CM IMPACT Guidebook for Class 10 Students

(With Important Questions and Answers)

(New Course 2024 – 2025)

Published by
Education Department
Government of Meghalaya

An Initiative under
Chief Minister's Initiative to Maximize Pass Achievement and Classroom Triumph (CM IMPACT)

This Book is published under the **CM IMPACT** Initiative for **free distribution** to all the students of Class-10 in the State of Meghalaya

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For any suggestions on education in the State, please write to vk.mantri@gov.in

Message

Dear Students,

I am excited to present to you the new guidebooks launched under the "CM IMPACT" initiative, a key element of our comprehensive strategy to enhance educational outcomes and support your journey towards academic excellence.

Our education system is at a pivotal moment, facing challenges that demand our collective attention and effort. The consistent gaps in performance and varying results across different districts highlight the need for targeted solutions. This initiative is designed with you in mind, to provide the support and resources you need to overcome these challenges and achieve your best.

The "CM IMPACT" guidebooks are crafted to offer you valuable insights and assistance in your studies. These subject-specific resources are intended to help you build a strong foundation of knowledge, develop effective study habits, and prepare thoroughly for your exams. Our goal is to ensure that you are well-equipped to excel academically and reach your full potential.

Education is the key to your future and the advancement of our state. By leveraging these guidebooks and applying yourself diligently, you are taking a significant step towards success. Remember, your efforts today pave the way for a brighter tomorrow.

I encourage you to use these guidebooks as a valuable tool in your studies, stay motivated, and strive for excellence. Together, we can achieve remarkable outcomes and build a prosperous future for everyone in Meghalaya.

Wishing you all the best in your academic endeavors.

With best wishes,

Conrad K Sangma

Chief Minister of Meghalaya

Message

Dear Students,

I am thrilled to introduce the new CM IMPACT Guidebook, specifically designed to enhance your learning experience and help you achieve success in the SSLC exams. This guidebook is a result of our dedicated efforts to address the challenges faced by students and improve our state's exam results.

These guidebooks are crafted with your needs in mind. Inside, you will find key questions and answers, sample question papers, and a detailed blueprint of the Board Examination. These resources are here to support you in your studies, helping you to understand the exam format better and to prepare more effectively.

Your journey through education is a crucial one, and this guidebook aims to make that journey smoother and more productive. By utilizing these resources, you can enhance your study strategies, strengthen your knowledge, and build confidence for the exams.

I encourage you to use this guidebook diligently and take full advantage of the tools it provides. Your hard work, focus, and determination are essential for achieving your academic goals. Together, we can work towards improving our educational standards and ensuring that every student in Meghalaya has the opportunity to excel.

Wishing you all the best in your studies and upcoming exams.

Warm regards,

Rakkam A Sangma

Education Minister

Government of Meghalaya

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CM IMPACT Guidebook for Students
(With Important Questions and Answers)

Health & Physical Education
Class X
(Old Course)
2024 – 2025

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Section-A

(1 Mark)

Multiple Choice Questions (MCQ):

1. Adolescence is the period of transition from_____
A. Infancy to Childhood.
B. Childhood to Adulthood.
C. Childhood to Puberty.
D. None of the above.
Ans.B

2. Chronological maturity is important for which of the following?
A. Getting the right to vote
B. Inheriting property
C. Obtaining a Driving License.
D. All of the above
Ans. D

3. _____ cannot change, you cannot hurry it up or slow it down.
A. Intellectual Age
B. Chronological Age
C. Cellular Age
D. Philosophical Age
Ans. B

4. Which of the following is not an aspect of maturity?
A. Physical.
B. Emotional.
C. Intellectual.
D. Calculative.
Ans. D

5. You often lose your temper and feel extremely annoyed when things do not happen the way you desire. This may be due to lack of_____
A. Intellectual maturity.
B. Social maturity.
C. Emotional maturity.
D. Philosophical maturity.
Ans.C

6. The ability to get along with people is_____
A. Emotional maturity.
B. Physical maturity.
C. Social maturity.
D. Philosophical maturity.
Ans. C

7. The maturity which is difficult to measure is_____
A. Physical maturity.
B. Social maturity.
C. Emotional maturity.
D. Intellectual maturity.
Ans. D

8. The maturity that helps in maintaining an equilibrium in the present as well as future life is
A. Philosophical Maturity
B. Intellectual Maturity
C. All – round Maturity
D. Social Maturity
Ans.C

9. Having a mission in life is part of what maturity?
A. Intellectual Maturity
B. Social Maturity
C. Philosophical Maturity
D. Emotional Maturity
Ans. C

10. You are _____ mature if you can reserve judgements till you have considered the pros and cons of a problem.
A. Intellectual Maturity
B. Social Maturity
C. Philosophical Maturity
D. Emotional Maturity
Ans. A

11. As you become teenager, your dependence on parents___
A. Increase
B. Decreases
C. Doesn't change
D. Cannot tell
Ans. B

12. Which of the following, your parents do not expect of you?
A. Have Polite Manners
B. Pay them monthly
C. Behave in a responsible way.
D. Be truthful and honest
Ans. B

13. It is expected of the newly-wed couple that they should give _____ to the family of each other.
A. Dowry

B. Gifts
C. Due respect
D. House

Ans. C

14. Today there is growing dissatisfaction with the joint family system because of _____
A. Government policy
B. Society perception
C. Construction of small houses
D. Adjustment issues of the family members

Ans. D

15. Marriages in our country are generally arranged by
A. grandparents.
B. parents.
C. friends.
D. relatives.

Ans. B

16. Which of the following helps husband and wife to bond together?
a) Sharing some common interests.
b) Belonging to same religion.
c) Coming from same village
d) Earning equal income

Ans. A

17. The most intimate relationship of a married couple is
A. Sexual.
B. Domestic Chores
C. Formal
D. Casual

Ans. A

18. Knowledge of our body structure and its functioning is essential for maintaining_____
A. Good Academics
B. Good wealth
C. Good Health
D. Good relations

Ans. C

19. All parts of the body grow at_____
A. the same rate.
B. different rates.
C. equal rate
D. None of the above.

Ans. B

20. Number of birthdays you have celebrated is _____
A. Social maturity
B. Physical maturity
C. Chronological maturity
D. Philosophical maturity

Ans. C

21. Maturity that you cannot change, you cannot hurry it up or slow it down:
A. Social.
B. Emotional.
C. Physical
D. Chronological.

Ans. D

22. Which is not correct in respect of Social Maturity?
A. It is gradually learned as you learn to live with people.
B. It is gradually learned as you live alone.
C. It is neither predictable nor regular
D. It is not same all the time.

Ans. B

23. Which of the following is not a benefit of living in joint family?
A. Abundant privacy
B. Help in upbringing children
C. Support in events of crisis
D. Advice on personal issues

Ans. A

24. Which of the following is not a requisite for a successful marriage?
A. Loving and being loved
B. Cooperation.
C. Compatibility.
D. Competitiveness

Ans. D

25. Feelings and how they are expressed is _____
A. Emotional maturity
B. Physical maturity
C. Philosophical maturity
D. Chronological maturity

Ans. A

26. Which of the following is not physical suffering?
A. Fever
B. Stomach pain
C. Depression
D. Cold

Ans. C

27. Growth is control by
A. genes and endocrine secretions
B. food and exercise
C. rest and sleep
D. All of the above.

Ans. D

28. Substances which are produced in the body to kill germs are called
A. toxoids
B. antigens
C. antibodies
D. phagocytes
Ans. C

29. Another name for white blood cells is
A. antigens
B. phagocytes
C. antibodies
D. leucocytes

Ans. D

30. Germs contain certain chemical substances called
A. antigens
B. antibodies
C. leucocytes
D. phagocytes

Ans. A

31. The production of antibodies depends upon
A. Food and nutrition
B. Sleeping habits
C. Physical Exercise
D. All of the above
Ans. D

32. A person is susceptible to diseases if he is
A. in poor health
B. undernourished
C. with severe physical and mental strain
D. All of the above
Ans. D

33. The protective foods which control the ability of the body to produce antibodies are
A. carbohydrates and proteins
B. proteins and vitamins
C. vitamins and minerals
D. minerals and fats
Ans. B

34. Immunity offered by the body under normal conditions is
A. acquired immunity
B. natural immunity
C. passive immunity
D. active immunity
Ans. B

35. Antibodies are produced in the body to kill germs, and dead germs are swallowed by _____
A. red blood corpuscles
B. white blood corpuscles
C. blood platelets
D. plasma
Ans. B

36. A mother supplies antibodies to her fetus is an example of
A. natural passive immunity
B. acquired passive immunity
C. natural active immunity
D. acquired active immunity
Ans. A

37. Violent reactions like asthma, migraine, eczema and skin rashes are symptoms of_____
A. tuberculosis
B. malaria
C. leprosy
D. an allergic reaction
Ans. D

38. When a group of people or community as a whole is immune to a particular disease, it is known as
A. herd immunity
B. natural immunity
C. acquired immunity
D. species immunity
Ans. A

39. Acquired immunity may be
A. Passive only
B. Active only
C. Either active or passive
D. None of the above
Ans. C

40. Under Mission Indradhanush, two new vaccines are provided in

selected cities. These are vaccines against
A. Japanese encephalitis
B. Haemophilus influenza type B
C. Both of the above
D. None of the above
Ans. C

41. The diseases covered under Mission Indradhanush include
A. diphtheria and polio
B. pertussis and measles
C. childhood tuberculosis and hepatitis B
D. All of the above
Ans. D

42. Which of the following is part of the primary focus group of the IMI programme?
A. Children up to 2 years of age
B. Children up to 5 years of age
C. Malnourished school going children
D. All children up to 15 years of age
Ans. A

43. Each blockcomprises of about
A. 10 villages
B. 100 villages
C. 1000 villages
D. 5000 villages
Ans. B

44. The Revised National Tuberculosis Control Programme aims to eradicate tuberculosis from the country by the year
A. 2025
B. 2035
C. 2045
D. 2055
Ans. A

45. The Department of AIDS Control is now known as
A. National AIDS Control Department (NACD)
B. National AIDS Control Organisation (NACO)
C. Indian AIDS Control Department (IACD)
D. Indian AIDS Control Organisation (IACO)
Ans. B

46. The Directorate General of Health Services comprises of
A. Medical care and hospital
B. Public health
C. General administration
D. All of the above

Ans. D

47. The Directorate of Health Services has achieved the eradication of_____
A. Small pox
B. Guinea worm
C. Polio
D. All of the above
Ans. D

48. Which of the following is false regarding the functions of the State Health Department?
A. To set up hospitals
B. To take measures for the control of communicable diseases
C. To maintain international health relations
D. To implement other national health programmes
Ans. C

49. What do we need to know, for prevention of diseases?
A. Signs and symptoms
B. The measures for prevention
C. Causes of the disease
D. All of above
Ans. D

50. Which of the following not a natural defense against the entry of disease producing germs?
A. skin
B. tears
C. sweat
D. saliva
Ans. C

51. Which is a non – communicable disease?
A. Diabetes
B. Measles
C. Diphtheria
D. Cholera
Ans. A

52. Which of the following is not a communicable disease?
A. Measles
B. Diphtheria

C. Cancer
D. Cholera
Ans. C

53. BCG Vaccination is being offered to all below the age of
A. All ages
B. 50 years
C. 20 years
D. 40 years
Ans. C

54. BCG Vaccination was discovered by
A. Paul Ehrlich
B. Alexander Fleming
C. Salman A Waksman
D. Calmette and Guerin
Ans. D

55. BCG vaccine protects from
A. TB
B. Leprosy
C. Cholera
D. Malaria
Ans. A

56. The tablet used for treating leprosy patients:
A. Sulfone
B. Bromides
C. Paracetamol
D. Amphetamines

Ans. A

57. Tuberculosis affects mainly the
A. kidneys
B. heart
C. lungs
D. legs
Ans. C

58. How many children die in India every year, due to diseases, which could be prevented with vaccines?
A. 5 lakh
B. 5 crore
C. 5,000
D. 500
Ans. A

59. The National Vector Borne Disease Control Programme do not cover _____
A. malaria
B. filariasis
C. Cancer
D. dengue
Ans. C

60. Survey, Education and Treatment(SET) centres are set up eradication of which disease?
A. TB
B. Leprosy
C. Malaria
D. Polio
Ans. B

61. Trachoma affects which part of the body?
A. Eye
B. Ears
C. Lungs
D. Legs
Ans. A

62. The first country in the world to launch Family Planning as an official programme is
A. USA
B. India
C. Russia
D. China
Ans. B

63. The course of treatment for tuberculosis should be for a period of
A. 6 – 8 days
B. 6 – 8 weeks
C. 6 – 8 months
D. 6 - 8 years
Ans. C

64. A Sub Centre normally looks after a population of about
A. 10,000
B. 1,000
C. 1,00,000
D. 5,00,000
Ans. A

65. Final and most severe stage of HIV is
A. AIDS
B. Genital Herpes
C. Chlamydia
D. Gonorrhea
Ans. A

66. World AIDS Day is observed on which day?
A. 1st January
B. 1st December

C. 1st November
D. 1st October
Ans. B

67. Anaemia is due to lack of
A. Iron
B. Carbohydrates
C. Fats
D. Vitamins
Ans. A

68. The percentage of our population living in rural areas is
a) 50 per cent
b) 60 per cent
c) 80 per cent
d) 95 per cent
Ans. C

69. In Health Services of Government, PHC stands for_____
A. Physical Health Centre
B. Physical Healing Centre
C. Primary Health Centre
D. Primary Healing Centre
Ans. C

70. Blindness in children caused due to_____ deficiency.
A. Vitamin A
B. Vitamin B
C. Vitamin C
D. Vitamin D
Ans. A

71. The PHC is the largest agency to serve the public health needs in
A. rural areas
B. urban areas
C. Both (a) and (b)
D. None of the above
Ans. A

72. Tablets distributed for the benefit of pregnant and lactating mothers:
A. Iron
B. Folic acid
C. Sulfone
D. Both (a) and (b)
Ans. D

73. Trachoma is found particularly in the age group of
A. 0-1 years
B. 0-10 years
C. 10-20 years
D. 60-70 years
Ans. B

74. An institution for the promotion of both health and welfare of the people in the area of the Community Development Block
A. Sub – Centre
B. CHC
C. PHC
D. Dispensary
Ans. C

75. Free and Compulsory Education is given for children upto the age of
A. 10 years
B. 14 years
C. 15 years
D. 16 years
Ans. B

76. The National Population Policy 2000, has a long-term objective of stabilising the country's population by
A. 2035 CE
B. 2040 CE
C. 2045 CE
D. 2055 CE
Ans. C

77. The ability of the body to produce antibodies is controlled by _____
A. Proteins
B. Vitamins
C. Both A and B
D. None
Ans. D

78. Which of the following vaccines are given at birth?
A. Oral Polio Vaccine
B. BCG
C. Hepatitis B
D. All of the above
Ans. D

79. Which following vaccine is not given at birth?
A. BCG
B. TT
C. Oral Polio Vaccine
D. Hepatitis B
Ans. B

80. Poisons produced by certain germs, which when made harmless are used

for producing immunity. They are called _____

A. Toxoids
B. Medicine
C. Narcotics
D. Depressants

Ans. A

81. Our choices of buying goods are often influenced by attractive advertisements using the words such as

A. Miracle cure
B. Quick relief
C. Energy in a pill
D. All of the above

Ans. D

82. Which of the following is not a false health related belief?

A. Raw milk is best quality milk
B. Rinsing mouth after eating food
C. Wine helps in forming blood
D. Alcoholic beverages can cure cold

Ans. B

83. In the market, the consumer needs to know how to choose products

A. spontaneously
B. Intelligently
C. quickly
D. after seeing advertisements

Ans. B

84. We should always consult a qualified medical practitioner for our

A. Educational needs
B. Medical needs
C. Spiritual needs
D. Social needs

Ans. B

85. Which of the following is a cultural practice that promote health?

A. Greeting friends with folded hands
B. Not eating milk and yogurt together
C. Drinking raw milk
D. Drinking alcoholic beverages to cure cold

Ans. A

86. Which of the following is not a criterion for a wise consumer?

A. Select consumer articles intelligently
B. Consider family budget
C. Practice self-medication
D. Make use of consumer laws.

Ans. C

87. Consumer Education helps people to make the right decision in the selection of_____

A. Drugs
B. Medicines
C. Food
D. All of the above

Ans. D

88. Early concepts of medicine and surgery were set out in the

A. Atharvaveda
B. Rigveda
C. Yajurveda
D. Ayurveda

Ans. A

89. Which of the following is not recommended by Ayurvedic practitioners?

A. Early rising
B. Cleaning of bowels
C. Cleaning of teeth
D. Taking medicine daily

Ans. D

90. Who was regarded as the God of medicine?

A. Chanakya
B. Ritucharya
C. Dinacharya
D. Dhanvantari

Ans. D

91. Which system is based upon three substances present in the body, i.evayu, pitta and kapha?

A. Unani system
B. Allopathy
C. Ayurvedic system
D. Naturopathy

Ans. C

92. The Unani system of medicine was introduced in India around the twelfth century CE by

A. British rulers
B. Muslim rulers
C. French rulers
D. Portuguese rulers

Ans. B

93. Siddha system of medicine is mainly practiced in

A. Tamil Nadu

B. Maharashtra
C. Bihar
D. Madhya Pradesh
Ans. A

94. The classical books of Siddha system are written in which language?
A. Telugu
B. Tamil
C. Kannada
D. Malayalam
Ans. B

95. A system of medicine based on natural philosophy:
A. Homeopathy
B. Allopathy
C. Naturopathy
D. Ayurvedic
Ans. C

96. Which of the following is not the main line of treatment in Naturopathy?
A. Hydrotherapy
B. Oil Bath
C. Enema
D. Fasting
Ans. B

97. A system of medicine based on the concept of 'similars', i.e. 'Likes are cured by likes' is
A. Homeopathy
B. Allopathy
C. Ayurvedic system
D. Siddha system
Ans. A

98. Homeopathy was discovered by
a) Dr. Samuel Hahnemann
b) Charaka Samhita
c) Susruta Samhita
d) Paul Erhlich
Ans. A

99. Which is the most prevalent system of medicine all over the world?
A. Naturopathy
B. Homeopathy
C. Allopathy
D. Ayurvedic system
Ans. C

100. There is no other system in medicine which has so many specializations as in
A. Homeopathy
B. Allopathy
C. Naturopathy
D. Unani system
Ans. B

101. Considering the development of medicine and surgery, innumerable career opportunities are available in
A. Homeopathy
B. Naturopathy
C. Siddha system
D. Allopathy
Ans. D

102. A false ray of hope, like a mirage, leads people to the money – making trap of
A. vaids
B. hakims
C. quacks
D. Allopathy doctors
Ans. C

103. Many quacks practice medicine under the garb of
A. Registered Medical Practitioners
B. Unregistered Medical Practitioners
C. Local Medical Practitioners
D. Indigenous Medical Practitioners
Ans. A

104. _____ may be defined as the practice of the art of healing by the people who are not qualified to practice them.
A. Curative quackery
B. Healing quackery
C. Corrective quackery
D. Medical quackery
Ans. D

105. The branch of medicine in which treatment of diseases is done by the operation of the diseased tissue is
A. Medicine
B. Surgery
C. Physiotherapy
D. Chemotherapy
Ans. B

106. The science of healing diseases by the administration of internal and external remedies is
A. Medicine
B. Surgery
C. Physiotherapy
D. Chemotherapy

Ans. A

107. Penicillin was discovered by
A. Marie Curie
B. Alexander Fleming
C. Antonie van Leeuwenhoek
D. Edward Jenner
Ans. B

108. Streptomycin was discovered by
A. Marie Curie
B. Alexander Fleming
C. Selman Waksman
D. Edward Jenner
Ans. C

109. What are the commonly abused substances throughout the word?
A. Alcohol and cocaine
B. Tobacco and alcohol
C. Tobacco and cocaine
D. Alcohol, tobacco and cocaine
Ans. B

110. Drugs which are essential in the practice of modern medicine:
A. Narcotics
B. Depressant
C. Stimulant
D. All of the above
Ans. D

111. Which of the following symptoms need immediate medical attention?
A. Chest pain
B. Coughing
C. Sneezing
D. None of above
Ans. A

112. Which of the following is known to cause serious allergies in some individuals?
A. Codeine
B. Novocaine
C. Penicillin
D. Paracetamol
Ans. C

113. Name the drugs which are used only in medical research
A. Hallucinogens
B. Narcotics
C. Depressants
D. Stimulants
Ans. A

114. All substances with abuse potential can produce changes in human behaviour such as
A. Muscular relaxation
B. Intoxication
C. Depression
D. All of the above
Ans. D

115. Codeine is an example of
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. A

116. Novocaine is an example of
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. A

117. Morphine is an example of
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. A

118. Which drugs are used by physicians and dentists to relieve pain or prevent pain?
A. Depressants
B. Narcotics
C. Stimulants
D. Hallucinogens
Ans. B

119. Which is an important component of commonly available cough syrups?
A. Novocaine
B. Morphine
C. Codeine
D. Heroin
Ans. C

120. Name the drug which is used by dentists for local anesthesia
A. Novocaine
B. Morphine
C. Codeine
D. Bromides
Ans. A

121. Which drug is used to smother unbearable and severe pain?
A. Novocaine
B. Codeine
C. Morphine
D. Bromide
Ans. C

122. Drugs that give a soothing feeling and reduce anxiety and tension
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. B

123. Bromides is an example of
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. B

124. Drugs that are present in many patent sedative or sleeping pills:
A. Morphine
B. Codeine
C. Novocaine
D. Barbiturates
Ans. D

125. Alcohol is an example of
A. Narcotics
B. Depressants
C. Stimulants
D. Hallucinogens
Ans. B

126. The alcohol used for drinking is
A. Ethyl alcohol
B. Methyl alcohol
C. Isopropyl alcohol
D. Methanol alcohol
Ans. A

127. Name the alcohol which is deadly poisonous and causes blindness and even death
A. Ethanol
B. Methyl alcohol
C. Isopropyl alcohol
D. Ethyl alcohol
Ans. B

128. Which of the following is used as a solvent and cleaning agent?
A. Ethanol alcohol
B. Methyl alcohol
C. Isopropyl alcohol
D. Ethyl alcohol
Ans. C

129. As medical science progressed the need for more and more drugs was felt. This gave birth to the era of
A. Herbal Drugs
B. Synthetic drugs
C. Mechanical drugs
D. Natural drugs
Ans. B

130. During _____, a person sees images that do not exist
A. Illness
B. Hallucination
C. surgery
D. Medication
Ans. B

131. Hallucinogen drugs affect one's
A. Sensory andauditory perception
B. visual and auditory perception
C. mental and visual perception
D. auditory perception
Ans. C

132. _____ is obtained from a nicotine rich leaves of a plant, which is grown in many parts of the world
A. Sugarcane
B. Rice
C. Tobacco
D. Cocaine
Ans. C

133. Nicotine and other chemicals enter the body through the
A. nose
B. throat
C. lungs
D. All of the above
Ans. D

134. Smoking is also associated with
A. Cancer of the lips and larynx
B. Chronic bronchitis
C. Lung cancer
D. All of the above
Ans. D

135. Which of the following is a fermented organic liquid, obtained by the natural fermentation of malts and sugars?

A. Alcohol
B. Tobacco
C. Medicine
D. Cigarette
Ans. A

136. Alcohol when taken in small quantities, causes
A. Bloating of stomach
B. muscular relaxation
C. itchy skin
D. Sneezing
Ans. B

137. Drugs are obtained from
A. plants and animals
B. plants, animals and minerals
C. minerals and plants
D. minerals and animals
Ans. B

138. The pioneering work in the field of the synthetic drugs was done by
A. Alexander Fleming
B. Paul Ehrlich
C. Selman A. Waksman
D. Samuel Hahnemann
Ans. B

139. Chemotherapy is the treatment of disease by
A. massaging
B. administering chemicals
C. using hot or cold water
D. Using UV Rays
Ans. B

140. In case of an illness, you should go to a
A. Laboratory
B. Uninformed quack
C. Qualified physician
D. Informed quack
Ans. C

141. Non prescription drugs are generally used in case of minor ailments such as
A. Headache
B. Cholera
C. Dysentery
D. All of the above
Ans. A

142. The leftover drugs can be
A. Used for next time
B. Given to relatives for use
C. Donated to charitable dispensaries
D. None of the above
Ans. C

143. Sale of drugs is governed by the
A. Medicine Control Act
B. Health Control Act
C. Drugs Control Act
D. All of the above
Ans. C

144. Using left over medicine from earlier illness is
A. harmless
B. dangerous
C. good
D. economical
Ans. B

145. Which of the following is not a characteristic of stimulants?
A. Produce Excitement
B. Feeling lazy
C. Increase of appetite
D. Increase the desire for Sleep
Ans. A

146. Some stimulants such as _____ are used medically to combat depression
A. Amphetamines
B. Thalidomide
C. Bromide
D. None of the above
Ans. A

147. Alcoholism generally leads to addiction because of its effects as a
A. depressant
B. stimulant
C. hallucinogen
D. narcotic
Ans. A

148. _____Can cross the border and spread diseases in the neighbouring country:
A. Flies
B. Mosquitoes
C. Viruses
D. All of the above
Ans. D

149. The headquarter of W.H.O. is in
A. Rome
B. Geneva
C. Canada

D. India
Ans. b) Geneva

150. The agency that promotes the development of basic soil and water resources of countries
A. WHO
B. UNICEF
C. FAO
D. CARE
Ans. C

151. The International Health Regulations (IHR), are binding on
A. 96 Countries
B. 16 Countries
C. 116 Countries
D. 196 Countries
Ans. D

152. The WHO provides _____ health guidance with regards to international travel to
A. Guess - based
B. evidence- based
C. profit – based
D. All of the above
Ans. B

153. The regional office of WHO for South East Asia in
A. New Delhi
B. Rome
C. Kolkata
D. Mumbai
Ans. A

154. _____ sets standards for the quality control of vaccines.
A. WHO
B. UNICEF
C. CARE
D. FAO
Ans. a) WHO

155. World Health Day is celebrated on
A. 1stApril
B. 7th April
C. 7th May
D. 1st December
Ans. B

156. The agency that promotes medical research and exchange of scientific information is
A. FAO
B. CARE
C. WHO
D. IHR
Ans. C

157. _____ assists in the control of diseases which are responsible for mortality among mother and children.
A. UNICEF
B. FAO
C. IMF
D. World Bank
Ans. A

158. The main aim of the UNICEF is to provide humanitarian and development assistance to
A. children alone
B. mothers alone
C. children and mothers
D. children and parents
Ans. C

159. One of the objectives of FAO is to improve production and distribution of all food and agricultural products from

A. farms
B. forests
C. fisheries
D. All of the above
Ans. D

160. _____ is providing technical assistance in such fields as nutrition and food management:
A. UNICEF
B. WHO
C. FAO
D. CARE
Ans. C

161. The International Health Regulations are intended to detect, reduce or eliminate the source from which infection spreads and to improve sanitation in
A. Airports, border check posts and ports
B. Airports, Railway Stations and ports
C. Airports, border check posts and Railway Stations
D. Airports, border check posts and Public Transport
Ans. A

162. A period during which persons who might spread an infectious disease are kept isolated is called
A. quarantine
B. treatment
C. hospitalisation
D. rehabilitation
Ans. A

163. CARE was created to mobilize relief supplies to
A. war – torn Asia
B. war – torn Europe
C. war – torn Africa
D. war – torn America
Ans. B

164. CARE has now grown into one of the world's largest

A. governmental agency
B. international voluntary relief agency
C. Health Business
D. None of the above
Ans. B

165. Which of the following is not a specialized agency of the United Nations?
A. FAO
B. CARE
C. WHO
D. UNICEF
Ans. B

166. The full form of IHR is
A. International Hygiene Regulations
B. International Health Regulations
C. Indian Hygiene Regulations
D. Indian Health Regulations
Ans. B

167. At the request of the member countries the WHO assists them in planning out
A. health programmes
B. Ruralprogrammes
C. education programmes
D. Drinking Water projects
Ans. A

168. Which of the following is not a symptom of teenage pregnancy?
A. Missed period
B. Headache
C. Fatigue
D. Vomiting
Ans. B

169. Potential behavior patterns for a teenage pregnancy:
A. early dating
B. unhealthy environment at home
C. stress and depression
D. All of the above
Ans. D

170. Genital Warts can be treated by
A. antibiotics
B. liquid hydrogen
C. cryotherapy
D. Hydrotherapy
Ans. C

171. Genital Herpes is caused by
A. Trichomonas Vaginalis Parasite
B. Human Papilloma Virus
C. Treponema Pallidum
D. Herpes Simplex Virus
Ans. D

172. Non-specific urethritis can be treated with
A. Antibiotics
B. Shampoo
C. Antiviral drugs
D. Glycerine
Ans. A

173. Pubic lice can be treated with
A. Coconut Oil
B. Medicated shampoo
C. Petroleum jelly
D. Bathing soap
Ans. B

174. Syphilis is caused by a
A. lice
B. worm
C. bacteria
D. virus
Ans. C

175. HIV can be transmitted from the mother to her baby during
A. Bathing the baby
B. labour and delivery
C. holding the baby
D. None of the above
Ans. B

176. Universal Precautions for infection control include

A. Washing hands
B. Wearing gloves and masks
C. Using disposable syringes
D. All of the above
Ans. D

177. The most common STI is
A. Chlamydia
B. Syphilis
C. Genital warts
D. AIDS
Ans.A

178. In the absence of treatment, HIV generally takes _____ years to progress to AIDS
A. 8 - 10 years
B. 18-20 years
C. 1 – 2 years
D. 2 – 5 years
Ans. A

179. Comprehensive sex education for young people is an essential part of HIV _____
A. Vaccination
B. Prevention
C. Detection
D. Infection
Ans. B

180. Human papilloma virus causes
A. Genital warts
B. Genital herpes
C. Syphilis
D. Gonorrhoea
Ans. A

181. To deliver a baby through its mother abdominal wall is called a/an
A. operation
B. incision
C. caesarean section
D. Delivery
Ans. C

182. Which of the following recognized that sport has a '' Unique power to attract mobilize and inspire"
A. WHO
B. IMF
C. World Bank
D. United Nations
Ans. D

183. The most effective form of contraception to prevent teenage pregnancy is the use of
A. birth control pills
B. contraceptive jelly
C. diaphragms
D. condoms
Ans. A

184. An early diagnosis of pregnancy helps a teenager to adjust
A. emotionally and socially
B. emotionally and physically
C. physically and intellectually
D. physically and socially
Ans. b) emotionally and physically

185. _____ given to an HIV infected mother that can greatly reduce the chances of the baby becoming infected are called
A. antiretroviral drugs
B. antidepressants
C. antibiotics
D. antioxidants
Ans. A

186. _____ means that a germ - virus, bacteria or parasite - that can cause a disease or sickness is present inside a person's body.
A. Chronic ailment
B. Infection
C. Discomfort
D. Diabetes
Ans. B

187. Health wise teenage mothers have a much higher risk of
A. Anaemia
B. Hypertension
C. Caesarian section
D. All of the above
Ans. D

188. The goal of physical education is to ensure that all students acquire the _____ to lead healthy and active lives
A. knowledge
B. skills
C. attitude
D. All the above
Ans. D

189. Drug addicts who inject the drugs intravenously are a
A. High risk group
B. Medium risk group
C. Low risk group
D. No risk group
Ans. A

190. According to WHO there is strong evidence that male circumcision reduces the risk of HIV transmission by around
A. 10%
B. Doesn't reduce
C. 60%
D. 100%
Ans. C

191. Mosquitoes do not spread
A. malaria
B. filariasis
C. dengue
D. HIV
Ans. D

192. HIV is not a/an
A. Air borne disease
B. Water – borne disease
C. Food borne disease
D. All of the above
Ans. D

193. HIV is not transmitted through
A. shaking hands
B. exchange of fluids
C. sharing of injections
D. All of the above
Ans. A

194. HIV infect cells which are a part of the body's
A. nervous system
B. digestive system
C. immune system
D. respiratory system
Ans. C

195. HIV is a
A. bacteria
B. virus
C. fungi
D. algae
Ans. B

196. A raised lump or lesion usually found on or near the genital or anus is the first sign of
A. genital warts
B. gonorrhea
C. public lice
D. syphilis
Ans. D

197. Treating warts using liquid nitrogen is called _____
A. chemotherapy
B. cryotherapy
C. physiotherapy
D. Hydrotherapy
Ans. B

198. Trichomoniasis can be treated with
A. antiviral
B. antifungal
C. antibiotics
D. None of the above.
Ans. C

199. Cooling the area with ice or cold water or bathing in a salt both can relieve symptoms of
A. Genital warts
B. Gonorrhea
C. Genital herpes
D. Syphilis
Ans. C

200. Lidocaine gel is a type of
A. intravenous anesthetic
B. topical anesthetic
C. inhalational anesthetic
D. oral anesthetic
Ans. B

* * *

Section - B
(2 Marks Questions)

Very Short Answer Questions:

1. Growth is controlled by many factors. Name them.

Ans. Growth is controlled by genes, endocrine secretions, food, exercise, rest, relaxation and sleep.

2. Define maturity.

Ans. Maturity is indicative of one's readiness to share adult experiences, privileges and responsibilities.

3. Name the different aspects of maturity?

Ans. The different aspects of maturity are Chronological maturity, Physical maturity, Intellectual maturity, Emotional maturity, Social maturity and Philosophical maturity.

4. Chronological maturity is important in what respects?

Ans.Chronological maturity is important for getting the right to vote, inheriting property, obtaining a driving license, getting married, opening a Bank Account, etc.

5. What does philosophical maturity include?

Ans. Philosophical maturity includes long term values, goals worth striving for, making true friends and having a dedication and mission in life.

6. When do one gain physical maturity? Can it be altered?

Ans. One gains physical maturity when one has obtained his full height, weight and strength.Proper nutrition and physical exercise can help but not altogether change the pattern of physical growth.

7. Why is compatibility an important requisite in marriage?

Ans.Compatibility is essential for making a married life happy. Two persons who marry cannot have exactly the same traits. Individual differences can always be there; the couple must accept and live with their differences.

8. What is the main function of the white blood cells?

Ans. The main function of the white blood cells in the blood is to help defend the body against a sudden attack of germs.

9. What are antigens and how do they function?

Ans. Germs contain certain chemical substances called antigens. Antigens make the body produce other substances called anti-bodies, which protect us from diseases.

10. Who is susceptible to diseases?

Ans. A person who is in poor health, undernourished, in fatigue and with severe physical and mental strain is susceptible to diseases.

11. What is the full form of DPT?

Ans. DPT stands for Diphtheria, Pertussis and Tetanus.

12. What is anaphylaxis?

Ans. In some cases of passive immunization, there will not be any violent reaction for the first dose. But the individual is rendered intolerant to a second dose. This condition is known as anaphylaxis.

13. What are toxoids?

Ans. Certain germs like diphtheria and tetanus produce poisons which when made harmless are used for producing immunity. These are toxoids.

14. What is natural immunity?

Ans. Natural immunity is the resistance offered by the body under normal conditions without any prior infection or external stimulation such as vaccination or inoculation.

15. What is natural acquired immunity?

Ans. An immunity is called acquired immunity when a previous attack of the disease gives a certain amount of immunity from another attack of the same disease, as in the case of chickenpox.

16. What is passive immunity?

Ans. It is called passive immunity when antibodies produced in some other person or animal of the same or another species are introduced into the body to fight the disease.

17. Who are the Primary focus groups of the IMI Programme?

Ans. The Primary focus groups of theIntensified Mission Indradhanush (IMI) programme are the children up to 2 years of age and pregnant women who have missed out routine immunization.

18. What is Trachoma?

Ans. Trachoma is a communicable eye disease which when left untreated it will lead to visual impairment or blindness.

19. Name the two tablets which are distributed for the benefits of pregnant and lactating mothers.

Ans. The two tablets which are distributed for the benefits of pregnant and lactating mothers are Iron and Folic Acid Tablets.

20. What are the two main objectives of the National Leprosy Control Programme?

Ans. The two main objectives of the National Leprosy Control Programme are the early case detection and the treatment given at the home of the Leprosy patients with Sulfone Tablets.

21. What is a PHC?

Ans. A PHC is an institution for the promotion of both health and welfare of the people in the area of a Community Development Block. It is the smallest agency adapted to serve the public health needs of rural areas, covering a population of 60,000 to 1,00,000.

22. Name two statutory bodies related to Medicine constituted by the Government of India.

Ans. Two statutory bodies constituted by the Government ofIndia are

(a) Central Council of Indian Medicine and
(b) Central Council for Research in Indian Medicine and Homeopathy.

23. In the science of curing diseases, what are the two areas of study?

Ans. In the science of curing diseases, these are two areas of study – medicine and surgery.

24. Who were the founders of the ayurvedic system of medicine?

Ans. Susruta and Charaka were the founders of the ayurvedic system of medicine.

25. How are diseases cured in Ayurveda?

Ans. In Ayurveda, elimination of the toxins from the body, and the restoration of internal equilibrium is done for curing the diseases.

26. Unani system of medicine is based upon four humours present in the body. Name them.

Ans. Unani is based upon four humours present in the body i.e, suada, safra, balgam and khoon.

27. What is the main criterion of investigation in the allopathy system of medicine?

Ans. The main criterion of investigation is to find anatomical and physiological deviations from the normal which manifest as a disease.

28. What do the Indian systems of medicine emphasize upon?

Ans. Indian System of Medicine lay emphasis on dietary control and use of herbal and mineral drugs.

29. How are diseases causedaccording to the ayurvedic system?

Ans. According to the ayurvedic system, diseases are caused by faulty food, disturbance of mind and unhygienic habits.

30. What is the law of ‘similars’ in Homeopathy?

Ans. Homeopathy is based upon the law of ‘similars’ called ‘similiasimilibuscurentur’ which means ‘like are cured by likes’.

31. Write any two points on the siddha system of medicine?

Ans. The siddha system of medicine is mainly practiced in Tamil Nadu and some parts of Kerala. The basic principles of this system are similar to ayurveda.

32. Who is an uninformed quack?

Ans. An uninformed quack has very little knowledge about what he/she intends to treat. However, he/she may not know that he/she knows nothing.

33. What is a drug?

Ans. A drug is a chemical or non – infectious biological substance which alters the body and its functions.

34. What is chemotherapy? Who founded this system?

Ans. Chemotherapy is the treatment of disease by administering chemicals. It was founded by Paul Ehrlich.

35. What are non – prescription drugs?

Ans. Non – prescription drugs are generally used in case of minor ailments such as headache, common cold and pain but they are not to be used indiscriminately.

36. What are the two important reasons for using drugs without doctor’s advice?

Ans. Two important reasons for using drugs without a doctor's advice are lack of resources and lack of attitude.

37. How do we know when to consult a doctor?

Ans. Severity, persistence and repetition of symptoms should be used as criteria for consulting a doctor.

38. What are the symptoms that may need immediate medical care by a qualified doctor?

Ans. Symptoms like chest pain, blackout, nausea and unconsciousness may need immediate medical care by a qualified doctor.

39. What is drug abuse?

Ans. Drug abuse is defined as self – administration of drugs in excessive or inappropriate doses. It is the use of drugs or substances in a way that is harmful to an individual's health, relationships or overall well being.

40. What is alcohol?

Ans. Alcohol also known as ethanol, is a fermented organic liquid, obtained by the natural fermentation of malts and sugars. It is the intoxicating constituent of wine, beer, spirits and other alcoholic drinks.

41. What is quarantine?

Ans. Quarantine is the period during which persons who might spread an infectious disease (especially travellers) are kept isolated.

42. What is the main objective of the WHO?

Ans. The main objective of the WHO is the attainment of the highest possible level of health by all people.

43. Why life skills education is important?

Ans. It is through life skills education that young adults would be guided in making some key life event decisions such as marriage, employment, bearing children and gaining acceptance in the community.

44. What are life skills according to WHO?

Ans. The World Health Organisation defines life skills as the "abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of every life.

45. What is life skills education meant for?

Ans. Life skills education is meant to enhance capabilities of adolescents and young adults to helps them deal with many challenges of life.

46. What is teenage pregnancy?

Ans. Teenage Pregnancy, also known as adolescent pregnancy is one that takes place from puberty to the age of 19 years.

47. What is an STI?

Ans. A sexually transmitted infection (STI) is an illness caused by an infectious pathogen which spread from one person to another by means of sexual contact, including vaginal intercourse, oral sex and anal sex.

48. What is infection?

Ans. Infection simply means that a germ – virus, bacteria or parasite – that can cause disease or sickness is present inside person's body.

49. Why intravenous drug users are said to be a high-risk group?

Ans. Drugs addicts who inject the drug intravenously are a high-risk group as they are often known to share the syringes among their fellow users.

50. What is a caesarean section?

Ans. A caesarean section is an operation to deliver a baby through its mother's abdominal wall, which reduces the baby's exposure to its mother's body fluids.

51. What is the goal of physical education?

Ans. The goal of physical education is to ensure that all students acquire the knowledge, skills and attitudes to lead healthy and active lives.

Group –C
(3 Marks Questions)

Short Answer Questions:

1. Why is chronological maturity important?

Ans. Chronological maturity is important in some respects e.g. getting the right to vote, inheriting property, obtaining a driving license, getting married, opening a saving account in the post office or a bank.

2. Why do you need to develop social maturity as you grow up?

Ans. We need to develop social maturity as we grow up because the spheres of relationship and activity keep on enlarging and one needs more and more people of various kinds in life and we need different things from them.

3. In which way intellectual growth varies from person to person?

Ans. Intellectual growth varies from person to person because each individual is different from one another, it also depends on situations in which one lives. It continues as long as one wants to grow and keeps alert.

4. Mention any three qualities in the choice of a bride-to-be.

Ans. Any three qualities in the choice of a bride-to-be are

a) She has good health and follow healthy habits.
b) She is well educated.
c) She has interests similar to those of the boy.

5. Mention any three qualities in the choice of the groom.

Ans. Any three qualities in the choice of the groom

a) He has good physical health and healthy habits.
b) He is well educated.
c) He is economically independent.
d) He is emotionally mature and balanced
e) He has interests similar to that of the girl.

6. What do your parents expect of you?

Ans.

a. Have polite manners.
b. Be well – groomed
c. Maintain good relations with people around us.
d. Be respectful to elders and parents.
e. Behave in a responsible way.

7. What are the benefits of a joint family?

Ans. The benefits derived from a joint family are economic help, refuge in events of crisis, help in upbringing the children, seeking advice and guidance on personal issues. In short, a joint family can provide a great support to its members.

8. What does the word ‘disease’ mean?

Ans. The word ‘disease’ means an illness that affects people or animals, especially one that is caused by infection. Whenever the body or its parts do not function properly and the suffers as a result, we call it a disease. It can be physical, such as fever, body pain, injuries, sores; however, it can also be cognitive such as schizophrenia and depression: or social such as mal-adjustment in family life.

9. Name some natural defences against the entry of disease producing germs.

Ans. Some of the natural defences against the entry of disease producing germs are physical barriers like skin, lymphoid tissue, tears, saliva, nasal secretion and digestive juice, etc.

10. What must we know in order to prevent disease?

Ans. For the prevention of diseases, we must know at least

a. The causes of the diseases and the ways in which they are spread
b. The measures for prevention
c. Signs and symptoms.

11. What do the production of antibodies depend upon?

Ans. The production of antibodies depends upon the state of health of the body, mainly on the nutritional status. The productive foods namely proteins and vitamins control the ability of the body to produce antibodies.

12. What is artificial acquired immunity?

Ans. It is called artificial acquired immunity when it is due to inoculation of certain material containing antigens. It gives protection against future exposure to that particular disease for a certain period.

Example are vaccination against diphtheria, whooping cough and tetanus.

13. What is an allergic reaction?

Ans. In some cases of passive immunization, certain violet reactions like asthma, migraine (headache), eczema and skin rashes may occur in the individual. This is known as an allergic reaction.

14. What is immunity? What are the two types of immunity?

Ans. Immunity is that condition existing in our body which protects our body against diseases.

The two broad categories of immunity are:

a) Natural or inborn and
b) Acquired

15. What is herd immunity?

Ans. It is herd immunity when a group of people or community as a whole is immune to a particular disease. This happens when more than 70 % of the people composing the community are immunized against the disease.

16. What are vaccines? Give two examples.

Ans. Vaccines are protective substances which when injected into the body, will afford protection against subsequent attacks of a disease e.g. DPT and Oral Polio Vaccine.

17. What are the main symptoms of Tuberculosis?

Ans. The main symptoms of tuberculosis are fever and weakness, loss of weight and appetite, pain in the chest, chronic cough which lasts for weeks and occasional blood in the sputum.

18. What is the main aim of the Applied Nutrition Programme?

Ans. The aim of theApplied Nutrition Programme is to promote the production of food stuffs like fish, poultry, milk, vegetables, fruits, etc., and to encourage their consumption among children, pregnant women and nursing mothers as they need them more.

19. Name three statutory councils set up by the government of India.

Ans. Three statutory councils were:

i. Medical Control of India.
ii. Dental Council of India.
iii. Indian Nursing Council

20. What is consumer education?

Ans. The term ‘consumer education’ refer to that area of ‘Health Education’ which is concerned with providing the knowledge to help people to make the right decision in the selection of drugs, medicines, foods and other products and services of day –to –day use.

21. Write any three false health – related beliefs.

Ans. (a) Milk and yoghurt should not be eaten together.
(b) Alcohol beverages are stimulants.
(c) Wine helps in forming blood.

22. Write any three cultural practices that promote health.

Ans. (a) Washing hands before and after eating.
(b) Rinsing mouth after taking food.
(c) Drinking boiled milk.

23. Why drugs have to be handled with great care?

Ans. Drugs are capable of doing a great deal of good, but if used indiscriminately, they are capable of doing great harm too. The harm can be temporary and minor or a kind of permanent disability, or even death in some cases.

24. What things should be kept in mind while using non-prescription drugs?

Ans. In case of non-prescription drugs, one should follow the direction on the label carefully and if symptoms of the ailment persist, a physician should be consulted immediately.

25. What are the ill effects of nicotine?

Ans. Nicotine causes dizziness and headache and may affect blood circulation, respiration and digestion. Heavy smoking increases the rate of heart beat and causes palpitation. Smoking is also associated with cancer of lips and larynx, chronic bronchitis, lung cancer and peptic ulcer.

26. Why was the Central Council of Health set up?

Ans. A large number of the health subjects fall in the concurrent list, which call cells for continuous consultation, mutual understanding and cooperation between the Central and the state. It was for this

purpose that the Central Council of Health was set up.

27. What are the aims of the Department of Health Research?

Ans. The DHR aims to make modern health technologies accessible to the people through research and innovations related to diagnosis, treatment methods and vaccines for prevention. It is also the responsibility of the DHR to introduce these innovations into the public health system.

28. Name the three units of the Directorate General of Health Services.

Ans. The Directorate comprises of three main units, which are,

a) medical care and hospital,
b) public health and
c) general administration.

29. Name some of the divisions that comprise the Department of Health and Family Welfare?

Ans. The Department of Health and Family Welfare comprises various divisions such as the Blindness Control, Cancer Control Programme, Immunization and Medical Tourism.

30. Write the full form of the following: -
DHR, NACO, PMSSY

Ans a) DHR- Department of Health Research
b) NACO- National AIDS Control Organisation
c) PMSSY- Pradhan MantriSwasthya Suraksha Yogana

31. Define medicine and surgery.

Ans. Medicine is the science of healing diseases by the administration of internal and external remedies.

Surgery is that branch of medicine in which treatment of diseases is done by removal or operation of the diseased tissue.

32. What is the daily routine recommended by ayurvedic practitioners?

Ans: The daily routine recommended by ayurvedic practitioners is based on health principle like early rising, cleaning of bowels, cleaning of teeth, physical exercises, taking baths and pranayamas, etc.

33. Who are quacks? How are quacks classified.

Ans. Quacks are people with no special training or license.

Quacks can be classified into

a) An uniformed quack
b) A deluded quack

34. Outline any three career opportunities available in both medicine and paramedical fields.

Ans. The care of the ill and injured.

i. The prevention of illness.
ii. Working with people in hospitals and community.
iii. Working in a laboratory.

35. Define medical quackery?

Ans. Medical quackery may be defined as the practice of the art of healing by people who are not qualified to practise them, application of worthless methods whether by unqualified practitioners or by those who are qualified by education and training, and distribution of drugs and devices which are worthless for the purposes for which they are offered.

36. Name three specialized agencies of the United Nations.

Ans. The specialized agencies of the UN are

a) World Health Organisation (WHO)
b) Food and Agricultural Organisation (FAO)
c) United Nations Children's Fund (UNICEF).

37. What preceded the formation of WHO?

Ans. From 1851 onwards, there were attempts at coming to an agreement on communicable diseases control at the international level. A series of conferences took place in Europe and America to discuss sanitary control of international traffic. These attempts preceded the formation of WHO.

38. What are the three objectives of FAO?

Ans. The three objectives of FAO are

a) To raise levels of nutrition and standards of living.
b) To improve production and distribution of all food and agriculture products from farms, forest and fisheries.
c) To better the economic conditions of rural people.

39. What are the main aspects of International Health Regulations?

Ans. The main aspects of the International Health Regulations relate to the prevention of the spread of communicable diseases and immunization and international health certificates for travelers who go abroad.

40. What are the social effects of teen pregnancy in India?

Ans. In India, socially teenage mothers can experience isolation and guilt accompanied by stress, depression and low self-esteem, which might result in lack of interest in studies, limited job prospects and lack of support group or friends.

41. What are the health effects of infants born to teenage mothers?

Ans. Infants born to teenage mothers are a higher risk of complications and pre-mature birth, low weight, accidental trauma and poisoning, acute infections and developmental delay.

42. How can STIs be diagnosed?

Ans. STIs can be diagnosed through physical examination which might includean internal examination for women. It can be also be diagnosed by examination of swabs, blood and urine samples.

43. What are treatments for genital herpes?

Ans. The treatment of genital herpes are as follows: -

a) Cooling the area with ice or cold water or bathing in a salt bath.
b) Using a topical anesthetic like Lidocaine gel or applying petroleum jelly can be soothing.
c) Treatment with an antiviral drug like acyclovir reduces the severity and duration of symptoms.

44. What are the signs and symptoms of syphilis?

Ans. The first sign of syphilis is a raised lump or lesion usually found on or near the genitals or anus which may then form a painless sore. This may be followed by general feeling of being unwell with symptoms such as fever, headache and tiredness. White patches may be noticed on the tongue or on roof of the mouth.

45. What is meant by the term 'cofactors' for disease progression of an HIV patient? Give examples.

Ans. Factors that give an impetus to the acceleration of the infection are termed as cofactors for disease progression of an HIV patient. E.g. genetic factors, age, gender, route of infection, smoking, nutrition and other infectious diseases.

46. Mention few ways through which HIV is not transmitted.

Ans. HIV is not transmitted through-

a) Casual, everyday contact
b) Shaking hand, hugging, kissing
c) Coughs, sneezes
d) Swimming pools, toilet seats
e) Sharing eating utensils, water fountains
f) Mosquitoes, other insects or animals.

47. Write any three main routes of HIV transmission.

Ans. Three main routes of HIV transmission are-

a. Unprotected penetrative sex with someone who is infected.
b. Injection or transfusion of contaminated flood or blood products, donations of semen, skin grafts or organ transplants taken from someone who is infected.
c. From a mother who is infected to her baby.

48. Why do social contacts not result in the transmission of HIV?

Ans. HIV is not an airborne, water borne or food borne virus, and does not survive for very long outside the human body. Therefore, ordinary social contact such as kissing, shaking hands, coughing and sharing cutlery does not result in the virus being passed from one person to another.

49. What are universal precautions of infection control?

Ans. The infection control procedures that are required to be followed by all health professionals when caring for any patient are called universal precautions. This includes washing hands and using protective barriers for direct contact with blood and other body fluids.

50. What are the three steps to be followed to ensure that HIV is not transmitted through sexual contact?

Ans. Three steps or ABCs of safety practice are-

a) Abstain from sex
b) Be faithful to one partner
c) Condom to be used consistently and correctly.

51. Define ‘sport’ according to the United Nations

Ans. The United Nations states, “sport is a powerful tool to strengthen social ties and networks, and to promote ideals of peace, fraternity, solidarity, non-violence, tolerance and justice”.

Section-D
(5 Marks Questions)
Long Answer Questions:

1. In what manner can we judge that a person has obtained intellectual maturity?

Ans. It is difficult to measure intellectual maturity, but it can be thought of in the following manner:

- Intellectual maturity means that you can handle and understand the language of words, figures and signs or symbols in accordance with your culture.
- An intellectually mature person takes his own decisions and does not wait for advice or prompting from others. The more independently he takes decisions, the more mature intellectually he is supposed to grow.
- You can be considered intellectually mature if you can look at your problems impartially, objectively and from a right perspective.
- If you make a mistake and accept it, you are more mature than those who shift the responsibility on to others.
- If you make hasty judgements, you are like the child who makes quick moves without weighing the pros and cons. Hasty judgement are always risky.

2. Explain what do you understand by philosophical maturity.

Ans. Every human being has a philosophy of life which includes long-term values, goals worth striving for, making true friends and having a dedication and mission in life. You cannot be quite mature until you have a good workable philosophy of life. Having a philosophy of life may aid a successful career or marriage.

Your philosophy of life depends upon the customs and values of the people in your family, religion and community. The tenets of your religion have already set a goal before you. The great thoughts, noble idea and the lives of great men have always moulded the philosophy of life of many. The people whom you love and admire also help in building the philosophy of your life.

3. Write a note on emotional maturity?

Ans. You often lose your temper and feel extremely annoyed when things don't happen the way you desire. This may be due to lack of emotional maturity. Children who do not get easily disturbed and upset, may be able to make rational decision and tend to grow emotionally mature. An emotionally mature person will restrain himself and will not be easily disturbed by his immediate impulse.

There are some feelings which you accept and keep to yourself. There are some feelings which you express and share with others. Such a control on one's emotions is not learnt in a day or two. You slowly learn to have more and more control on yourself. Emotional maturity helps you to have an attractive and charming personality. It makes you a socially acceptable person.

4. Explain what do you understand by social maturity?

Ans. Social maturity is the ability to get along with people. As you grow upon from a baby to a child, then to an adolescent and eventually to an adult, your spheres of social relationship and activity keep on enlarging.

Social maturity is gradually learned as you learn to live in a world full of people. You must have by now acquired some social maturity. You know now where you stand. Social maturity is a very difficult area of growth. It is neither predicable nor regular. It is not the same all the time. Your success, popularity and happiness to a great extent depends upon how you get along with people around you.

5. Explain any five requisites which are essential for making married life happy.

Ans. The five requisites which are essential for making married life happy are:

i) Loving and being loved:
A husband and wife should have a loving attitude towards each other. If the couple develops hostility and indifference towards one another, their marriage is likely to fail.

ii) Emotional interdependence:
A husband and wife have an emotional bond of interdependence which gives them a sense of reliance on each other. This makes the marriage satisfying to everybody in the family.

iii) Compatibility:
Two persons who marry cannot have exactly the same traits. Individuals differences can always be there; the

couple must accept and live with their differences.

iv) Common interests:

If the husband and wife share some common interests, it helps to bind them together. Similar reading habits, musical, cultural and professional tastes helps in strengthening the marriage ties.

v) Cooperation:

A good home is a cooperative set – up for all the members of the family. Women, too, are earning members of the family now. Hence, the domestic chores need to be shared between the husband and the wife.

6. Differentiate between natural acquired immunity and artificial acquired immunity?

Ans. An immunity is called natural acquired immunity when a previous attack of the disease gives a certain amount of immunity from another attack of same disease, as in the case of chickenpox.

It is called artificial acquired immunity when it is due to inoculation of certain material containing antigens. It gives protection against future exposure to that particular disease for a certain period. Example are vaccination against diphtheria, whooping cough and tetanus.

7. What is the grim reality of the immunization scene in India?
   a. Every year in India, 5 lakhs children die due to diseases, which could be prevented with vaccines.
   b. 1 out of 3 children in India does not receive all vaccines that are available under the UIP.
   c. Five percent of children in urban areas and 8 percent in rural areas are not immunized.
   d. Another 89 lakhs children are at danger because they are either partially immunized or are not at all immunised against vaccine – preventable diseases.

8. Why was Mission Indradhanush named thus?

Ans. Mission Indradhanush was named thus as it depicts the seven colours of the rainbow. In the beginning, the mission aimed at the immunization of all children against seven preventable diseases-diphtheria, pertussis, tetanus, childhood tuberculosis, polio, hepatitis B and measles. In select states, children are now provided vaccines of Japanese encephalitis and haemophilus influenza type B.

9. What are the goals of Mission Indradhanush?

Ans. The goals of Mission Indradhanush are as follows:

i. The Mission was launched with the focus on interventions to expand full coverage in India from 65% in 2014 to 90% children in the next five years.
ii. The Government aim to do this through catchy campaigns.
iii. It was decided that painstaking planning, public mobilization efforts and intensive training for health workers would be conducted primarily in high-risk are identified by the polio eradication programme and areas with low routine immunization coverage
iv. In the first phase (April to July 2015) 201 high focus districts across the country were targeted.

10. Name the two groups of diseases. Explain them with examples.

Ans. Diseases are classified into as:

   a. Communicable.
   b. Non-communicable.

Communicable diseases are the diseases, which are caused by germs (germs are micro-organisms, worms or other parties. Usually these are infectious and spread from a person suffering from the disease (measles, diphtheria, cholera, etc) to healthy ones.

Non-communicable disease (heart attack, cancer, diabetes) are not transmitted from person to person.

11. List five preventive measures that can help in the National Vector Borne Disease Control Programme.

Ans. The five preventive measures that can help in the National Vector Borne Disease Control Programme are as follows:

i) Help the health workers to spray in the areas like drains and any stagnant pool etc.
ii) Do not allow any area to develop as a breeding place for mosquitoes.

iii) Do not allow water to stagnate in any place.
iv) Observe one dry day every week when all stored water should be emptied.
v) Report any fever cases to the health worker so that he can take the blood sample and arrange for laboratory examination of the same.

12. State any five main functions of the state health department.
    a) To set up hospitals, dispensaries, health centres, clinics, etc.
    b) To take measures for the control of communicable diseases.
    c) To implement other national health programmes in the state.
    d) To enforce minimum standard with regard to food and drugs as laid down by the Central or States Acts.
    e) To collect and publish vital statistics of the state and its important health administration units.

13. What are the specific functions of the Directorate General of Health Services?

Ans. The specific functions and activities include:

i. International health relations and quarantine.
ii. Control of drug standards.
iii. Maintaining medical store and depots.
iv. Post-graduate training.
v. Medical education.
vi. Central Government Health Scheme.
vii. Medical research
viii. National health programmes
ix. Health intelligence
x. Maintain a national medical library
xi. Health education.

14. Name some of the major achievements of the Directorate General of Health Services.

Ans. Some of the major achievements of the Directorate include:

i. The eradication of small pox, guinea worm polio.
ii. The elimination of Leprosy and Yaws.
iii. Control of disease such as cholera and malaria.
iv. The combining of AYUSH (Department of Ayurvedic, Yoga and Naturopathy, Unani, Siddha and Homeopathy) with National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) in 6 districts in the country.
v. Launch of National Program for Palliative Care (NPPC).

15. Which areas concerning health are addressed by the National Health Programme?

Ans. The National Health Programmes address five broad areas concerning national health. They are:

i. Reproductive, Maternal, Neonatal, Child and Adolescent Health.
ii. Nutrition.
iii. Communicable Diseases.
iv. Non-communicable Diseases.
v. Health System Strengthening.

16. Explain any two Nutrition Programmes.

Ans. Any two Nutrition Programmes are as follows:

i. Midday meals programme – CSM (Corn-soy-milk) and butter oil or salad oil are invariably used to meet the nutritional needs of primary school children. In some places, Balahar is also used and in other places even locally available food are prepared and distributed to the children.
ii. Special nutrition programme – The beneficiaries include pre-school children, pregnant and lactating mothers in the city slums and tribal areas. In the city slums, invariably bread and milk are supplied, whereas in tribal areas locally available foods such as mixtures of cereals and pulses and Balahar, etc, are distributed.

17. Explain any two Prophylaxis programme.

Ans. The two Prophylaxis programme are as follows:

i. *Prophylaxis programme against blindness in children caused by vitamin A deficiency:* It covers the vulnerable segments of pre-school children between 1-6 years of age. A massive dose of vitamin A solution

is given orally to children once every six months.

ii. *Prophylaxis programme against nutritional anaemia*: Iron and folic acid tablets are being distributed for the benefit of pregnant and lactating mothers.

18. Mention any five aims of National AIDS Control Programme?

Ans. Five aims of National AIDS Control Programme are as follows:

i. Reduce the blood borne transmission of HIV to less than 1 percent of total transmission.
ii. Enable people to protect themselves from getting infected.
iii. Improve services for care of living with HIV/AIDS.
iv. Promote AIDS education in school, colleges, universities and in the community.
v. Enable people to manage the HIV/AIDS problem themselves with their family and community support.

19. Explain briefly any five functions of the PHC.

Ans. The five functions of the Primary Health Centre are as follows:

i. Medical care – The Nature of medical care is elementary and provides emergency treatment of minor ailments for ambulatory patients as out-patients.
ii. Control of communicable disease – normally the health staff keeps a surveillance on the outbreaks of communicable diseases in the area, particularly malaria.
iii. Maternal and child welfare services and family planning – MCW services are a direct special service to all mothers and children to attain total well-being of the child.
iv. Environmental sanitation – It includes the provisions of safe drinking water supply and sanitary disposal of waste products. It also includes disposal of industrial waste.
v. School health and nutrition education – This service is concerned with the child's growth and development, i.e, physical, emotional, intellectual and social development. An ideal school health service comprises prevention of diseases. Promotion of health, early detection of disease and its treatment and healthy school living.

22. Why do people go to quacks?

Ans: People who turn to quacks are:

a) People who do not know the difference between qualified medical practitioners and quack.
b) Those who are mentally disturbed and who even told by qualified professional practitioners that they do not have any problem, continue to show anxiety about their health.
c) Those individuals with terminal stages of diseases like cancer who would rather like to accept misconceptions and lift truths from quacks than the truth from a qualified physician.

24. Who is a deluded quack?

Ans: A deluded quack may have some education, including some medical training. However, he/she may have little or no knowledge of the conditions and illness of research, and little information of the difficulties that may be associated with a person's illness. This type of quack uses scientific sounding jargon to impress his/her customers.

25. Give any five characteristics of a Quack.

Ans: The five characteristics of a Quack are as following:

i) Claims 'secret' or 'exclusive' formula or machine can cure disease.
ii) Claims cure-all preparations as having blessings of saints and sages.
iii) Uses psychological suggestions to use their worthless remedies
iv) Guarantees a quick cure within a specified time limited usually on a contract basis
v) Advertises or uses case history and testimonials a promote acure.

26. List any five dangers of self – medication.

Ans. Five dangers of self-medication are:

i. Similar symptoms may arise for a variety of diseases – both fatal and non-fatal. Without knowing the cause of the disease, it is dangerous to treat it on our own.
ii. Reaction to various drugs differs from individual to individual and for the same individual under different conditions.

iii. Medicines prescribed for another person for the same disease may not suit us even if the symptoms are similar. Some individuals are allergic to certain drugs.
iv. A number of medicines have side effects: that is, they may relieve the symptom but may cause other problems.
v. Using leftover medicine from earlier illness is also dangerous.

27. Name any two categories of drugs with abuse potential. Explain any one of the categories of drugs with abuse potential.
Ans. Narcotics and Depressants.

Narcotics - They produce sleep and drowsiness and numbing effect on consciousness. Narcotic also reduce body activity and produce relaxation. Some narcotics are used by physician and dentists to relieve or prevent pain. Codeine is an important component of commonly available cough syrups. Novocaine is used by dentists for local anesthesia, before filling or extracting teeth. Morphine is also used to smother unbearable and severe pain. Narcotics can be fatal, if not used under medical supervision. Some of these are known to cause addiction.

28. Mention any five genral criteria for a wise consumer.

Ans. The five general criteria for a wise consumer are:

i) Select and buyfood, Clothing, Medecines and other consumer articles intelligently.
ii) Do not get influenced by the claims of advertisements
iii) Avoid self-medication; consult a qualified Medical practitioner for your medical needs.
iv) Make use of the Laws protecting consumers against adulterated and substandard products
v) Distinguish a man frauds, cheats and qualified personnel.

29. Write any five false health related beliefs.
Ans. The five false health related beliefs are:
i) Alcoholic beverages are stimulants
ii) Alcoholic beverages can cure cold
iii) Wine helps in forming blood
iv) Fish is the brain developing food
v) Raw milk is the best quality milk

30. Write any five cultural practices that promote health.
Ans. The five cultural practices that promote health are:
i) Washing hand before and after eating
ii) Rinsing mouth after taking food
iii) Drinking boiled milk
iv) Greeting friend with folding hands
v) Keeping a separate dress to wear while cooking

31. Explain any five main functions of the WHO.
Ans. The main functions of the WHO are:-
i) It plans and coordinates health activities on a global basis.
ii) The WHO provides research and exchange of scientific information and this is very useful for all countries.
iii) The WHO provides evidence-based health guidance with regards to international travel to medical professionals, travelers and members states.
iv) The WHO keep communicable diseases under constant watch, collects data and sends out information on health matters.
v) The most important measures for prevention of certain diseases are the production of vaccines. It is for this reason that World Health Organization set standards for the quality control of the vaccines.

32. Explain the main aims of the UNICEF.
Ans. The main aims of the UNICEF are:
i) The main aim of the UNICEF is to provide humanitarian and development assistance to children and mother. It has effective partnership with government and non-government organizations, through which it work towards bringing practical solution to the women and children who are at risk.
ii) The UNICEF is communicated to ensure that all children and mother are able to access the knowledge of how to prevent HIV infection and also to provide adequate treatment, care and support to the one with the infection.
iii) The UNICEF works towards ensuring the children worldwide get proper vaccines. Therefore, immunisation is one of the keys focus areas of UNICEF

iv) The UNICEF assists in the control of diseases which are responsible for mortality among mothers and children, such as vitamin deficiencies, anaemia, trachoma, etc.
v) A large part of UNICEF assistance is in the form of equipment and supplies. Depending on the type of projects, UNICEF may provide equipment and drugs for child health services. The UNICEF also provides technical services for food conservation.

33. What are the five areas of life skills that had been broadly classified by WHO?
Ans. The five skills are
i) Self- awareness and empathy
ii) Communication and interpersonal relationship
iii) Decision making and problem solving
iv) Creative thinking and critical thinking
v) Coping with emotional and with stress

34. Mention any five capabilities a skilled person would have.
Ans. Five capabilities a skilled person would have are:
i) Self-awareness: Being aware of one's character, strengths, weakness, desires likes and dislikes.
ii) Strong interpersonal relationships: Understand what build and break relationships, relate positively with people, maintain and end relationships in a constructive manner.
iii) Decision - making skills: Be able to consider all option available and likely Consequences of each action before making a choice.
iv) Critical-thinking skills: Be able to analyse information and experience in an objective manner, question and reason independently.
v) Coping with stress: Be able to recognise the source and the effects of stress and take remedial measures.

35. Write any five potential behavior patterns of teenage girl becoming pregnant.
Ans. Five potential behavior patterns for teenage girl becoming pregnant are
i) Early dating behavior
ii) Lack of support group or few friends
iii) Unhealthy environment at home
iv) Stress and depression
v) Financial constraints

36. What are the health effects of teenage pregnancy?
Ans. Health wise teenage mothers have much high risk of aneamia, pregnancy-induced hypertension, lower genital tract infections, requirement of a caesarean section because of pre-maturity, gestation of large baby within a small pelvis, Foetal distress infant death syndrome. The major complications in young mothers are through to be a high blood pressure, iron deficiency, cephalopelvic disproportion and birth of low weight babies.

37. What are the social effects of teenage pregnancy?
Ans. Single motherhood can be overwhelming when an infant is born prematurely. The financial, emotional, and medical needs of the infant may be too difficult for a teenage mother and/or her extended family to deal with. It is further complicated with society's attitude towards teenage unwed mothers. They can experience isolation and guilt accompanied by stress, depression and low self-esteem, which might result in the lack of interest in studies, limited job prospects and lack of a support group or friends.

38. How can one prevent teenage pregnancy?
Ans. The following preventive steps and care may be adopted to prevent teenage pregnancy
i) Since unprotected sex is the main cause of teenage pregnancies, contraceptive counseling extremely important in order to prevent teenage pregnancy, especially repeat ones.
ii) Clinics, private medical officers or NGOs can play a major role in providing contraceptive counseling.
iii) Birth control pills be taken regularly or as advised since barrier methods such as condoms, diaphragms and foams have high failure rates among teenagers.
iv) To avoid pregnancy in the event of unprotected sexual intercourse, teenagers should be made aware of emergency contraception.
v) To educate the teenagers about importance of abstinence and/or having safe sex.

39. Mention any five symptoms of STIs?
Ans. The following are the symptoms of STIs
i) Bleeding after sex or between period
ii) Pain during sex
iii) Pelvic or lower abdominal pain
iv) An usual discharge from the vagina, penis or anus

v) Infection in the rectum or throat

39. What are the three key things that can be done to prevent transmission of HIV?

Ans: Three key things that can be done to prevent transmission of HIV are as follows-

i) First among these is promoting widespread awareness of HIV and how it can be spread. Media campaigns and education in schools are among the best ways to do this.
ii) Another essential part of prevention is HIV consulting and testing. People living with HIV are less likely to transmit the virus to other if they know they are infected and if they have received counseling about safer behavior.
iii) The third key factor is providing antiretroviral treatment. This treatment enables people living with HIV to enjoy longer, healthier lives and such it acts as an incentive for HIV testing.

40. What prevention can a HIV positive mother take to ensure that the infection is not passed on to the child?

Ans: Following preventive measures may be taken by HIV positive mother-

i) First prevention measures that can be taken to reduce the number of babies infected is to prevent HIV infection in women, and to prevent unwanted pregnancies.
ii) A course of antiretroviral drugs given to an infected mother during pregnancy and labour as well as to her new born baby can greatly reduce the chances of the child becoming infected.
iii) A caesarean section reduces the baby's exposure to its mother's body fluids. This procedure lowers the risks of HIV transmission.
iv) The WHO advises mothers with HIV not to breastfeed if there is access to acceptable, feasible, affordable, sustainable and safe feeding options.

* * *

Sample Question Paper

(SSLC Examination 2024-25)

Health and Physical Education

(Old Course)

by

Meghalaya Board of School Education (MBOSE)

A. The Scheme of Examination

	Maximum Marks	**Pass Marks**
Theory Examination	80	24
Internal Assessment	20	6
Total	100	30

B. Scheme of Theory Examination

Section	**Type of Questions**	**Marks for Each Question**	**No. of questions to be attempted/ no. of questions given**	**Total Marks**
Section-A	MCQs	1	30/30	1x30=30
Section-B	Very Short Answer Questions	2	6/9	2x6=12
Section-C	Short Answer Questions	3	6/9	3x6=18
Section-D	Long Answer Questions	5	4/7	5x4=20
Total Marks				**80**

S. No.	Name of Unit	Chapters	Indicative Allocation of Marks
1	GROWTH AND DEVELOPMENT	1. How Mature are you? 2. You and your family. 3. Marriage and family life	14
2	DISEASES	1. Some defence measures against diseases. (Immunity and Immunization). 2. National Health Programmes. 3. Importance of Public's participation in the implementation of these programmes. 4. Primary health care set up in urban and rural areas.	21
3	CONSUMER EDUCATION	1. Consumer education, consumer rights, making correct choices while buying different items, food adulteration 2. Systems of medicine and quackery 3. Drugs, medicine and self-medication.	18
4	INTERNATIONAL HEALTH	1. Importance of international health.	11
5	LIFE-SKILLS EDUCATION	1. Teenage pregnancy 2. Sexually transmitted diseases 3. Basic facts about HIV/AIDS 4. Prevention against HIV/AIDS	16

C. Scheme of Internal Assessment

The Internal Assessment can be done through anyone of the following:

1. Project Work
2. Written Tests
3. Assignments (Class work or Home Work)

D. Content Weightage in Theory Examination

The unit-wise weightage shown below is only indicative for the purpose of information of teachers while prioritising different chapters during teaching or assessment. Though the weightage in Theory Examination conducted by MBOSE would broadly follow the following pattern, there may still be some variation.

* * *

Sample Question Paper

Health & Physical Education
Class-X

Question Paper Code: XY

Time: 3 hours **Max Marks: 80 (Pass Marks: 24)**

General Instructions:

1. Please check that this Question Paper contains 55 Questions.
2. Question Paper Code given above should be written on the Answer Book, in the space provided, by the Candidate.
3. For candidates without an Internal Assessment, their marks will be multiplied by 1.25 to adjust their total to a maximum of 100 marks.
4. 15 minutes time is given for the candidates to read the Question paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.
5. The Question Paper contains 4 sections, Section A, B, C and D.
6. Section-A contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers provided anywhere else will not be counted for marking.
7. Section-B contains Very Short Answer Questions. Answer the questions briefly, in not more than 30 (thirty) words.
8. Section-C contains Short Answer Questions. Answer the questions in not more than 50 (fifty) words each.
9. Section-D contains Long Answer Questions. Answer the questions in not more than 80 (eighty) words each.

Section- A

Multiple Choice Questions: Attempt **ALL** Questions. (30 X 1 = 30 marks)

1. The aspect of maturity which helps you to have an attractive and charming personality.
(A) Physical maturity
(B) Intellectual maturity
(C) Emotional maturity
(D) Social maturity

2. Chronological maturity is important for which of the following?
(A) Getting the right to vote
(B) Inheriting property
(C) Obtaining a Driving License.
(D) All of the above

3. Striking changes take place in the body during
(A) Infancy
(B) Adulthood
(C) Adolescent
(D) Childhood

4. Husband and wife should share same_____
(A) Interests
(B) Religion
(C) Skills
(D) Language

5. Another name for white blood cell is
(A) Antigens
(B) Phagocytes
(C) Antibodies
(D) Leucocytes

6. A person is susceptible to diseases if he is
(A) In poor health
(B) Under nourished
(C) With severe physical and mental strain
(D) All of the above

7. Violent reactions like asthma, migraine, eczema and skin rashes are symptoms of
(A) Tuberculosis
(B) Malaria
(C) Leprosy
(D) An allergic reaction

8. Every year in India, Children who die of diseases that could be prevented with vaccine is
(A) 2 lakhs
(B) 3 lakhs
(C) 4 lakhs
(D) 5 lakhs

9. Each block comprises of about
(A) 10 villages
(B) 100 villages
(C) 1000 villages
(D) 5000 villages

10. The Ministry of Health and Family Welfare consists of
(A) Two departments
(B) Three departments
(C) Four departments
(D) Five departments

11. Which is a non-communicable disease?
(A) Measles
(B) Diphtheria
(C) Cholera
(D) Diabetes

12. The first country in the world to launch Family Planning as an official programme is
(A) USA
(B) India
(C) China
(D) Russia

13. The market, the consumer needs to know how to choose products
(A) Rashly
(B) Intelligently
(C) Quickly
(D) None of the above

14. Early concepts of medicine and surgery was set out in the
(A) Atharvaveda
(B) Rigveda
(C) Yajurveda
(D) Ayurveda

15. The Government has enacted _____ to protect the consumer from cheats
(A) Customs
(B) Legislation
(C) Constitution
(D) Principles

16. Which is the most prevalent system of medicine all over the world?
(A) Allopathy
(B) Naturopathy
(C) Homeopathy

(D) Ayurveda

17. Penicillin was discovered by
(A) Marie Curie
(B) Alexander Fleming
(C) Antonie van Leeuwenhoek
(D) Edward Jenner

18. Which of the following symptoms need immediate medical attention?
(A) Chest pain
(B) Blackout
(C) Nausea
(D) All of the above

19. Name the drugs which are used only in medical research
(A) Hallucinogens
(B) Narcotics
(C) Depressants
(D) Stimulants

20. Name the alcohol which deadly poisonous and causes blindness and even death
(A) Ethanol alcohol
(B) Methyl alcohol
(C) Isopropyl alcohol
(D) None of the above

21. The headquarter of the World Health Organisation is in
(A) Geneva
(B) New Delhi
(C) Rome
(D) New York

22. The main aim of the UNICEF is to provide humanitarian and development assistance to
(A) children alone
(B) mothers alone
(C) children and mothers
(D) children and parents

23. One of the objectives of FAO is to improve production and distribution of all food and agricultural products from
(A) Farms
(B) Forests
(C) Fisheries
(D) All of the above

24. World Health Day is celebrated on
(A) 6th April
(B) 7th April
(C) 7th May
(D) 6th May

25. Genital warts can be treated by
(A) Anti-biotics
(B) Liquid Hydrogen
(C) Cryotherapy
(D) None of the above

26. HIV can be transmitted from the mother to her baby
(A) During pregnancy
(B) Labour and delivery
(C) Breastfeeding
(D) All of the above

27. The most common STI
(A) Syphylis
(B) Chlamydia
(C) Genital Warts
(D) AIDS

28. Drug addicts who inject the drugs intravenously are a
(A) High risk group
(B) Medium risk group
(C) Low risk group
(D) No risk group

29. Mosquitoes do not spread
(A) Malaria
(B) Filariasis
(C) Dengue
(D) HIV

30. Cooling the area with ice or cold water or bathing in a salt bath can relieve symptoms of
(A) Genital warts
(B) Gonorrhea
(C) Genital herpes
(D) Syphylis.

Section – B

Very Short Answer Questions: Answer **any 6 (six)**. (2x6=12 marks)

31. What do you understand by human development?

32. Growth is controlled by many factors. Name them.

33. What are antigens? How do they function?

34. What is natural immunity?
35. What is self-medication?
36. What is quarantine?
37. What is the chief objective of international health organizations?
38. What is infection?
39. What is a caesarean section?

Section – C

Short Answer Questions: Answer **any 6(six)**. **(**3x6=18 marks)

40. Why is chronological maturity important?
41. What must we know in order to prevent diseases?
42. What is meant by the term "Consumer Education"?
43. Define medical quackery.
44. What are the three objectives of the FAO?
45. Define life skills according to the World Health Organisation.
46. Write any three cultural practices that promote health.
47. Mention any three major achievements of the Directorate General of Health Services.
48. What are the three steps to be followed to ensure that HIV is not transmitted through sexual contact?

Section – D

Long Answer Questions: Answer **any 4(four)** **(**4x5=20 marks)

49. How is intellectual maturity measured? (Any five points)
50. What are the goals of Mission Indradhanush?
51. Suggest any five guidelines for a consumer to select and utilize various products and services intelligently.
52. What are the social effects of teenage pregnancy in India?
53. State any five functions of the State Health Department.
54. Explain any five main functions of the World Health Organisation.
55. What prevention can a HIV positive mother take to ensure that the infection is not passed on to the child?

*** End of the Question Paper ***

CM IMPACT Guidebook for Students
(With Important Questions and Answers)

Social Science
Class X
(Old Course)
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SOCIAL SCIENCE

Section-A

Multiple Choice Questions (MCQs) – 1 Mark

1. Which statement best describes nationalism?
   A) Belief that one's culture and ethnicity are superior
   B) Support for global cooperation over national interests
   C) Importance of national identity and self-governance
   D) Rejection of national borders and identities

Answer: C) Importance of national identity and self-governance

2. The French Revolution emphasis on liberty, equality, and fraternity helped spread nationalist ideas throughout:
A) France
B) Europe and beyond
C) The American colonies
D) The German states
Answer: B) Europe and beyond

3. Which 19th-century movement sought to unify various German states into a single nation-state?
A) Pan-Germanism
B) German Nationalism
C) The Frankfurt Parliament
D) The Unification of Italy
Answer: C) the Frankfurt Parliament

4. The concept of "self-determination" is closely tied to:
A) Nationalism
B) Imperialism
C) Federalism
D) Globalization
Answer: A) Nationalism

5. The Balkans region in South Eastern Europe has been a hotbed of nationalist tensions due to:
A) Religious differences
B) Ethnic and linguistic diversity
C) Economic rivalries
D) All of the above
Answer: D) All of the above

6. Which of the following nationalist leaders advocated for the unification of Italy?
A) Giuseppe Garibaldi
B) Otto von Bismarck
C) Napoleon Bonaparte
D) Victor Emmanuel II
Answer: A) Giuseppe Garibaldi

7. The main objective of the Congress of Vienna (1815) was to:
A) Redraw the map of Europe
B) Establish the principle of national self-determination
C) Suppress nationalist movements and maintain the status quo
D) Promote economic integration and cooperation among European nations
Answer: A) Redraw the map of Europe

8. Which of the following is an example of civic nationalism?
A) The French Revolution's emphasis on liberty, equality, and fraternity
B) The idea of a people's community in Nazi Germany
C) The promotion of English language and culture in the UK
D) The idea of secularism in France
Answer: A) The French Revolution's emphasis on liberty, equality, and fraternity.

9. Which European country is known for its historic nationalist movement led by Giuseppe Garibaldi?
A) France
B) Germany
C) Italy
D) Spain
Answer: C) Italy

10. Which of the following is an example of a nationalist symbol?
A) The European Union flag
B) The French tricolour
C) The United Nations logo
D) The Olympic rings
Answer: B) The French tricolor flag.

11. Who was Otto von Bismarck?
A) A French general

B) A German statesman
C) An Italian nationalist
D) A British prime minister
Answer: B) A German statesman

12. What was Otto von Bismarck's role in German history?
A) He was a military leader who defeated Napoleon
B) He was a king who ruled Prussia
C) He was a chancellor who unified Germany
D) He was a revolutionary who overthrew the government
Answer: C) He was a chancellor who unified Germany.

13. What was the name of the policy pursued by Otto von Bismarck to unify Germany?
A) Realpolitik
B) Nationalism
C) Imperialism
D) Militarism
Answer: A) Realpolitik

14. Which of the following was a consequence of Otto von Bismarck's foreign policy?
A) Germany became a federal state
B) Germany was divided into smaller states
C) Germany gained significant territory through wars
D) Germany lost its independence to France.
Answer: C) Germany gained significant territory through wars.

15. How did India contribute to the British war effort during World War I?
A) By providing financial support
B) By sending troops to fight
C) By supplying ammunition
D) By providing medical aid
Answer: B) By sending troops to fight

16. What was the Rowlatt Act?
A) A law that allowed for peaceful protests
B) A law that restricted civil liberties
C) A law that promoted Indian independence
D) A law that encouraged British rule
Answer: B) A law that restricted civil liberties

17. Who led the Non-Cooperation Movement in India?
A) Mahatma Gandhi
B) Jawaharlal Nehru
C) Subhas Chandra Bose
D) Lala Lajpat Rai
Answer: A) Mahatma Gandhi

18. What was the Jallianwala Bagh massacre?
A) A peaceful protest
B) A violent uprising
C) A British massacre of Indian civilians
D) A natural disaster
Answer: C) A British massacre of Indian civilians

19. What was the objective of the Indian National Congress?
A) To promote British rule
B) To achieve Indian independence
C) To support the war effort
D) To suppress local movements
Answer: B) To achieve Indian independence

20. How did the First World War affect the Indian economy?
A) It led to economic growth
B) It resulted in economic decline
C) It had no impact
D) It led to inflation
Answer: B) It resulted in economic decline

21. What was Satyagraha?
A) A form of violent protest
B) A form of non-violent resistance
C) A form of civil disobedience
D) A form of political participation
Answer: B) A form of non-violent resistance

22. Which local movement led by Gandhi was successful in winning concessions from the British?
A) Champaran Satyagraha
B) Kheda Satyagraha
C) Ahmedabad Mill Strike
D) All of the above
Answer: D) All of the above

23. How did Gandhi's Non-Cooperation Movement impact British rule in India?
A) It strengthened British rule
B) It weakened British rule
C) It had no impact
D) It led to the partition of India

Answer: B) It weakened British rule

24. How did Gandhi's philosophy of non-violence influence the Indian independence movement?
A) It led to increased violence
B) It resulted in decreased participation
C) It promoted non-violent resistance
D) It had no impact
Answer: C) It promoted non-violent resistance

25. Which Act passed by the British for the Indians that restricted Civil liberties?
A) Arms Act
B) Rowlatt Act
C) Vernacular Press Act
D) Salt Tax
Answer: B) Rowlatt Act

26. Who were the primary beneficiaries of the Poona Pact?
A) Scheduled Castes (SCs)
B) Scheduled Tribes (STs)
C) Other Backward Classes (OBCs)
D) Depressed Classes (DCs)
Answer: A) Scheduled Castes (SCs)

27. Who was the founder of the HSRA?
A) Bhagat Singh
B) Chandrashekhar Azad
C) Sukhdev Thapar
D) Shivaram Rajguru
Answer: A) Bhagat Singh

28. What was the main objective of the HSRA?
A) To achieve independence through non-violent means
B) To establish a socialist republic in India
C) To promote communal harmony
D) To support British rule
Answer: B) To establish a socialist republic in India

29. What was the outcome of the Delhi Conspiracy Case (1929)?
A) Bhagat Singh and his associates were acquitted
B) Bhagat Singh and his associates were sentenced to life imprisonment
C) Bhagat Singh and his associates were sentenced to death
D) The case was dismissed due to lack of evidence
Answer: C) Bhagat Singh and his associates were sentenced to death.

30. Who invented the movable-type printing press?
A) Johannes Gutenberg
B) William Caxton
C) Martin Luther
D) Christopher Columbus
Answer: A) Johannes Gutenberg

31. Which of the following was a major consequence of the Print Revolution?
A) Spread of literacy
B) Decline of education
C) Rise of authoritarianism
D) Fall of empires
Answer: A) Spread of literacy

32. What was the first book printed on the Gutenberg press?
A) The Bible
B) The Quran
C) The Mahabharata
D) The Iliad
Answer: A) The Bible

33. Who introduced printing to India in the 16th century?
A) Portuguese missionaries
B) British colonialists
C) French traders
D) Dutch explorers
Answer: A) Portuguese missionaries

34. Which Indian language was first printed using the Gutenberg press?
A) Sanskrit
B) Tamil
C) Hindi
D) Konkani
Answer: D) Konkani

35. Who was the first to publish a newspaper in India?
A) Raja Ram Mohan Roy
B) Henry Louis Vivian Derozio
C) James Augustus Hickey
D) Gangadhar Bhattacharya

Answer: C) James Augustus Hickey

36. What was the name of the first newspaper published by James Augustus Hickey?
A) Bengal Gazette
B) Calcutta Journal
C) Bombay Samachar
D) Sambad Kaumudi
Answer: A) Bengal Gazette

37. Who was a prominent Indian reformer who utilized printing to spread social reform ideas?
A) Ishwar Chandra Vidyasagar
B) Raja Ram Mohan Roy
C) Pandita Ramabai
D) Jyotirao Phule
Answer: A) Ishwar Chandra Vidyasagar

38. What was the impact of the Print Revolution on the standardization of languages?
A) It led to the decline of regional languages
B) It resulted in the standardization of languages
C) It had no impact on language standardization
D) It led to the emergence of new languages
Answer: B) It resulted in the standardization of languages

39. How did the Print Revolution affect the development of Indian literature?
A) It led to the decline of traditional oral literature
B) It resulted in the emergence of new literary genres
C) It had no impact on Indian literature
D) It led to the dominance of foreign literature
Answer: B) It resulted in the emergence of new literary genres

40. Who was a prominent Indian writer who utilized printing to spread nationalist ideas?
A) Bankim Chandra Chattopadhyay
B) Rabindranath Tagore
C) Subramania Bharati
D) Aurobindo Ghose
Answer: A) Bankim Chandra Chattopadhyay

41. What was the main purpose of the Vernacular Press Act of 1878?
A) To promote the growth of the vernacular press
B) To regulate and control the vernacular press
C) To encourage criticism of the government
D) To support the development of local languages
Answer: B) To regulate and control the vernacular press

42. What was the impact of the Vernacular Press Act on the vernacular press in India?
A) It led to a growth in the number of newspapers and journals
B) It had no significant impact
C) It forced many newspapers and journals to shut down
D) It encouraged more criticism of the government
Answer: C) It forced many newspapers and journals to shut down

43. A consumer buys a product with a label showing a picture of a recycle symbol. What does this label indicate?
A) The product is eco-friendly
B) The product can be recycled
C) The product is biodegradable
D) The product is reusable
Answer: B) The product can be recycled

44. A consumer receives a product that is different from what was advertised.What is the consumer's right in this situation?
A) Right to information
B) Right to choose
C) Right to redress
D) Right to refund
Answer: C) Right to redress

45. A product label displays a picture of a skull and crossbones.What does this label indicate?
A) The product is hazardous
B) The product is non-toxic
C) The product is flammable
D) The product is explosive
Answer: A) The product is hazardous

46. A consumer purchases a product with a warranty card.What does this warranty card represent?
A) Right to information
B) Right to choose
C) Right to redress
D) Assurance of product quality
Answer: D) Assurance of product quality

47. A product label shows a picture of a vegetarian symbol.What does this label indicate?

A) The product contains meat
B) The product is vegetarian
C) The product is vegan
D) The product is gluten-free
Answer: B) The product is vegetarian

48. A consumer buys a product with a label indicating ' Batteries not included'.
What is the consumer's right in this situation?
A) Right to information
B) Right to choose
C) Right to redress
D) Right to refund
Answer: A) Right to information

49. A product label displays a picture of a lock.What does this label indicate?
A) The product is secure
B) The product is locked
C) The product is private
D) The product is confidential
Answer: A) The product is secure

50. A consumer receives a product that is damaged during shipping.What is the consumer's right in this situation?
A) Right to information
B) Right to choose
C) Right to redress
D) Right to refund
Answer: C) Right to redress

51. A product label shows a picture of a globe.What does this label indicate?
A) The product is made locally
B) The product is made globally
C) The product is eco-friendly
D) The product is sustainable
Answer: B) The product is made globally

52. A consumer buys a product with a label indicating 'For external use only'.
What does this label indicate?
A) The product can be used internally
B) The product can be used externally
C) The product is for medical use
D) The product is for cosmetic use
Answer: B) The product can be used externally

53. What is the primary goal of consumer rights?
A. To protect businesses
B. To protect consumers
C. To promote competition
D. To regulate markets
Answer: B) To protect consumers

54. Which of the following is a basic consumer right?
A. Right to privacy
B. Right to information
C. Right to choose
D. All of the above
Answer: D) All of the above

55. Who is responsible for enforcing consumer rights?
A. Government
B. Businesses
C. Consumers
D. NGOs
Answer: A) Government

56. What is the purpose of consumer protection laws?
A. To punish businesses
B. To protect consumers from unfair practices
C. To promote business growth
D. To regulate markets
Answer: B) To protect consumers from unfair practices

57. What is the right to information in consumer rights?
A. Right to know product details
B. Right to know business secrets
C. Right to know competitor information
D. Right to know government policies
Answer: A) Right to know product details

58. Which of the following is NOT an example of an unfair trade practice?
A. Misleading advertising
B. Labelling and packaging
C. High prices
D. Poor customer service
Answer: D) Labelling and packaging

59. What is the purpose of the consumer complaints redressal mechanism?
A. To punish businesses
B. To compensate consumers
C. To resolve consumer grievances
D. To promote business growth
Answer: C) To resolve consumer grievances

60. What is the role of labelling and packaging in consumer rights?
A. To provide product information
B. To promote business growth
C. To protect consumers from harmful products
D. All of the above
Answer: D) All of the above

61. Which of the following is not an example of a consumer redressal mechanism?
A. Courts
B. Consumer forums
C. Criticising on Social Media
D. Arbitration
Answer: C) Criticising on Social Media

62. What is the purpose of consumer education and awareness?
A. To promote business growth
B. To protect consumers from unfair practices
C. To provide consumers with more information
D. To lobby government
Answer: B) To protect consumers from unfair practices

63. What is the role of consumer protection agencies in promoting consumer rights?
A. To enforce consumer protection laws
B. To educate consumers
C. To advocate for policy changes
D. All of the above
Answer: D) All of the above

64. Which of the following is an example of an emerging issue in consumer rights?
A. E-commerce and online shopping
B. Product safety and liability
C. Consumer data protection and privacy
D. All of the above
Answer: D) All of the above

65. What is the primary goal of consumer rights?
A. To protect businesses
B. To protect consumers
C. To promote competition
D. To regulate markets
Answer: B) To protect consumers

66. What is the purpose of consumer protection laws?
A. To punish businesses
B. To protect consumers from unfair practices
C. To promote business growth
D. To regulate markets
Answer: B) To protect consumers from unfair practices

67. Which sector contributes the most to India's GDP?
A. Agriculture
B. Industry
C. Services
D. Manufacturing
Answer: C) Services

68. Which industry is the largest contributor to India's industrial sector?
A. Textiles
B. Steel
C. Automotive
D. Pharmaceuticals
Answer: B) Steel

69. What is the main reason for the growth of the services sector in India?
A. Government policies
B. Foreign investment
C. IT revolution
D. Globalization
Answer: C) IT revolution

70. Which of the following is a characteristic of the informal sector in India?
A. High productivity
B. Low wages
C. No job security
D. All of the above
Answer: D) All of the above

71. Which state is the largest producer of milk in India?
A. Uttar Pradesh
B. Punjab
C. Haryana
D. Gujarat
Answer: A) Uttar Pradesh

72. What is the main crop grown in the Rabi season?
A. Wheat
B. Rice
C. Sugarcane
D. Cotton
Answer: A) Wheat

73. Which industry is the largest consumer of power in India?
A. Textiles
B. Steel
C. Cement
D. Aluminium
Answer: B) Steel

74. Which of the following is a type of cooperative society in India?
A. Consumer cooperative
B. Producer cooperative
C. Marketing cooperative
D. All of the above
Answer: D) All of the above

75. What is the main objective of the National Industrial Policy, 2011?
A. To promote foreign investment

B. To encourage entrepreneurship
C. To develop infrastructure
D. To enhance productivity
Answer: B) To encourage entrepreneurship

76. Which sector has the highest growth rate in India?
A. Agriculture
B. Industry
C. Services
D. Manufacturing
Answer: C) Services

77. Which state is the largest producer of silk in India?
A. Karnataka
B. Andhra Pradesh
C. Tamil Nadu
D. West Bengal
Answer: A) Karnataka

78. What is the main reason for the growth of the IT sector in India?
A. Government policies
B. Foreign investment
C. Skilled workforce
D. Infrastructure
Answer: C) Skilled workforce

79. Which industry is the largest producer of greenhouse gas emissions in India?
A. Steel
B. Cement
C. Power
D. Automotive
Answer: C) Power

80. Which of the following is a benefit of the services sector?
A. High productivity
B. Low wages
C. Job security
D. Contribution to GDP
Answer: D) Contribution to GDP

81. What is the share of the industrial sector in India's total GDP?
A. 20-25%
B. 25-30%
C. 30-35%
D. 35-40%
Answer: C) 30-35%

82. What is the primary goal of sustainable development?
A. Economic growth
B. Environmental protection
C. Social justice
D. All of the above
Answer: D) All of the above

83. Which of the following is a characteristic of a developing country?
A. High per capita income
B. Low life expectancy
C. High literacy rate
D. Strong institutional framework
Answer: B) Low life expectancy

84. What is the Human Development Index (HDI)?
A. A measure of economic growth
B. A measure of social development
C. A composite measure of health, education, and income
D. A measure of environmental sustainability
Answer: C) A composite measure of health, education, and income

85. Which of the following is not a type of foreign aid?
A. Grant
B. Loan
C. Investment
D. Import of our products into their country
Answer: D) Import of our products into their country

86. What is the main objective of the Millennium Development Goals (MDGs)?
A. To reduce poverty and hunger
B. To promote gender equality
C. To combat climate change
D. To achieve universal primary education
Answer: A) To reduce poverty and hunger

87. What is the term for the movement of people from rural to urban areas?
A. Urbanization
B. Migration
C. Displacement
D. Relocation
Answer: A) Urbanization

88. Which of the following is a challenge faced by developing countries?
A. Limited access to technology
B. Inadequate infrastructure
C. Corruption
D. All of the above
Answer: D) All of the above

89. Which of the following is a type of development planning?
A. Top-down
B. Bottom-up
C. Participatory
D. All of the above

Answer: D) All of the above

90. What is the term for the process of creating new businesses and jobs?
A. Entrepreneurship
B. Innovation
C. Economic growth
D. Development
Answer: A) Entrepreneurship

91. Which of the following is a benefit of Foreign Direct Investment (FDI)?
A. Increased employment
B. Technology transfer
C. Improved infrastructure
D. All of the above
Answer: D) All of the above

92. What is the name of the United Nations agency responsible for promoting development?
A. UNDP
B. UNICEF
C. WHO
D. ILO
Answer: A) UNDP

93. Which of the following is a type of development project?
A. Infrastructure project
B. Social sector project
C. Economic development project
D. All of the above
Answer: D) All of the above

94. What is the term for the process of reducing poverty and inequality?
A. Social protection
B. Poverty reduction
C. Inclusive growth
D. Sustainable development
Answer: C) Inclusive growth

95. Which of the following is a benefit of decentralization?
A. Improved accountability
B. Reduced accountability
C. Reduced efficiency
D. Concentration of Power
Answer: A) Improved accountability

96. Which of the following is a type of development indicator?
A. GDP per capita
B. No. of Feature films
C. Expenditure on Clothes
D. All of the above
Answer: A) GDP per capita

97. What is the term for the process of promoting economic growth and development?
A. Economic development
B. Sustainable development
C. Inclusive growth
D. Development planning
Answer: A) Economic development

98. What is the term for the process of integrating local economies into the global economy?
A. Globalization
B. Localization
C. Regionalization
D. Internationalization
Answer: A) Globalization

99. Which of the following is a benefit of "south-south cooperation" in development?
A. Increased dependence on foreign aid
B. Improved access to technology
C. Enhanced cultural exchange
D. Reduced economic inequality
Answer: B) Improved access to technology

100. What is the primary role of caste in Indian politics?
A. To promote social justice
B. To mobilize votes
C. To represent economic interests
D. To maintain social hierarchy
Answer: B) To mobilize votes

101. Which of the following is a consequence of caste-based politics in India?
A. Reduced social inequality
B. Increased communalism
C. Improved representation of marginalized groups
D. Enhanced economic development
Answer: B) Increased communalism

102. What is the term for the process of caste groups uniting to achieve political power?
A. Caste consolidation
B. Caste mobilization
C. Caste polarization
D. Caste fragmentation
Answer: A) Caste consolidation

103. Which caste group has historically dominated Indian politics?
A. Brahmins
B. Kshatriyas
C. Vaishyas
D. Shudras

Answer: A) Brahmins

104. Which of the following is a characteristic of communalism in India?
A. Emphasis on secularism
B. Focus on economic development
C. Promotion of social justice
D. Provocation of religious differences
Answer: D) Provocation of religious differences

105. What is the term for the process of using religion to achieve political power?
A. Communalization
B. Secularization
C. Politicization
D. Socialization
Answer: A) Communalization

106. What is the primary role of caste in Indian politics?
A. Vote bank politics
B. Social reform
C. Economic development
D. Cultural identity
Answer: A) Vote bank politics

107. What is the term for the politicization of caste identities?
A. Casteism
B. Communalism
C. Regionalism
D. Secularism
Answer: A) Casteism

108. What is the name of the commission established to investigate caste-based discrimination?
A. Mandal Commission
B. Sachar Committee
C. Ranganath Misra Commission
D. Kalelkar Commission
Answer: A) Mandal Commission

109. Which article of the Indian Constitution prohibits discrimination based on caste?
A. Article 14
B. Article 15
C. Article 16
D. Article 17
Answer: D) Article 17

110. What is the term for the practice of excluding certain castes from social and economic opportunities?
A. Casteism
B. Communalism
C. Untouchability
D. Social exclusion
Answer: C) Untouchability

111. What is the name of the law aimed at preventing communal violence?
A. Communal Violence Bill
B. Prevention of Communal Violence Act
C. Communal Harmony Act
D. Social Cohesion Act
Answer: B) Prevention of Communal Violence Act

112. Which caste group has been most affected by poverty and inequality in India?
A. Brahmins
B. Kshatriyas
C. Vaishyas
D. Dalits
Answer: D) Dalits

113. What is the basis of the Indian federal system?
A. Linguistic states
B. Religious states
C. Geographical regions
D. Cultural zones
Answer: A) Linguistic states

114. Which Article of the Constitution describes India as a "Union of States"?
A. Article 1
B. Article 2
C. Article 3
D. Article 4
Answer: A) Article 1

115. Which of the following is a characteristic of Indian federalism?
A. Strong center and weak states
B. Weak center and strong states
C. Balance between center and states
D. Unitary system
Answer: C) Balance between center and states

116. What is the purpose of the Interstate Council?
A. To resolve disputes between states
B. To promote cooperation between states
C. To advise the President on national issues
D. To oversee state governments
Answer: B) To promote cooperation between states

117. What is the role of the Rajya Sabha in Indian federalism?
A. To represent the interests of states
B. To represent the interests of the center
C. To advise the Lok Sabha
D. To oversee state governments
Answer: A) To represent the interests of states

118. Which of the following is a type of emergency that can be declared by the President?
A. National emergency
B. State emergency
C. Financial emergency
D. Constitutional emergency
Answer: A) National emergency

119. What is the purpose of the Finance Commission?
A. To allocate funds to states
B. To advise the center on financial matters
C. To oversee state finances
D. To resolve financial disputes between states
Answer: A) To allocate funds to states

120. What is the role of the Supreme Court in Indian federalism?
A. To interpret the Constitution
B. To advise the center on legal matters
C. To oversee state governments
D. To resolve disputes between states
Answer: A) To interpret the Constitution

121. Which of the following is a characteristic of the Indian Parliament?
A. Bicameral legislature
B. Unicameral legislature
C. Federal legislature
D. Unitary legislature
Answer: A) Bicameral legislature

122. Which Article of the Constitution deals with the role of the Governor?
A. Article 153
B. Article 154
C. Article 155
D. Article 156
Answer: A) Article 153

123. What is the role of the Lok Sabha in Indian federalism?
A. To represent the interests of states
B. To represent the interests of the center
C. To advise the Rajya Sabha
D. To oversee state governments
Answer: B) To represent the interests of the centre

124. Which party is the oldest political party in India?
A. Indian National Congress (INC)
B. Bharatiya Janata Party (BJP)
C. Communist Party of India (CPI)
D. All India Trinamool Congress (AITC)
Answer: A) Indian National Congress

125. Which party is known for its socialist ideology?
A. Indian National Congress(INC)
B. Bharatiya Janata Party (BJP)
C. Communist Party of India (CPI)
D. Samajwadi Party (SP)
Answer: D) Samajwadi Party (SP)

126. Which party is led by Arvind Kejriwal?
A. Aam Aadmi Party (AAP)
B. Bharatiya Janata Party (BJP)
C. Indian National Congress (INC)
D. Bahujan Samaj Party (BSP)
Answer: A) Aam Aadmi Party (AAP)

127. Which party is known for its regional stronghold in Tamil Nadu?
A. All India Anna Dravida Munnetra Kazhagam (AIADMK)
B. Bahujan Samaj Party (BSP)
C. Indian National Congress
D. Bharatiya Janata Party (BJP)
Answer: A) All India Anna Dravida Munnetra Kazhagam (AIADMK)

128. Which party is led by Mamata Banerjee?
A. All India Trinamool Congress (AITC)
B. Indian National Congress
C. Bharatiya Janata Party (BJP)
D. Bahujan Samaj Party (BSP)
Answer: A) All India Trinamool Congress (AITC)

129. Which party is known for its communist ideology?
A. Bahujan Samaj Party (BSP)
B. Communist Party of India (Marxist) (CPI(M))
C. Indian National Congress
D. Bharatiya Janata Party (BJP)
Answer: B) Communist Party of India (Marxist) (CPI(M))

130. Which party is led by Mayawati?
A. Bahujan Samaj Party (BSP)
B. Indian National Congress
C. Bharatiya Janata Party (BJP)
D. Samajwadi Party (SP)
Answer: A) Bahujan Samaj Party (BSP)

131. Which party is known for its regional stronghold in Uttar Pradesh?
A. Samajwadi Party (SP)
B. Bahujan Samaj Party (BSP)
C. Indian National Congress

D. Bharatiya Janata Party (BJP)
Answer: A) Samajwadi Party (SP)

132. Which party's ideology is based on the principles of Gandhian socialism?
A. Indian National Congress
B. Bharatiya Janata Party (BJP)
C. Communist Party of India (CPI)
D. Janata Dal (United)
Answer: D) Janata Dal (United)

133. Why is voter awareness important in a democracy?
A. It helps to increase voter turnout
B. It promotes political stability
C. It ensures informed decision-making by voters
D. All of the above
Answer: D) All of the above

134. What is the role of the Election Commission of India in promoting voter awareness?
A. To conduct elections
B. To promote political parties
C. To educate voters about the electoral process
D. To monitor election expenses
Answer: C) To educate voters about the electoral process

135. What is the importance of voter awareness in preventing electoral fraud?
A. It helps to detect fraud
B. It prevents fraud
C. It educates voters about fraud
D. It has no role in preventing fraud
Answer: B) It prevents fraud

136. How can voter awareness programs promote inclusive democracy?
A. By increasing representation of marginalized communities
B. By promoting political parties
C. By educating voters about the electoral process
D. By making voting compulsory
Answer: A) By increasing representation of marginalized communities

137. What is the importance of voter awareness in promoting good governance?
A. It helps to hold elected representatives accountable
B. It promotes political stability
C. It ensures informed decision-making by voters
D. All of the above
Answer: D) All of the above

138. How can voter awareness programs promote critical thinking among voters?
A. By providing information on political parties
B. By promoting fact-checking
C. By educating voters about the electoral process
D. By making voting compulsory
Answer: B) By promoting fact-checking

139. Which of the following forest ecosystems is most vulnerable to climate change-induced die-offs?
A) Tropical rainforests
B) Boreal forests
C) Temperate deciduous forests
D) Montane cloud forests
Answer: B) Boreal forests

140. What is the national flower of India?
A) Lotus
B) Rose
C) Sunflower
D) Marigold
Answer: A) Lotus

141. Which of the following animals is the national animal of India?
A) Bengal Tiger
B) Asiatic Lion
C) Indian Elephant
D) Snow Leopard
Answer: A) Bengal Tiger

142. What is the most common species of tree found in Indian forests?
A) Teak
B) Sal
C) Mango
D) Banyan
Answer: B) Sal

143. Which of the following birds is the national bird of India?
A) Peacock
B) Parrot
C) Myna
D) Sparrow
Answer: A) Peacock

144. What is the largest species of cat found in India?
A) Bengal Tiger
B) Asiatic Lion
C) Snow Leopard
D) Clouded Leopard
Answer: A) Bengal Tiger

145. Which of the following plants is known for its medicinal properties in India?
A) Neem
B) Tulsi
C) Turmeric
D) All of the above
Answer: D) All of the above

146. Which of the following birds is known for its distinctive call that sounds like laughter?
A) Peacock
B) Parrot
C) Myna
D) Hornbill
Answer: D) Hornbill

147. Which of the following plants is used to make the popular Indian drink, chai?
A) Tea
B) Coffee
C) Cardamom
D) Ginger
Answer: A) Tea

148. Which of the following is a protected area under the Wildlife (Protection) Act, 1972?
A) National Park
B) Wildlife Sanctuary
C) Biosphere Reserve
D) All of the above
Answer: D) All of the above

149. What is the main objective of Project Tiger, launched in 1973?
A) Conservation of elephants
B) Protection of tigers and their habitat
C) Preservation of wildlife corridors
D) Promotion of eco-tourism
Answer: B) Protection of tigers and their habitat

150. The Wildlife (Protection) Act, 1972, prohibits:
A) Hunting of all wild animals
B) Hunting of scheduled wild animals
C) Trade in all wild animals
D) Trade in scheduled wild animals
Answer: B) Hunting of scheduled wild animals

151. The National Afforestation Programme (NAP) aims to:
A) Increase forest cover
B) Improve forest quality
C) Enhance biodiversity
D) All of the above
Answer: D) All of the above

152. Which type of forest is permanently reserved for forest produce and is protected from encroachment?
A) Reserved Forest
B) Protected Forest
C) Unclassed Forest
D) Village Forest
Answer: A) Reserved Forest

153. Unclassed forests are:
A) Privately owned forests
B) Community-owned forests
C) Forests not classified as reserved or protected
D) Degraded forests
Answer: C) Forests not classified as reserved or protected

154. Beej Bachao Andolan is related to:
A) Seeds
B) Trees
C) Forests
D) Animals
Answer: A) Seeds

155. Unclassed forests can be converted into:
A. Reserved Forest
B. Protected Forest
C. Village Forest
D. Any of the above
Answer: D) Any of the above

156. Sacred groves are:
A. Forests protected by law
B. Forests protected by local communities
C. Forests with high biodiversity
D. Forests with religious significance
Answer: D) Forests with religious significance

157. Sacred groves are typically found in:
A. Urban areas
B. Rural areas
C. Tribal areas
D. Coastal areas
Answer: C) Tribal areas

158. The main purpose of sacred groves is to:
A. Conserve biodiversity
B. Promote eco-tourism
C. Protect water sources
D. Preserve cultural heritage
Answer: D) Preserve cultural heritage

159. Sacred groves are managed by:

A. Government agencies
B. Local communities
C. NGOs
D. Private companies
Answer: B) Local communities

160. Sacred groves are important for:
A. Carbon sequestration
B. Soil conservation
C. Water conservation
D. All of the above
Answer: D) All of the above

161. The concept of sacred groves is rooted in:
A. Scientific conservation
B. Cultural and religious beliefs
C. Economic development
D. Political ideology
Answer: B) Cultural and religious beliefs

162. What is the term for the process of removing soil and rock to expose the mineral deposit in an open pit mine?
A. Stripping
B. Excavation
C. Haulage
D. Blasting
Answer: A) Stripping

163. What is the primary goal of mineral conservation?
A. To increase mineral production
B. To reduce mineral waste
C. To protect the environment
D. To promote sustainable use of minerals
Answer: D) To promote sustainable use of minerals

164. Which of the following is a strategy for conserving minerals?
A. Increasing recycling rates
B. Reducing mineral usage
C. Improving mining efficiency
D. All of the above
Answer: D) All of the above

165. What is the term for the process of reusing minerals from waste materials?
A. Recycling
B. Reusing
C. Reducing
D. Recovering
Answer: A) Recycling

166. . Which of the following minerals is often recycled due to its high value and limited supply?
A. Copper
B. Iron
C. Aluminum
D. Gold
Answer: D) Gold

167. What is the benefit of reducing mineral waste through conservation efforts?
A. Increased economic benefits
B. Decreased environmental impacts
C. Improved public health
D. All of the above
Answer: D) All of the above

168. Which state in India is the largest producer of iron ore?
A. Odisha
B. Jharkhand
C. Chhattisgarh
D. Karnataka
Answer: A) Odisha

169. Which state in India is the largest producer of limestone, with many mines located in the districts of Chittorgarh and Bundi?
A. Rajasthan
B. Gujarat
C. Madhya Pradesh
D. Andhra Pradesh
Answer: A) Rajasthan

170. Which nuclear power plant in India is the largest, with a total installed capacity of 1440 MW?
A. Kudankulam Nuclear Power Plant
B. Tarapur Atomic Power Station
C. Kaiga Atomic Power Station
D. Kalpakkam Nuclear Power Plant
Answer: A) Kudankulam Nuclear Power Plant

171. Which of the following is a significant contribution of industries to India's economy?
A. Employment generation
B. Foreign exchange earnings
C. GDP growth
D. All of the above
Answer: D) All of the above

172. Industries play a crucial role in:
A. Reducing dependence on agriculture
B. Increasing rural-urban migration
C. Enhancing India's global competitiveness
D. Reducing economic inequality
Answer: C) Enhancing India's global competitiveness

173. What is a key benefit of industrialization in India?
A. Increased food production
B. Improved healthcare facilities

C. Increased economic growth and development
D. Reduced environmental pollution
Answer: C) Increased economic growth and development

174. Which of the following factors influences the location of industries in India?
A. Raw material availability
B. Market proximity
C. Transportation facilities
D. All of the above
Answer: D) All of the above

175. What is a significant factor in the location of industries in India's north eastern region?
A. Government subsidies
B. Raw material availability
C. Transportation infrastructure
D. Proximity to markets
Answer: C) Transportation infrastructure

176. Which of the following is a primary classification of industries in India?
A. Primary, Secondary, and Tertiary
B. Light, Heavy, and Cottage
C. Public, Private, and Joint
D. Manufacturing, Service, and Agriculture
Answer: A) Primary, Secondary, and Tertiary

177. Which type of industry is concerned with the extraction and production of natural resources?
A. Primary industry
B. Secondary industry
C. Tertiary industry
D. Quaternary industry
Answer: A) Primary industry

178. Which of the following is an example of a secondary industry?
A. Agriculture
B. Mining
C. Manufacturing
D. Services
Answer: C) Manufacturing

179. Which type of industry provides support services to other industries?
A. Primary industry
B. Secondary industry
C. Tertiary industry
D. Quaternary industry
Answer: C) Tertiary industry

180. What is the primary raw material used in the production of gunny bags in India?
A. Jute
B. Cotton
C. Sugarcane
D. Tobacco
Answer: A) Jute

181. What is the primary raw material used in aluminium smelting plants in India?
A. Bauxite
B. Coal
C. Iron ore
D. Limestone
Answer: A) Bauxite

182. What is the primary raw material used in the production of fertilizers in India?
A. Natural gas
B. Naphtha
C. Coal
D. Phosphoric acid
Answer: A) Natural gas

183. Which state in India has the highest number of cement plants?
A. Andhra Pradesh
B. Telangana
C. Karnataka
D. Rajasthan
Answer: A) Andhra Pradesh

184. What is the primary raw material used in cement production in India?
A. Limestone
B. Clay
C. Coal
D. Gypsum
Answer: A) Limestone

185. Which of the following industries is the largest contributor to air pollution in India?
A. Textile industry
B. Steel industry
C. Cement industry
D. Thermal power plants
Answer: D) Thermal power plants

186. What is the primary cause of water pollution in India's rivers and lakes?
A. Domestic sewage
B. Industrial effluents
C. Agricultural runoff
D. Natural disasters
Answer: B) Industrial effluents

187. Which of the following cities are connected by the Golden Quadrilateral Super Highways?
A. Delhi-Mumbai-Kolkata-Chennai
B. Delhi-Bengaluru-Hyderabad-Pune
C. Mumbai-Chennai-Kolkata-Bengaluru

D. Delhi-Pune-Mumbai-Chennai
Answer: A) Delhi-Mumbai-Kolkata-Chennai

188. What is the total length of the National Highways in India?
A. 50,000 km
B. 70,000 km
C. 90,000 km
D. 1,00,000 km
Answer: B) 70,000 km

189. Which of the following National Highways is the longest?
A. NH-1
B. NH-2
C. NH-44
D. NH-66
Answer: C) NH-44

190. Which state has the highest number of State Highways?
A. Uttar Pradesh
B. Maharashtra
C. Tamil Nadu
D. Karnataka
Answer: A) Uttar Pradesh

191. Who is responsible for the maintenance of State Highways?
A. Central Government
B. State Government
C. Local Government
D. Private Companies
Answer: B) State Government

192. What is the total length of the railway tracks in India?
A. 60,000 km
B. 70,000 km
C. 80,000 km
D. 90,000 km
Answer: C) 80,000 km

193. What is the total length of the navigable waterways in India?
A. 10,000 km
B. 15,000 km
C. 20,000 km
D. 25,000 km
Answer: B) 15,000 km

194. Which of the following is the busiest port in India?
A. Mumbai Port
B. Chennai Port
C. Kolkata Port
D. Jawaharlal Nehru Port
Answer: D) Jawaharlal Nehru Port

195. Who is responsible for the development and maintenance of ports in India?
A. Ministry of Shipping
B. Ministry of Transport
C. Indian Ports Association
D. Private Companies
Answer: A) Ministry of Shipping

196. Which of the following is the longest pipeline in India?
A. Hazira-Vijaipur-Jagdishpur pipeline
B. Mumbai-Manmad pipeline
C. Chennai-Bengaluru pipeline
D. Delhi-Agra pipeline
Answer: A) Hazira-Vijaipur-Jagdishpur pipeline

197. Which of the following is a traditional form of communication in India ?
A. Email
B. SMS
C. Folk songs and dances
D. Social Media
Answer: C) Folk songs and dances

198. What is the primary function of the Indian postal service?
A. To transmit message through telegraph
B. To deliver emails
C. To transport goods and parcels
D. To provide banking services
Answer: C. To transport goods and parcels

199. What is the primary function of the All India Radio (AIR)?
A) To broadcast entertainment programs
B) To transmit educational programs
C) To provide news and current affairs
D) To promote cultural programs
Answer: C). To provide news and current affairs

200. Which of the following is a modern means of communication in India?
A. Letter writing
B. Teleprinter
C. Email
D. Telegram
Answer: C) Email

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Section-A

Short Answer Questions (2 Marks)

Please note: Though we have provided more than two points for many questions, in the SSLC examination it is sufficient to answer only two points in this category.

1. Why did some industrialists in nineteenth-century Europe prefer hand labour over machines?

   Answer: Industrialists in nineteenth-century Europe preferred hand labour over machines due to the following reasons:
   (i) The machines needed capital investments.
   (ii) They were costly, difficult to repair and ineffective.
   (iii) Labours were available at lower wages.
   (iv) Seasonal labour was required in seasonal industries only.
   (v) Handmade clothes were preferred by the elite.

2. How did the East India Company procure regular supplies of cotton and silk textiles from Indian weavers?

   Answer:
   (i) They appointed paid supervisors called Gomasthas who collected textiles from weavers and examined cloth quality.
   (ii) They also prevented the weavers from dealing with other buyers by giving advances and loans to them.

3. How did factories in England multiply in the late 18th Century?

   Answer: Factories in England grew rapidly in the late 18th century because:

   (i) The British cotton industry expanded significantly during this time.
   (ii) New inventions made the production processes faster and more efficient.
   (iii) Tasks like carding, twisting, spinning, and rolling became quicker due to these innovations.
   (iv) The establishment of cotton mills allowed expensive machines to be bought, set up, and maintained in one place.
   (v) In these mills, all production steps were organized under one roof, making management and production more efficient.

4. Describe any two major problems faced by the Indian weavers in nineteenth century.

   Answer: Weavers in India faced a new set of problems in 19th century that led to further eroding of it.
   (a) The Indian market flooded with cheap, machine-made goods from Manchester. It led to decline in domestic market.
   (b) Traders in Britain persuaded the government to impose import duties. This led to decrease in international market.

5. Define Urbanization? State the causes for urbanization?

   Ans: Urbanization refers to a process in which an increasing proportion of an entire population lives in cities and the suburb of the cities.
   The main causes of Urbanization are:
   a. Industrialization
   b. Worldwide establishment of colonial rules and
   c. Democratic ideals.

6. Mention the steps undertaken by the Londoners to clean up their environment during the late 19th Century.
   Ans:
   i. Decongestion of localities
   ii. Increasing green open spaces by building suburbs or countryside homes for the rich.
   iii. Reduction and control of pollution by building a green belt around London.
   iv. Landscaping and building cottages for single family.

7. Highlight why rapid industrialization changed the society, its morals, and ethics during the 19th century?
   Ans:
   i. Among the working class the institution of marriage tended to break down.

ii. Women of the upper and middle classes faced increasing levels of isolation.

iii. Their lives were made easier by domestic maids who cooked, cleaned and cared for them at low wages.

8. Write short notes on the Gutenberg Press
Answer: The Gutenberg Press: Johann Gutenberg invented the first printing press in the 1430s. He used existing technology, refining it from wine presses that were used to make olive oil and wine. The first book he printed was the Bible, and he produced 180 copies in three years. He used lead molds to create the metal letters for printing. His method was later adopted by many countries worldwide.

9. What were the effects of the spread of print culture for poor people in nineteenth century India?
Answer:
(i) Enlightening essays written against caste discrimination and injustices were read by the common people across the country.
(ii) Because of the support and encouragement of the social reformer, overworked factory workers set up libraries for self-education, and some also published their own works like, Kashibaba and Chhoteaur Bade Sawal.

10. Explain how print culture assisted the growth of nationalism in India.
Answer:
(i) It assisted by providing easy access to nationalist ideas of quality and freedom.
(ii) It became easier for the social reformers to spread their ideas and opinions through newspapers, which sparked off public debates.
(iii) The common people began questioning the authority due to increased awareness.
(iv) The nationalist newspapers reported on colonial misrule and encouraged people to participate in nationalist activities.

11. What do you know about wood-block printing?
Answer:
(i) This was a system of hand printing.
(ii) Initially books in China were printed by rubbing paper against the inked surface of wood blocks.
(iii) As both sides of the thin, porous sheet could not be printed, the traditional Chinese 'accordion book' was folded and stitched at the side.

12. What was the role of cartoons and caricatures in Indian printing?
Answer:
(i) By 1870, caricatures and cartoons were being published in journals, newspapers, commenting on social and political issues.
(ii) Some caricatures ridiculed the educated Indians' fascination with western clothes and tastes, while other expressed the fear of social change.
(iii) There were imperial caricatures highlighting nationalists as well as nationalist's cartoons criticising imperial rules.

13. Classify the resources on the basis of origin with one example each:
Answer:

Biotics Resources	Abiotic Resources
These are obtained from the biosphere and have life. Example: Human beings, livestock	These are composed of non living things. Example: Rock, minerals

14. What are resources? Classify the resources
.
Answer:All natural and man-made substances that have the capacity to fulfil human needs and satisfy human wants are termed as resources.

(i) Classification of Resources:
(ii) Basis of origin
(iii) Exhaustibility
(iv) Ownership
(v) State of development.

15. Define Development Resources.

Answer:Development Resources are those resources that are being developed with the use

oftechnology according to their level of feasibility. These resources have been assessed and surveyed and their quality and quantity determined their utilisation.

16. Define Resource Planning. What is the main aim of Resource Planning?

Answer:Resource planning refers to the technique of a balanced utilisation of resources to achieve specific goals and objectives.

The main aim of resource planning is to manage resources optimally, balancing human needs with environmental protection, to ensure sustainable development.

17. "Overuse and exploitation of natural resources have created many problems". Justify.

Answer: Overuse and exploitation of natural resources have created numerous problems:

(i) Depletion of resources
(ii) Environmental degradation
(iii) Climate change:
(iv) Water scarcity

18. Classify resources on the basis of ownership.

Answer:On the basis of ownership resources can be classified into:

(i) Individual Resources.
(ii) Community-owned Resources.
(iii) National Resources.
(iv) International Resources.

19. Explain how water is a renewable resources?

Answer: All the water that is being used mainly ends up in the sea. From there on, it enters the hydrological cycle in the form of water vapors. When precipitation occurs, it renews the freshwater. Therefore, water is a renewable resource.

20. Compare the advantages and disadvantages of multipurpose river projects.

Answer: Multipurpose river project help in irrigation, electricity production, flood control, inland navigation and fish breeding. Nevertheless, the reservoirs destroy local flora and fauna. Many native villages are submerged and people lose their livelihood, with little or no hope of rehabilitation.

21. Describe how modern adaptations of traditional rainwater harvesting methods are being carried out to conserve and store water.

Answer: The rooftop method is considered to be a traditional method of rainwater harvesting, which is becoming popular in India. In Gendathur village, Mysore, about 200 households have adapted the rooftop rainwater harvesting method, thereby making the village rich in rainwater. The state of Tamil Nadu has made it compulsory for all the houses to have rooftop rainwater harvesting structures.

22. Explain the river-water dispute between the states of India.

Answer: Krishna-Godavari dispute is due to the objection raised by the government of Andhra Pradesh and Karnataka. It is regarding the diversion of more water at Koyna by the Maharashtra government for a multipurpose project. This would reduce downstream flow in their states with adverse consequences for agriculture and industry. Similar disputes arise as the Kaveri issue between the states of Karnataka and Tamil Nadu, and the Yamuna water dispute between Haryana and Delhi governments regarding the use of water.

23. "The dams that were constructed to control floods have triggered floods." Analyse the statement.

Answer:

(i) Sedimentation in the reserves causes floods.
(ii) Big dams have mostly been unsuccessful in controlling floods at the time of excessive rainfall.
(iii) Sudden release of water from Dams causes devastation and floods.

24. Why is the practice of rooftop rainwater harvesting slowly declining in Rajasthan? Which state has made rooftop rainwater harvesting compulsory?

Answer:

(i) In Rajasthan, sadly the practice of rooftop rainwater harvesting is on decline.
(ii) It is due to availability of plenty of water from Perennial Rajasthan Canal.
(iii) New generations considered stored rainwater unhygienic so they don't prefer to drink that water.
(iv) Tamil Nadu is the state which has made rooftop rainwater harvesting compulsory.

25. "India is heading towards water scarcity". Trace the possible solutions to tackle this problem.

Answer:

(i) Overuse and wastage of water in day to day life activities need to be controlled.

(ii) Over irrigation and agricultural industry need to consider the decreasing trend of groundwater.
(iii) Proper disposal of waste, otherwise leaches may pollute groundwater. There are many more reasons.
(iv) Rainwater harvesting and Bamboo drip irrigation system can help a lot.

26. What do you know about the 'Bamboo-Drip Irrigation System'?
Answer: In Meghalaya, a 200 year old system of tapping stream and spring water by using bamboo pipes, is prevalent.
(i) Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches by gravity.
(ii) The channel sections made of bamboo, divert water to the plant site, where it is distributed into branches.
(iii) If the pipes pass roads, they are taken high above the land on the tree branches.
(iv) Reduced channel sections and diversion units are used at the last stage of water application. The last channel section enables water to be dropped near the roots of the plant.

27. Trace the ancient history of Meghalaya.
Answer:
(i) People living in Meghalaya since Neolithic era.
(ii) The people are practiced Jhum cultivation in the Neolithic style.
(iii) The highland plateaus fed by abundant rains provide safety from flood and a rich soil.
(iv) Archaeological excavations done in the hills of Meghalaya suggest human settlement since ancient times.

28. When Meghalaya was attained full statehood? What were the three main tribes habited in Meghalaya?
Answer: Meghalaya attained full state-hood on 21st January 1972.The three tribes habited Meghalaya are the Khasi, Garo and Jaintia.

29. Discuss the geographical features of Meghalaya?
Answer:
(i) The State is mountainous which stretches of valley and highland plateau and it is geologically rich.
(ii) It consists mainly of Archean rock formations that contain rich deposits of valuable minerals like coal, limestone, uranium and siliminite.
(iii) It has many rivers which are rain fed and seasonal.
(iv) The elevation of the plateau ranges between 150m to 1961 m.

30. Which is the dominant foodgrain of Meghalaya? Name any three horticultural crops of Meghalaya?

Answer: Riceis the dominant foodgrain of Meghalaya.
The horticultural crops of Meghalaya:
(i) Orange
(ii) Lemon
(iii) Pineapple

31. Write in brief about the Railway in Meghalaya?
Answer: Meghalaya has a railhead at Mendipathar and regular train service connecting Mendipathar in Meghalaya and Guwahati in Assam were started on November 30, 2014.

32. Write a brief notes about Sacred Groves in Meghalaya?
Answer: Meghalaya is also known for its "Sacred Groves". They are small or large area of forests or natural vegetation that are usually dedicated to local folk deities or treespirits or some religious symbolism over many generation. The Mawphlang sacred forest also known as "Law lyngdoh" is one of the most famous sacred forests in Meghalaya.

33. Which type of challenge is being faced by at least one-fourth of the countries of the world?
Answer: At least one-fourth of the countries of the world do not have a democratic government. These countries face the foundational challenge of making a transition to democracy, lessen the control of military and gradually establish democratic government.

34. Mention any four challenges facing Indian democracy?
Answer:
(i) Population explosion
(ii) Communalism
(iii) Poverty and unemployment
(iv) Low status of women.

35. How poverty and unemployment poses as a challenge to Indian democracy?
Answer: The problems of poverty and unemployment are interrelated. Several poverty alleviation programmes have been launched during the last three decades. But still around thirty percent people live below poverty line. To alleviate poverty new employment opportunities need to be generated especially in rural areas. Agriculture needs to be modernised, industries have to be expanded and diversified in order to absorb the teeming millions.

36. Highlight any two measures to deepening democracy in India?

Answer:

(i) The first step in deepening democracy in India is education people.

(ii) Creating a literate society, enlightened masses, tolerant people who have only one goal – the unity, and development of the country.

37. How does freedom of press help in promoting democracy?

Answer: It helps in forming public opinion on issues of national importance. The press play a double role – it makes the public aware of what is happening in the country and conveys the public opinion to the government.

38. What are political reforms?

Answer: Political reforms are changes or improvements aimed at addressing issues within a democratic system. These reforms are necessary to strengthen democracy, ensure fair governance, and adapt to new challenges. Since each country faces different issues, political reforms can vary, evolving to meet the specific needs of a society.

39. Does law play a role in political reforms?

Answer: Law plays an important role in political reforms. A law can be helpful in solving an unhealthy political practice and encourage sound ones but total dependence on law is not the way to overcome challenges to democracy. Will of the people and the political parties, activists and movements are also important in carrying out political reforms.

40. How many categories of Women's Rights have been classified in India? Explain.

Answer: The Rights available to women in India can be classified into two categories, namely as Constitutional Rights and Legal Rights.

(a) Constitutional Rights are those which are provided in the various provisions of the constitution.

(b) The Legal Rights on the other hand, are those which are provided in the various laws (Acts) of the Parliament and the State Legislatures.

41. Write only four major issues of concern for women in India.

Answer:

a. Rape and sexual assault
b. Child Marriage
c. Women's property and inheritance rights.
d. Child sexual abuse

42. Explain the Protection of women from Domestic Violence Act 2005.

Answer: Protection of women from Domestic Violence Act 2005 is a comprehensive legislation to protect women in India from all forms of domestic violence. It also covers women who have been/are in a relationship with the abuser and are subjected to violence of any kind, physical, sexual, mental, verbal or emotional.

43. What do you understand by Women's Justice Initiative (WJI)?

Answer: The Women's Justice Initiative (WJI) is a national network of lawyers and social activist.It opposes all forms of gender based discrimination and violence against women and works to increase women's access to the justice system as a vital means to their empowerment.

44. Write any two Constitutional Rights of Women in India.

Answer:

(i) The State shall not discriminate against any citizen of India on the ground of sex (Article 15(I))

(ii) Human trafficking and forced labour are prohibited (Article 23 (1))

45. Discuss the major impact of Status of Women in India through Women's Justice Initiative.

Answer: The Women Justice Initiatives (WJI) has had a significant impact on the status of women in India, particularly in rural area, through its various programs and Initiatives like-

(i) Legal Awareness: WJI has educated thousands of women about their legal rights empowering them to navigate the justice system and assent their rights.

(ii) Access to Justice: WJIs legal assistance programs have helped women access to court, file cases and receive justice.

46. Highlight the salient features of the convention adopted by the UN General Assembly for empowerment of Person with disabilities?

Answer:

(i) Respect for inherent dignity, individual autonomy including the freedom to make one’s own choices, and independence of persons.

(ii) Non- Discrimination

(iii) Full and effective participation and inclusion in society

(iv) Equality of opportunity.

47. Mention any four types of disabilities covered by the Right of person with Disabilities Act 2016?

Answer:

(i) Blindness

(ii) Low-vision
(iii) Leprosy cured person
(iv) Mental illness

48. Mention any two Rights and entitlements given to Person with disabilities.

Answer:

(i) The appropriate Government shall ensure that the persons with disabilities enjoy the right to equality, life with dignity and respect for his or her integrity equally with others.
(ii) No person with disability shall be discriminated on the ground of disability.

49. State any two skill development and employment rights given to Person with disabilities.

Answer:

(i) The appropriate government shall formulate schemes and programmes including provision of loans at concessional rates to facilitate and support employment of persons with disabilities especially for their vocational training and self-employment.
(ii) No Government establishment shall discriminate against any person with disability in any matter relating to employment.

50. Mention any two Special Provisions for person with Benchmark Disabilities as per the Right to person with disabilities Act 2016?

Answer:

(i) The appropriate government and local authorities shall ensure that every child with benchmark disability has access to free education till he attains the age of 18 years.
(ii) The appropriate Government shall identify posts in the establishment which can be held by respective category of person with benchmark disabilities.

51. Mention any two Special Provisions for person with Disabilities with high support needs as per the Right to person with disabilities Act 2016?

Answer:

(i) Any person with benchmark disability, who considered himself to be in need of high support, or any person or organization on his or her behalf, may apply to an authority, to be notified by the appropriate Government requesting to provide high support.
(ii) On receipt of such an application, the authority shall refer it to an Assessment Board consisting of such members as may be prescribed by the Central Government.

52. What is Persons with benchmark disability?

Answer: A person with not less than 40% of a specified disability, where specified disability has not been defined in measurable terms and includes a person with disability where specified disability has been defined in measurable terms.

53. What do you understand by disguised unemployment?

Answer: Disguised unemployment is a type of unemployment where more people are employed or working than necessary and where they are made to work less than their potential. This situation is also known as Hidden unemployment.

54. Worker are exploited in the unorganised sector. Do you agree with this view? Give reasons in support of your answer.

Answer:

(i) Jobs are poorly paid. The workers in the unorganised sectors are either illiterate, ignorant or unorganised.
(ii) Apart from the daily wages, they do not get other allowances.
(iii) There are no fixed working hours. The workers mainly work from 10-12 hours without being paid overtime.
(iv) The rules and regulations applied by the government to protect the labourers are not followed in their case.

55. How are the activities in the economy classified on the basis of employment conditions?

Answer: They are mainly classified in two types:

Organised: The enterprises or place of work where the terms of employment are regular and therefore, people have assured work. They are registered by the government and have to follow its rules and regulations which are given in various laws such as the Factories Act, Minimum Wages Act, Payment of Gratuity Act, Shops and Establishments Act, etc.

Unorganised: The enterprises or place of work are not registered by the government and does not follow nay rules or regulations. There are no terms of employment. Workers do not enjoy security of employment. There is no fixed number of hours. Workers do not enjoy any benefits.

56. Using examples from your area compare and contrast the activities and functions of private and public sectors.
Answer:

Sr. No	Public Sector	Private Sector
(i)	The main aim of this sector is public welfare.	The main aim of this sector is to earn profit.
(ii)	It is controlled and managed by the government.	It is controlled and managed by an individual or group of individuals.

57. Explain how public sector contributes to the economic development of a nation?
Answer: In the following ways Public sector contributes to the economic development of a nation:
(i) It promotes rapid economic development through creation and expansion of infrastructure.
(ii) It creates employment opportunities.
(iii) It generates financial resources for development.
(iv) It ensures equality of income, wealth and thus, a balanced regional development..

58. "There is need for protection and support for the workers in the unorganised sector". Evaluate this statement.
Answer: Protection of workers in the unorganised sector:
(i) They are often exploited and not paid fair wages.
(ii) Low and irregular earning.
(iii) Insecure jobs and no other benefits.
(iv) They are vulnerable people so need economic/social protection.

59. Distinguish between the primary and secondary sectors.
Answer:

Primary Sector		Secondary Sector
(i)	It deals with the utilisation of natural resources such as mining, fishing, cultivation etc.	It uses the products of the primary sector as raw materials for their production.
(ii)	This sector is also called the agriculture and related sector as most of the natural products are obtained from agriculture, dairy, fishing and forestry.	As manufacturing and processing of raw materials takes place in this sector, this sector is also known as the industrial sector.

60. "Tertiary sector activities help in the development of the primary and secondary sectors". Evaluate the statement.
Answer: Tertiary sector help in the development of the primary and secondary sectors.
(i) Tertiary sector activities help in the development of the primary and secondary sector.
(ii) These activities are an aid or support for the production process.
(iii) Transport, Storage, Communication, banking, Trade are some example of service or Tertiary sector.
(iv) Promote primary and secondary sectors by providing expertise, finance, transportation, advertisement, etc.

61. Distinguish between Public sector and Private sector.
Answer: Public Sector:
(i) It is controlled and managed by the government.
(ii) The main aim of the sector is public welfare. To serve the citizens of the country.
Private Sector:
(i) It is controlled and managed by an individual or a group.
(ii) The main aim of this sector is to earn profit.

62. How far is it to say that in recent past, India has experienced some significant changes in the contribution of GDP service sector? Explain.
Answer:
(i) Not all service sectors are growing equally well. Service sector in India employs many different kinds of people.
(ii) At one end, there are limited number of services that employ highly skilled and educated workers. At the other end, these are a very large number of workers engaged in services such as small shopkeepers, repair persons, transport persons, etc.

63. Why do we need to expand formal sources of credit in India?
Answer: We need to expand formal sources of credit in India:
(i) To reduce dependence on informal sources of credit because the latter

charges high interest rates and do not benefit the borrower much.

(ii) The Reserve Bank of India supervises the functioning of formal sources of loans. In contrast, there is no organisation which supervises the functioning of informal source of loans or the credit activities of lenders in the informal sector.

64. What is the basic idea behind the SHGs (Self-Help Groups) for the poor? Explain in your own words.

Answer: There are some main objectives of SHGs, which are as follows:

(i) It organises the rural poor, especially women, into small Self-Help Groups.
(ii) It collects saving of the member, saving per member varies from 25 - 100 or more.
(iii) It provide loans without collateral, among the members.
(iv) It provides timely loans for various purposes.

65. In what ways does the Reserve Bank of India supervise the functions of Banks? Why is this necessary?

Answer: The Reserve Bank of India (RBI) supervise the functions of Banks in various ways:

(i) RBI holds a part of the cash reserve of the commercial banks, RBI mainly ensures that the banks maintain a minimum cash balance out of the deposits they receive.
(ii) The commercial banks have to submit information to RBI on how much they are lending, to whom, and at what interest rate, etc.
(iii) RBI observes that the Banks are not only providing loans to profitable business but also to trades and small cultivators, small scale industries, small borrowers etc.

66. Why does the formal or informal sector ask for collateral? Why do banks or lenders demand collateral against loans?
Answer:

(i) Every loan agreement specifies an interest rate which the borrower must pay to the lender along with the repayment of the principal.
(ii) In addition, lenders may demand a collateral or an asset that the borrower owns to use it as a guarantee until he repays the loan.
(iii) Interest rate, collateral and documentation requirement and the mode of repayment are the terms of credit requires for formal or informal sectors for loans.

67. Explain any three functions of the Reserve Bank of India.
Answer: Functions of the Reserve Bank of India:

(i) It supervises the functioning of formal sources of loans.
(ii) RBI monitors the banks in maintaining cash balance.
(iii) RBI sees that the banks give loans not just for profit making business, but also to benefit the small cultivators, small scale industries, to small borrowers etc.

68. Who was considered as the father of consumer movement? When is World consumer Rights day celebrated?
Answer:

Ralph Nadar
March 15

69. The Government had taken steps to protect the interest of consumers. Highlight the rights of the consumers as taken by the government?

Answer:

(i) Right to safety
(ii) Right to be informed
(iii) Right to choose
(iv) Right to be heard
(v) Right to consumer education.

70. What were the measures undertaken by the Government to protect the interest of the consumers?

Answer:

(i) Legislative measures
(ii) Administrative measures
(iii) Technical measures

* * *

Section- C

Long Answer Questions (5 Marks)

1. What steps did the French revolutionaries take to create a sense of collective identity among the French people?
   Answer:
   i) A new French new tricolour flag was choose to replace the former royal standard.
   ii) The Estate General was elected by the body of active citizens and renamed the National Assembly.
   iii) Poets composed new hymns, leaders took oath and martyrs were commemorated, all in the name of the nation. It was through folk songs, folk poetry and folk dances that the true spirit of the nation was popularised. Collecting and recording these forms of folk culture was essential to the project of nation building.
   iv) To formulate uniform laws for all its citizens, a new centralised administrative system was established.
   v) A uniform system of weights and measures was adopted and internal customs duties and dues were abolished.
   vi) Regional directs were discouraged and French, as it was spoken and written in Paris was adopted as the common language of the nation.

2. What changes did Napoleon introduce to make the administrative system more efficient in the territories ruled by him?
   Answer:
   i) There were several changes introduced by napoleon in the administrative system, to make it more efficient, they are as follows:
   ii) He improved the transport and communication system.
   iii) He abolished the feudal system. The peasants and the serfs became free.
   iv) A new freedom was given to the peasants, workers, artisans and businessman.
   v) Uniform laws, standardisation of weights and measures, common nation currency helped the new businessman and they flourished.

3. Briefly explain the process of unification of Italy.
   Answer:
   (i) Political Fragmentation: Like Germany, Italy was also politically fragmented. During the middle of the 19th century, Italy was divided into seven states, of which only one, Sardinia – Piedmont was ruled by an Italian Prince.
   (ii) Role of Mazzini: Giuseppe Mazzini made efforts to unite the Italian Republic. He had formed a secret society called 'Young Italy' for achieving his goals.
   (iii) Role of Count Cavour: He was the Chief Minister of Prussia who led the movement to unify Italy. He formed a tactful diplomatic alliance with France and defeated the Austrian forces.
   (iv) Role of Giuseppe Garibaldi: Garibaldi also formed armed volunteers. In 1860, they marched into South Italy the Kingdom of Two Sicilies and succeeded in driving out the Spanish rulers
   (v) In 1861, Victor Emmanuel II was proclaimed King of United Italy.

4. Describe the main clauses of the Treaty of Vienna of 1815.
   Answer:
   The main clauses of the Treaty of Vienna signed in 1815 were:

   Vienna Congress: The Congress was hosted by the Austrian Chancellor "Duke Metternich".

   (i) The Bourbon dynasty which had been deposed during the French Revolution was restored to power.
   (ii) France lost the territories it had annexed under Napoleon.
   (iii) A series of states was set up on the boundaries of France to prevent French extension in future.
   (iv) Kingdom of the Netherlands, including Belgium was set up.
   (v) Prussia was given important new territories on its western frontiers.

5. Briefly explain the incident of the JallianwalaBagh massacre and its effects on Punjab.
   Answer:
   (i) On 13th April 1919, the infamous JallianwalaBagh incident took place.

(ii) On that day, a crowd of villagers who had come to Amritsar to attend a fair gathered in the enclosed ground of JallianwallaBagh.
(iii) Being from outside the city, they were unaware of the martial law that had been imposed.
(iv) General Dyer entered the area, blocked the only exit point, and opened fire on the crowd, killing and wounding hundreds of people.

Effects: As the news spread, crowds took to the streets. There were strikes, clashes with police and attacks on government buildings. The government responded with brutal repression. Seeing violence spread, Mahatma Gandhi called off the non-cooperation movement.

6. What action did the British government take after the famous Dandi March?
Answer:
(i) Worried by the developments, the colonial government began arresting the Congress leaders one by one.
(ii) This led to violent clashes in many places.
(iii) A month later when Mahatma Gandhi himself was arrested, industrial workers in Sholapur attacked police posts, municipal buildings, law courts and railways stations – all structures that symbolised British rule.
(iv) A frightened government responded with a policy of brutal suppression.
(v) Abdul Ghaffar Khan, a devout disciple of mahatma Gandhi was arrested (April 1930)
(vi) Angry crowds demonstrated in the streets of Peshawar facing armoured cars and police firing, many were killed.

7. Describe the participation of the rich and poor peasant communities in the Civil Disobedience Movement.
Answer:
(i) Rich peasants were hit hard by the trade depression and falling prices, whereas the poor peasants' cash income dwindled and they could not pay their rents.
(ii) Refusal of the government to reduce the revenue demand led to widespread resentment among the rich peasants, whereas the poor peasants wanted the unpaid rent to the landlord to be remitted.
(iii) For the rich peasants, fight for Swaraj was a struggle against high revenues and for the poor peasants, their 'no rent' campaign.
(iv) Rich peasants were disappointed since revenue was not reduced and the poor peasants were disappointed with the Congress as it was unwilling to support them.

8. Explain the importance of the 'Salt march' of Gandhiji as a symbol to unite the nation.
Answer:
Gandhi found 'Salt' a powerful symbol. He sent letter to Viceroy Irwin stating eleven demands in 1930. The most stirring of all was to abolish the salt tax. Salt was one of the most essential items of food.
(i) All classes of Indian society came together as a united campaign.
(ii) Mahatma Gandhi broke the salt law with the march from Sabarmati to Dandi.
(iii) Thousands others in different parts of the country broke the salt law, manufactured salt and demonstrated in front of government salt factories.
(iv) As the movement spread, foreign clothes were boycotted, and liquor shops were picketed.
(v) Peasants refuse to pay revenue and chaukidari taxes.
(vi) Village officers resigned.
(vii) In many places, forest people violated forest laws – going into Reserved Forest to collect wood and graze cattle.
(viii) The different social groups participated.
(ix) In the countryside, rich peasants and poor peasants were active in the movements.
(x) The business class workers of Nagpur and women also joined the Movement.

9. How did business classes of India relate to Civil Disobedience Movement?
Answer:
(i) During the First World War, Indian merchants and industrialists had made huge profits and became powerful.

(ii) Keen on expanding their business, they now reacted against colonial policies that restricted business activities.

(iii) They wanted protection against imports of foreign goods, and a rupee-sterling foreign exchange ratio that would discourage imports.

(iv) The industrialists attacked colonial control over the Indian economy and supported the Civil Disobedience Movement when it was first launched.

(v) They gave financial assistance and refused to buy or sell imported goods.

10. How did the industrial working classes participate in Civil Disobedience Movement?
Answer:

(i) The industrial working classes did not participate in the Civil Disobedience Movement in large numbers as the industrialists came closer to the Congress, workers stayed aloof.

(ii) But in spite of that, some of the ideas of the Gandhian programme, like boycott of foreign goods, as part of their own movement against low wages and poor works conditions.

(iii) There were strikes by railways workers and dock workers in 1930 and 1932 respectively.

(iv) In 1930, thousands of people wore Gandhi caps and participated in protest rallies and boycotted campaigns.

11. Why did the Muslims feel alienated from Congress during the Civil Disobedience Movement?
Answer:

(i) Some of the Muslim political organisation in India were also lukewarm in their response to the Civil Disobedience Movement.

(ii) After the decline of the Non-cooperation and Khilafat Movements, a large section of Muslims felt alienated from the Congress.

(iii) The important differences were over the question of representation in the future assemblies that were to be elected.

(iv) Muhammad Ali Jinnah, one of the leaders of the Muslim League, was willing to give up the demand for separate electorates, if Muslims were assured reserved seats in the Central Assembly and representation in proportion to population in the Muslim-dominated provinces.

(v) Many Muslim leaders and intellectuals expressed their concern about the status of Muslims as a minority within India. They feared that the culture and identity of minorities would be submerged under the domination of a Hindu majority.

12. "The Civil Disobedience Movement was different from the Non-Cooperation Movement." Support the statement with examples.
Answer:
The Civil Disobedience Movement was different from the Non-Cooperation movement:
Non-Cooperation Movement:

(i) The people were asked not to cooperate with the government.

(ii) Foreign goods were boycotted.

(iii) Liquor shops were picketed.

(iv) Foreign cloth burnt in huge bonfires.

Civil Disobedience Movement:

(i) The countrymen broke the salt law.

(ii) Peasants refused to pay revenue and chaukidari tax.

(iii) Village officials resigned from their jobs.

(iv) Forest people violated forest rules and laws.

13. Describe the implication of First World War on the economic and political situation of India.
Answer:

(i) It led to a huge increase in defence expenditure which was financed by war loans and increasing taxes.

(ii) Customs duties were raised and income tax introduced.

(iii) Price increased and led to extreme hardship for the common people.

(iv) The forced recruitment in rural areas caused widespread anger.

(v) Crop failed in many parts of India, resulting in acute shortage of food.

(vi) This was accompanied by an influenza epidemic.

(vii) Millions of people perished as a result of famines and the epidemic.

14. How have technical and economic development led to more consumption of resources?
Answer: Technical and economic development involves more utilisation and exploitation of resources for the purpose of present development. As the history of our colonisation shows. It was mainly one of the higher levels of technological development of the colonising countries that helped them to exploit resources of the regions and establish their own power over the colonies.
- Technological development has led to more industries and therefore use of natural resources has increased.
- A means of transportation and communication are developing fast, they helped in the mobility of the resources.
- Due to technological advancement, techniques of mining and quarrying are also improving, leading to safer mining and more resources and more economic development.
- Green revolution led to the introduction of latest mechanical devices, fertilisers, HYV seeds, etc., leading to more and more production and consumption of resources.

15. What are the causes of land degradation? What are the ways to solve this problem?
Answer:
(i) Mining sites are abandoned after the excavation work is done, leaving deep scars of overburdening. In states like Odisha, Jharkhand, Madhya Pradesh, Chhattisgarh, deforestation due to mining has caused severe land degradation.
(ii) Overgrazing in states like Gujarat, Rajasthan, Madhya Pradesh, and Maharashtra is one of the main reasons behind land degradation.
(iii) Over irrigation and waterlogging lead to increase in salinity and alkalinity in the states of Punjab, Haryana and Western Uttar Pradesh, thereby leading to land degradation.
(iv) Mineral processing like grinding of limestone for cement industry and calcite and soap stone for ceramic industry generate huge quantities of dust in the atmosphere. It stops the infiltration of water in the soil.
(v) Industrial effluents as waste have become a major source of land and water pollution in many parts of the country.

16. What is soil erosion? What are the main causes of soil erosion?
Answer: Denudation of the soil cover and subsequent washing down is known as soil erosion.
Causes of soil erosion:
(i) Due to human activities like deforestation, overgrazing, construction and mining, etc.,
(ii) Natural forces like wind, glaciers and water lead to soil erosion.
(iii) The running water cuts through clayey soil and makes deep channels as ‘gullies’. The land becomes unfit for cultivation, this process is called gully erosion and the land is called bad land or ravines in the Chambal basin.
(iv) Sometimes, water flows as a sheet over large areas down a slope. It leads to the washing away of the topsoil. This process is called sheet erosion.

17. What are various methods of soil conservation?
Answer: Methods of soil conservation:
(i) Contour ploughing: Ploughing along the contour lines can check the flow of water down the slopes. It is called contour ploughing. It can be practised on the hills.
(ii) Terrace cultivation: Steps can be cut out on the slopes making terraces. It restricts soil erosion. It is practised in western and central Himalayas.
(iii) Strip cropping: Large fields can be divided into strips. Strips of grass are left to grow between the crops. This breaks up the force of wind. This method is called strip cropping.

(iv) Planting of shelter belts: Planting lines of trees to create shelter also checks the soil erosion. Rows of such trees are called shelter belts. These shelter belts have contributed significantly to the stabilisation of sand dunes and in stabilising the desert in western India.

18. Classify four major soil types of India with examples.
Answer: India has varied relief features, landforms, climatic realms and vegetation types which have contributed in the development of such soil types as follows:
(i) Black Soil: Also known as regur soils and ideal for growing cotton later known as black cotton soil. It is made up of clayey material known for their capacity to hold moisture. For example – Black soil are spread over northwest Deccan pleatue and it covers the plateau of Maharashtra, Malwa, Madhya Pradesh and Chhattisgarh and, also extend in south in Godavari and Krishna valleys.

(ii) Arid soil: They are red to brown in color having sandy texture and saline in nature. Due to dry climate in some areas like Rajasthan, this soil humus and moisture.
(iii) Forest soil: Found in hilly and mountainous areas where availability of rainforest is sufficient. These soil are loamy and silty in villages. In Himalayan regions, these soils experience denudation and are acidic with low humus.

(iv) Alluvial soil: It makes up the northern plains, left behind by the Indus, Ganga and Brahmaputra. The soil is found in Gujarat, Rajasthan, and eastern coastal plains, with varing ratios of sand, silt and clay. Alluvial soil are divided into two groups based on their age with Bangar being the oldest and more fertile and Khaddar being the youngest and having more fine particles.

19. Suggest the initiative taken by the government to ensure the increase in agriculture production.
Answer: Some of the initiative taken by the government to ensure the increase in agriculture production are:
(i) The Green and White revolution which aimed at improving Indian agriculture productivity.
(ii) The government of India embarked upon introducing agricultural reforms to improve Indian agriculture in the 1960's and 1970s.
(iii) The Green revolution based on the use of package technology and the White Revolution (operation flood) were some of the strategies initiated to improve the lot of Indian agriculture.
(iv) Kissan Credit Card (KCC), Personal Accident Insurance Scheme (PAIS) are some other schemes introduced by the government of India for the benefit of farmers.
(v) The government also announced minimum support price, remunerative and procurement .price for important crops to check the exploitation of farmers by speculators and middle men.

20. Describe the three cropping seasons of India.
Answer:
(i) Rabi Season:
(a) Crops sown in winters and harvested in summers.
(b) Some of the important rabi crops are wheat, barley, peas, gram and mustard.
(c) States growing rabi crops are: Punjab, Haryana, Himachal, Jammu and Kashim. Uttarkhand and Uttar Pradesh.
(ii) Kharif Season:
(a) Crops grown with the onset of monsoons and harvested in September or October.
(b) Important Kharif growing states are: Assam, West Bengal, coastal regions of Odisha, Andhra Pradesh, Tamil Nadu, Kerala and Maharashtra.
(c) Crops grown during this season are: rice, maize, jowar, bajra, tur, moong, urad, cotton, jute, and groundnut and soya bean.
(iii) Zaid Season:
(a) It falls in between the rabi and kharifseaseons.

(b) It's a short season during the summer months.
(c) Major crops grown are: watermelon, muskmelon, cucumbers, vegetables and fodder crops.

21. Differentiate between commercial farming anf plantation farming.
Answer:

Commercial Farming	Plantation Farming
(i) In this type of farming, crops are grown only for commercial purposes.	(i) In this type of farming, a single crop is grown on a large area.
(ii) Farmers make use of higher doses of modern inputs, HYV seeds, chemical fertilisers, insecticides, etc.	(ii) Labour is employed to work in large tracts of land, using capital intensive devices.
(iii) E.g: Rice is a commercial crop in Haryana and Punjab.	(iii) E.g: Tea Gardens produce tea, and coffee plantations produce coffee.

22. Which crop is known as a 'golden fibre'? Explain any two geographical conditions essential for the cultivation of this crop. Mention its four uses.
Answer: Jute is known as 'golden fibre'.
It grows well on well-drained fertile soils in the flood plains where soils are renewed every year. West Bengal, Bihar, Assam, Odisha, Meghalaya are the major jute producing states of India.
It is used in making gunny bags, mats, ropes, yarn, carpets, and other artefacts. Due to its high cost, it is losing market to synthetic fibres and packing material, particularly nylon.

23. What type of climate is required for the production of sugarcane? What are the by-products of sugarcane?
Answer:
(i) It is a tropical as well as a subtropical crop.
(ii) It grows well in hot and humid climate.
(iii) It requires a temperature between 21º C to 27ºC and an annual rainfall between 75 and 100cm.
(iv) Irrigation is required in regions receiving low rainfall.

By-Products:
It is the main source of sugar, gur (jaggery), khandsari and molasses.

24. What type of farming is called plantation farming? Which factors are needed to promote them in India?
Answer:
Plantation is a type of commercial farming.
(i) In this type of farming, a single crop is grown on a large area.
(ii) The plantation also includes the processing of that crop in the nearby industries.
(iii) Plantation covers large tracts of land using capital intensive inputs, with the help of migrant labourers.
(iv) All the produce is used as raw material in respective industries.
(v) In India, tea, coffee, rubber, sugarcane, banana, etc, are important plantation crops.
(vi) Since the production is mainly for market, a well-developed network of transport and communication connecting the plantation areas, processing industries and markets play an important role in the development of plantations.

25. Explain any five technological and institutional reforms in Indian agriculture.
Answer: Technological and Institutional reforms in Indian Agriculture.
(i) Collectivisation and consolidation of land holding.
(ii) Abolition of Zamindari.
(iii) Provision of crop insurance against droughts, floods, cyclones etc. to protect farmers.
(iv) Grameen banks, Co-operative societies and banks provided loan facilities to farmers at low rates of interest.
(v) Kissan credit cards and personal accident insurance for farmers introduced by the government.
(vi) Special weather bulletin and agricultural programme for farmers through radio and television.

26. How Pressure Groups are differing from Political parties?

Answer: Pressure groups are organizations that attempt to influence government policies. But unlike political parties, pressure groups do not aim to directly control or share political power. These organizations are formed when people with common occupation, interest, aspirations, or opinions come together in order to achieve a common objective.

In some instances, the pressure groups are either formed or led by the leaders of political parties or act as extended arms of political parties. For example, most trade unions and students' organizations in India are either established by or affiliated to one or the other major political party. Most of the leaders of such pressure groups are usually activists and leaders of party.

27. Suggest some reforms to strengthen parties so that they perform their functions well.

Answer: Various reforms that can be taken to strengthen parties are:

(i) There has to be a mechanism to check that the information given by a candidate for election in his affidavit is correct and true.

(ii) There has to be a mechanism for elected members to dissent without needing to defect and losing their seat.

(iii) Internal elections have to be held for all decision making positions of a party with a transparent list of voters.

(iv) Initiatives have to be taken to stop the flow of illegal money to political parties during elections.

28. Describe the various party systems existing in different countries.

Answer:Party System:

(i) One party system:

(a) In some countries, only one party is allowed to control and run the government. It is called one-party system.

(b) We cannot consider one-party system as a good option because this is not a democratic option.
Example: Communist Party of China.

(ii) Two-party system:

(a) In some countries, power usually changes between two main parties.

(b) Here, only the3 two main parties have a serious chance of winning majority seats to form the government.
Example: USA and UK.

(iii) Multi-party system.

(a) If several parties compete for power and more than two parties have a reasonable chance of coming to power, either on their own or in alliance with others, it is called a multi-party system.

(b) The multi-party system often appears very messy and leads to political instability.
Example: India

29. Describe the role of Political Parties in Indian Democracy.

Answer: The role of Political Parties are:

(i) Political Parties contest elections. Elections in contemporary democracies are fought among the various candidates put forward by the political parties.

(ii) Political Parties put forward policies and programme. People make choices on the basis of these.

(iii) Political Parties form and run the government the major policies for the government comes from the political party that won the election.

(iv) Parties that lose the elections form the opposition. They criticize the government for it failures, points out faults and mobilise opposition to the government.

(v) Political parties help people to access government machinery and welfare schemes.

30. The first challenges faced by political parties is lack of internal democracy within parties. What do you understand by the statement? Explain.

Answer:

(i) All over the world there is a tendency in political parties towards the concentration of power in one or few leaders at the top.

(ii) Parties do not keep membership register. They do not regularly hold organisational meetings. They do not conduct interval elections regularly.
(iii) Ordinary members of the party do not have sufficient information as to what happens inside the party.
(iv) They do not have the means of connections needed to influences the decisions. As a result, the leaders assume greater power to make decisions in the name of the party.
(v) Since one or few leaders exercise paramount power in the party, those who disagree with the leadership finds it difficult to continue in the party.

31. Suggest any five effective measures to reform political parties.
Answer:
Effective Measures:
(i) Parties should hold free internal elections and should have a word to look into dispute.
(ii) Women should be given ⅓ reserved seats and also should be present in decision making body of the parties.
(iii) Parties should be given compensations according to their performance in last election in the form of petrol for transportation, or cash etc.
(iv) People should also form pressure movement groups to influence parties to have reforms.
(v) People should themselves take part in politics to bring reforms.

32. "Political parties are a necessary condition for a democracy." Analyse the statement with examples.
Answer: Necessity or utility of Political Parties:
(i) Elected representative will be accountable to their consistency for what they do in the locality.
(ii) The rise of political parties is directly linked to the emergence of representative democracies.
(iii) In large and complex societies some agency is needed to gather different views on various issues to present these to the government.
(iv) They are needed to bring various representatives together so that a responsible government could be formed.
(v) They needed a mechanism to support or restrain the government.

33. What is the role of an ordinary citizen in reforming the political parties?
Answer:
(i) People can put pressure on political parties. This can be done through petitions, publicity and agitations. Ordinary citizens, pressure groups, movements and the media can play an important role.
(ii) In a democracy, everybody has been given the right to speak, right to express his ideas and right to agitate.
(iii) Political parties can improve if those who are interested, also join the political parties. The quality of democracy depends on the degree of public participation.
(iv) If political parties feel that they would lose public support by not taking up reforms, they would become more serious about reforms.

It is difficult to reform politics if ordinary citizens do not take part in it and simply criticise it from outside. The problem of bad politics can be solved by more and better politics.

34. What is the criterion used by the UNDP for classifying countries?
Answer: United Nations Development Programme (UNDP) has used the criterion of Human Development Index to measure the development of countries. HDI is calculated on the basis of:
(i) Per capita income: When the total national income of the country is divided by its population, we get the per capita income.
(ii) Life expectancy: It measures the average age of a person in a country. It helps us to know the health facilities of a country.
(iii) Literacy rate: Education is also one of the most important criteria for the development of a country.

(iv) Gross enrolment ratio: It measures the education gained at three levels – at the Primary, Secondary and Higher education level.

35. How good health contributes the process of economic development of a country?

Ans:

(i) It increases the efficiency of workers
(ii) It reduces production loss caused by worker's illness.
(iii) It permits the use of natural other resources.
(iv) It spares resources that otherwise would have to be spend on treating illness.
(v) It increases the enrolment of children in schools and helps them learn better.

36. What is sustainable development? Suggest three measures to ensure sustainable development.

Answer: Sustainable development is a development only when resources are managed in such a way that future generations do not suffer and have at least the same which present generations have.

The three measures to ensure sustainable development are:

(i) Limiting the human population to a level within the carrying capacity of the environment.
(ii) Technological progress must be input efficient particularly about non-renewable resources.
(iii) Renewable resources should be extracted on a sustainable basis. In other words, the rate of extraction must not exceed the rate of regeneration.

37. How has foreign trade been integrating markets of different countries? Explain with examples.

Answer:Foreign trade has been integrating the markets by:

(a) Producers from one country go beyond the domestic market and compete globally.
(b) Producers from different countries come in close contact and closely competing with each other.
(c) Manufacturing by multinational companies operate production across various countries thus linking the consumers and producers.
(d) The producers supplying goods, consumers and producers in widely dispersed locations become associated through the means of foreign trade and investment by MNCs. Consumers have greater choices available.
(e) Examples: Multinational Company that manufactures automobiles gets parts by China, assembles in Mexico & Eastern Europe, and gets call centre facilities from India.

38. How has globalisation affected the life of Indians? Explain with examples.

Answer: Following are the benefits of globalisation in India:

(i) There is an increase in the volume of trade in goods and service.
(ii) It has led to the rise of quality products.
(iii) There is an inflow of private foreign capital and export orientation of the economy.

Through there are also some negative impacts of globalisation. They are as follows:

(i) It might not help in achieving sustainable growth.
(ii) It might not lead to lessening of income inequalities among various countries.
(iii) It might lead to aggravation of income inequalities within countries.

39. What is liberalisation? Describe any four effects of liberalisation on the Indian Economy.

Answer: Liberalisation is process of removing barriers or restrictions for trade. It helps in increasing the trade.

Effects:

(i) It has increased trade in India. More and more companies/MNCs are coming in India.
(ii) It has increased the economy of the country by increasing trade.
(iii) It has also led to the declining of some business which has created problems.
(iv) Many people are not able to get proper jobs facilities even in organised sector. It has more people to work for extra hours.

40. How does World Trade Organisation facilitate free trade for all countries? Analyse with examples.

Answer: World Trade Organisation facilitates free trade:

(i) It aims at liberalisation of foreign trade and investment in countries.
(ii) WTO says that trade barriers should be abolished by the countries for free trade.

(iii) It establishes rules regarding international trade.
(iv) All countries in the world should liberalise their policies.
(v) WTO sees that the rules made by it are obeyed by the member countries.
(vi) Through WTO is supposed to allow free trade for all but in practice it is seen that develop countries have unfairly retained trade barriers.
(vii) WTO rules are forced on developing countries.

* * *

Section-D
Case Based Questions

CIVICS

Read the source given below and answer the questions:

Case 1:

India is a federal country with a parliamentary system. The Constitution of India divides power between the central government and the states. The central government has the power to make laws on matters such as defense, foreign affairs, and communication, while the states have the power to make laws on matters such as education, healthcare, and agriculture.

Recently, the state of Maharashtra wanted to increase the quota for reservations in government jobs and education beyond the 50% limit set by the central government. The central government opposed this move, leading to a dispute between the two governments.

Questions:

1. What is federalism, and how is it practiced in India?
   Answer: Federalism is a system of government where power is divided between a central authority and constituent political units, such as states. In India, federalism is practiced through the division of powers between the central government and the states, as outlined in the Constitution.

2. What are the advantages of federalism in India?
   Answer: The advantages of federalism in India include promoting regional autonomy, diversity, and inclusivity, as well as allowing for more effective governance and decision-making at the local level.

3. What was the dispute between the central government and the state of Maharashtra about?
   Answer: The dispute was about the state's desire to increase the quota for reservations in government jobs and education beyond the 50% limit set by the central government.

4. How did the central government respond to Maharashtra's proposal?
   Answer: The central government opposed Maharashtra's proposal, leading to a dispute between the two governments.

Case2: The state of Tamil Nadu wants to enact a law to regulate the sale of tobacco products, while the central government has already enacted a law on the same subject.

Questions:

1. Which list does the subject "regulation of sale of tobacco products" fall under in the Indian Constitution?
   Answer: Concurrent List.

2. Can the state of Tamil Nadu enact a law on this subject?
   Answer: Yes, but it needs to be consistent with the central law.

3. What happens if the state law conflicts with the central law?
   Answer: The central law prevails.

4. Can the central government override the state law?
   Answer: Yes, if the central law is more stringent or contradictory.

5. What is the purpose of the Concurrent List?
   Answer: To allow both central and state governments to legislate on certain subjects, promoting cooperation and coordination.

Case 3: Decentralization in India refers to the transfer of power and decision-making authority from the central government to local governments, such as Panchayats (village councils) and Municipalities. This aims to promote grassroots democracy, increase citizen participation, and address local needs more effectively. The 73rd and 74th Constitutional Amendments (1992) mandated decentralization, empowering local governments to manage education, healthcare, and infrastructure development. Decentralization has led to more inclusive and responsive governance, but challenges persist, including inadequate funding and capacity building.

Questions:

1. What is decentralization in India?
   Answer: Transfer of power from central to local governments.

2. What is the aim of decentralization?
   Answer: Promote grassroots democracy and address local needs.
3. Which amendments mandated decentralization?
   Answer: 73rd and 74th Constitutional Amendments (1992).
4. What are the benefits of decentralization?
   Answer: More inclusive and responsive governance.
5. What challenges does decentralization face?
   Answer: Inadequate funding and capacity building.

Case 4:Panchayati Raj is a system of local self-governance in India, aiming to decentralize power and promote democratic participation.

Aims:

1. Democratic Decentralization

2. People's Participation

3. Economic Development

4. Social Justice

Questions:

1. What is the primary aim of Panchayati Raj?
   Answer: Democratic Decentralization, to transfer power to the grassroots level.
2. How does Panchayati Raj promote people's participation?
   Answer: Through direct elections, citizen engagement, and decision-making involvement.
3. What is the role of Panchayati Raj in economic development?
   Answer: To plan and implement local development projects, promoting economic growth.
4. How does Panchayati Raj address social justice?
   Answer: By ensuring equitable distribution of resources, promoting inclusivity, and addressing local disparities.
5. What is the significance of the 73rd Constitutional Amendment in achieving Panchayati Raj aims?
   Answer: It empowered Panchayati Raj Institutions (PRIs) by devolving powers, functions, and finances.
6. How do PRIs contribute to democratic decentralization?
   Answer: By ensuring local self-governance, accountability, and transparency.

Case 5: Municipal Corporations are urban local bodies responsible for providing civic amenities and infrastructure to citizens.

Functions:

1. Water supply
2. Sanitation and sewerage
3. Roads and transportation
4. Streetlights and electricity
5. Solid waste management
6. Public health and hygiene
7. Education and social welfare
8. Urban planning and development.

Questions:

1. What is the main function of a Municipal Corporation?
   Answer: To provide civic amenities and infrastructure to citizens.
2. Which of the following is a function of a Municipal Corporation?
   Answer: All of the above (water supply, sanitation, roads, etc.).
3. What is the role of a Municipal Corporation in urban planning?
   Answer: To prepare and implement development plans, ensuring sustainable growth.
4. How do Municipal Corporations address public health concerns?
   Answer: By providing healthcare services, sanitation, and hygiene facilities.
5. What is the significance of solid waste management in Municipal Corporations?
   Answer: Ensures proper disposal and recycling of waste, promoting environmental sustainability.
6. How do Municipal Corporations contribute to education and social welfare?
   Answer: By running schools, hospitals, and social welfare programs for citizens.
7. What is the role of a Municipal Corporation in maintaining public transportation?

Answer: To manage and maintain public transport systems, ensuring efficient connectivity.

8. How do Municipal Corporations address environmental concerns?

   Answer: By implementing measures to reduce pollution, promote green spaces, and conserve resources.

Case 6: Despite some progress, women in India continue to face significant challenges. Gender inequality and discrimination remain deeply ingrained, perpetuating gender-based violence, limited access to education and healthcare, and restricted economic opportunities. Women comprise only 25% of the workforce, and gender-based wage gaps persist. Domestic violence affects millions, with 30% of women experiencing spousal violence. Additionally, India's gender ratio is skewed, with 933 women per 1000 men. To address these issues, initiatives like BetiBachaoBetiPadhao aim to empower women and promote gender equality. However, much work remains to ensure women's rights and dignity are fully respected and protected.

Questions:

1. What is the gender ratio in India?
   Answer: 933 women per 1000 men.
2. What percentage of women in India are literate?
   Answer: 65%.
3. What is the main reason for gender inequality in India?
   Answer: Patriarchal society and cultural norms.
4. What is the most common form of violence against women in India?
   Answer: Domestic violence.
5. What is the legal age for marriage in India?
   Answer: 18 years for women.
6. What percentage of women in India participate in the workforce?
   Answer: 25%.
7. What is the main challenge faced by women in India in accessing healthcare?
   Answer: Lack of access to healthcare facilities.
8. What is the government initiative to empower women in India?
   Answer: BetiBachaoBetiPadhao.

Case 7: Women’s representation in politics in India is gradually increasing, but still lags behind. Women hold 14.3% of Parliamentary seats and 9% of Assembly seats. The Women's Reservation Bill aims to reserve 33% of seats for women.

Questions:

1. What percentage of Parliamentary seats are held by women in India?
   Answer: 14.3%
2. What is the goal of the Women's Reservation Bill?
   Answer: To reserve 33% of seats for women.
3. What percentage of Assembly seats are held by women in India?
   Answer: 9%
4. Are women's representation in politics increasing in India?
   Answer: Yes, gradually.

Case 8: Religion and politics are deeply intertwined in India, with religious identities often influencing political affiliations and voting patterns. The country's secular constitution is sometimes challenged by religious nationalist movements. Political parties often use religious symbolism and appeals to garner support.

Questions:

1. Is India a secular country?
   Answer: Yes, by Constitution.
2. Do religious identities influence political affiliations in India?
   Answer: Yes, often.
3. Is religion a sensitive topic in Indian politics?
   Answer: Religion has always been a sensitive topic in Indian politics.
4. What were Gandhiji’s views on religion?
   Answer: Gandhiji used to say that for him politics devoid of religion was unethical and immoral.

Case 9: Communalism in India refers to the politicization of religious identities, often leading to tension and conflict between different religious groups. This can manifest in various forms, including violence, discrimination, and exclusion. Communalism can be fuelled by political parties, social media, and other factors, and can have devastating consequences for individuals and communities.

Questions:

1. What is communalism in India?
   Answer: Politicization of religious identities.
2. What are the consequences of communalism?
   Answer: Violence, discrimination, exclusion.
3. Can communalism lead to violence?
   Answer: Yes, it often leads to clashes and riots as an example: Partition of India 1947.
4. What is Not communalism?
   Answer: It means absence of communal ideologies that divide people based on religion, race, or other identities and instead promote unity, inclusivity and harmony among individuals.

Case 10: Secularism in India is a constitutional principle that ensures the separation of religion from the state. It guarantees equal rights and freedoms to all citizens, regardless of their religious beliefs or practices. Secularism promotes religious tolerance, pluralism, and diversity, allowing people to practice their faith without fear of discrimination or persecution.

Questions:

1. What is secularism in India?
   Answer: Separation of religion from the state.
2. What does secularism guarantee to citizens?
   Answer: Equal rights and freedoms.
3. What are the core values promoted by secularism?
   Answer: Religious tolerance, pluralism, and diversity.
4. Can secularism coexist with religion?
   Answer: Yes, secularism protects individual religious freedom.
5. Why is secularism important in India?
   Answer: To maintain social harmony and ensure equal rights for all citizens.

Economics

Read the source given below and answer the questions by choosing the most appropriate:

Case 1
Consumer exploitation takes many forms, including false advertising, predatory lending, price gouging, phishing scams, and bait-and-switch tactics. False advertising deceives consumers with misleading claims, while predatory lending traps them in high-interest loans. Price gouging exploits emergencies or shortages to inflate prices. Phishing scams steal personal information through fake emails, calls, or texts. Bait-and-switch tactics lure consumers with attractive offers, only to substitute inferior products or services. Additionally, other forms of exploitation include high-pressure sales tactics, hidden fees, and Ponzi schemes. Consumers must remain vigilant and informed to protect themselves from these exploitative practices, which can result in financial loss, identity theft, and diminished trust in the marketplace.

Questions:
Q1. Who is a wise consumer?
Answer: Is a well-informed consumer, who knows his right as to where and when to exercise them.
Q2: Is false advertising a form of consumer exploitation?
A) Yes
B) No
Answer: A) Yes
Q3: Is predatory lending unfair to consumers?
A)Yes
B) No
Answer: A) Yes
Q4: Can phishing lead to identity theft?
A) Yes
B) No
Answer: A) Yes
Q5: Is price gouging a form of price manipulation?
A) Yes
B) No
Answer: A) Yes
Q6: Can scams lead to financial loss for consumers?
A) Yes
B) No
Answer: A) Yes

Case 2:
Adulteration, the act of contaminating or debasing a product with inferior or harmful substances, poses a significant threat to consumer safety. This unethical practice can occur in various industries, including food, cosmetics, and pharmaceuticals. In the food industry, adulteration can lead to serious health issues, as seen in the 2013 horse meat scandal in Europe. Counterfeit cosmetics can cause skin irritation, allergic reactions, and even serious health problems. Adulterated medications can have devastating consequences, including harmful side effects, worsening of medical conditions, or even death.

Consumers can protect themselves by being vigilant and taking precautions. When purchasing food, check labels and buy from trusted sources. Be cautious of

unusual prices or packaging. For cosmetics, buy from authorized retailers and check for certifications. When it comes to medications, ensure you buy from licensed pharmacies and check for expiration dates.

Q1: What happened in the 2013 horse meat scandal in Europe?
Answer: Horse meat was found in products labelled as beef.
Q2: What is the main concern with food adulteration?
Answer: Consumer safety and trust in the food supply chain.
Q3: How can consumers protect themselves from food adulteration?
Answer: Check labels, buy from trusted sources, and be aware of unusual prices or packaging.

Case 3:
Ramesh, a local vegetable vendor, was known for his rough behaviour with customers. One day, he was selling tomatoes at an inflated price, claiming they were of high quality. When a customer, Mrs. Kumar, asked him to reduce the price, Ramesh became abusive and started yelling at her. Mrs. Kumar felt humiliated and threatened to report him to the authorities.

1. What was Ramesh's behaviour towards Mrs. Kumar?
   a) Polite and courteous
   b) Rough and abusive
   c) Indifferent and neutral
   d) Friendly and helpful

Answer: b) Rough and abusive

2. Why was Mrs. Kumar unhappy with Ramesh?
   a) He was selling tomatoes at a low price
   b) He was selling tomatoes at an inflated price
   c) He was not selling tomatoes at all
   d) He was selling poor quality tomatoes

Answer: b) He was selling tomatoes at an inflated price

3. How did Mrs. Kumar respond to Ramesh's behavior?
   a) She apologized and left the shop
   b) She argued with Ramesh and tried to negotiate
   c) She threatened to report him to the authorities
   d) She started yelling back at Ramesh

Answer: c) She threatened to report him to the authorities

4. What can be done to address Ramesh's rough behavior?
   a) Ignore him and continue shopping
   b) Report him to the authorities
   c) Confront him and argue
   d) Boycott his shop

Answer: b) Report him to the authorities.

Case 4:
Albert, a young professional, purchased a laptop from a local store without thoroughly inspecting its features, warranty, and reviews. The laptop's battery life was subpar, and the operating system was outdated. When Albert attempted to return the laptop, the store owner refused, citing a "no return" policy. Albert argued that the store had a legal obligation to provide a refund or replacement under the consumer protection act. However, the store owner claimed that the policy was clearly displayed at the time of purchase.

1. What was the primary reason for Albert's difficulty in returning the laptop?
   a) The store's "no return" policy
   b) Albert's failure to inspect the laptop before purchase
   c) The laptop's battery life and outdated operating system
   d) The store owner's refusal to acknowledge the consumer protection act

Answer: b) Albert's failure to inspect the laptop before purchase

2. Which of the following is a legal right of consumers under the consumer protection act?
   a) The right to return a product regardless of the store's policy
   b) The right to a refund or replacement for a defective product
   c) The right to purchase a product at the lowest price available
   d) The right to inspect a product before purchase

Answer: b) The right to a refund or replacement for a defective product

3. What should Albert have done to avoid this situation?
   a) Inspected the laptop's features, warranty, and reviews before purchase
   b) Purchased the laptop from a different store
   c) Accepted the store's "no return" policy
   d) Demanded a refund without checking the policy

Answer: a) Inspected the laptop's features, warranty, and reviews before purchase

4. What can be inferred about the store owner's claim that the "no return" policy was clearly displayed?
   a) The store owner is trying to deceive Albert.
   b) The store owner is unaware of the consumer protection act

c) The store owner is attempting to justify the policy
d) The store owner is admitting fault

Answer: c) The store owner is attempting to justify the policy

Case 5:

Ms. Sharma, a resident of Mumbai, wanted to know the status of her passport application. She filed an RTI application with the Regional Passport Office, Mumbai, on February 10, 2023. However, she did not receive any response within the stipulated 30-day period. She then filed a first appeal with the Appellate Authority, but still did not receive any information. Finally, she approached the Central Information Commission (CIC) with a second appeal.

1. What was Ms. Sharma trying to obtain through her RTI application?
   a) Information on the passport office's working hours
   b) Status of her passport application
   c) List of documents required for passport renewal
   d) Contact details of the passport officer

Answer: b) Status of her passport application

2. Which section of the RTI Act 2005 states that an applicant should receive a response within 30 days?
   a) Section 7(1)
   b) Section 8(1)
   c) Section 6(1)
   d) Section 5(1)

Answer: a) Section 7(1)

3. What was the next step taken by Ms. Sharma after not receiving a response to her RTI application?
   a) Filed a second appeal with the CIC
   b) Filed a first appeal with the Appellate Authority
   c) Approached the passport office in person
   d) Filed a complaint with the police

Answer: b) Filed a first appeal with the Appellate Authority

4. Which authority did Ms. Sharma approach finally?
   a) State Information Commission (SIC)
   b) Central Information Commission (CIC)
   c) Appellate Authority
   d) Passport Office

Answer: b) Central Information Commission (CIC)

Case 6:

Ricky, a resident of Jowai, purchased a electric water heater with an ISI mark from a local store. After using it for six months, he noticed that the heater was not working efficiently and was consuming more electricity than usual. He lodged a complaint with the store owner, who refused to replace the product or provide a refund. Ricky then approached the Bureau of Indian Standards (BIS) and filed a complaint against the manufacturer for misusing the ISI mark.

1. What is the significance of the ISI mark on an electric water heater in India?
   a) It indicates that the product is made in India
   b) It ensures that the product meets safety and quality standards
   c) It guarantees a warranty for the product
   d) It shows that the product is environmentally friendly

Answer: b) It ensures that the product meets safety and quality standards

2. What was Rahul's issue with the electric water heater?
   a) It was not working efficiently
   b) It was consuming less electricity than usual
   c) It did not have an ISI mark
   d) It was not made in India

Answer: a) It was not working efficiently

3. Who did Rahul approach to file a complaint against the manufacturer?
   a) Consumer Court
   b) Bureau of Indian Standards (BIS)
   c) Local Police Station
   d) National Human Rights Commission

Answer: b) Bureau of Indian Standards (BIS)

4. What is the role of the Bureau of Indian Standards (BIS) in this case?
   a) To issue ISI marks to manufacturers
   b) To investigate complaints against manufacturers
   c) To provide refunds to consumers
   d) To conduct safety tests on products

Answer: b) To investigate complaints against manufacturers

Case 7

In a small village in rural India, there lived two farmers, Ramesh and Suresh. Ramesh grew wheat, while Suresh grew sugarcane. One season, Ramesh's wheat crop failed due to drought, but Suresh's sugarcane crop was abundant. Ramesh needed sugar for his family's consumption, while Suresh needed wheat for his cattle feed. They agreed to exchange 10 kg of sugarcane for 5 kg of wheat. This was their first transaction using the barter system.Later, Ramesh's wheat crop recovered, and he had a surplus. Suresh, on the other hand, faced a sugarcane shortage due to pests. They renegotiated their earlier agreement and

settled on a new exchange rate of 5 kg of sugarcane for 3 kg of wheat.

1. What was the initial exchange rate agreed upon by Ramesh and Suresh?
   a) 1 kg of sugarcane for 1 kg of wheat
   b) 10 kg of sugarcane for 5 kg of wheat
   c) 5 kg of sugarcane for 3 kg of wheat
   d) 2 kg of sugarcane for 1 kg of wheat

Answer: b) 10 kg of sugarcane for 5 kg of wheat

2. Why did Ramesh and Suresh renegotiate their agreement?
   a) Due to changes in market prices
   b) Due to changes in their crop yields
   c) Due to changes in government policies
   d) Due to changes in their personal preferences

Answer: b) Due to changes in their crop yields

3. What is the main advantage of the barter system in this case?
   a) Increased efficiency
   b) Reduced costs
   c) Improved quality of goods
   d) Convenience and mutual benefit

Answer: d) Convenience and mutual benefit

4. What is the limitation of the barter system evident in this case?
   a) Lack of standardization
   b) Limited scalability
   c) Difficulty in storing value
   d) All of the above

Answer: d) All of the above

5. How did the barter system help Ramesh and Suresh?
   a) It helped them earn profits
   b) It helped them reduce losses
   c) It helped them meet their needs without using money
   d) It helped them increase their production

Answer: c) It helped them meet their needs without using money.

Case 8

In a small village, there lived two farmers, Joy and Lam. Lam had a surplus of wheat and wanted to buy a cow to increase his dairy production. Joy had a cow and wanted to buy wheat to make bread for his family. One day, they met at the village market and discussed their needs. Lam offered to exchange 50 kg of wheat for Joy's cow. Joy agreed, and they exchanged their goods.Later, Lam's dairy production increased, and he wanted to buy a tractor to expand his farm. Joy, who had used the wheat to bake bread, now wanted to buy a solar panel to power his bakery. They met again and agreed to exchange Lam's tractor for Joy's solar panel.

1. What is the concept illustrated in this case story?
   a) Double Coincidence of Wants
   b) Supply and Demand
   c) Opportunity Cost
   d) Comparative Advantage

Answer: a) Double Coincidence of Wants

2. What was the initial exchange between Lam and Joy?
   a) Wheat for cow
   b) Cow for tractor
   c) Wheat for solar panel
   d) Tractor for solar panel

Answer: a) Wheat for cow

3. What is the challenge faced by Lam and Joy in the absence of a medium of exchange?
   a) They have to produce goods that others want
   b) They have to find someone who has what they want and is willing to trade
   c) They have to transport their goods to the market
   d) They have to set prices for their goods

Answer: b) They have to find someone who has what they want and is willing to trade

4. How does the double coincidence of wants limit the exchange of goods?
   a) It increases the number of transactions
   b) It reduces the number of transactions
   c) It makes transactions more efficient
   d) It has no impact on transactions

Answer: b) It reduces the number of transactions.

Case 9

Richard, a businessman, opens a current account with State Bank of India (SBI) to manage his daily financial transactions. He deposits ₹100,000 into his account and uses his debit card to pay ₹20,000 to his supplier, ₹15,000 to his employee, and ₹5,000 for office expenses. Later, he receives ₹30,000 from a client and deposits it into his account. Rahul can withdraw cash or use his debit card to make payments at any time.

1. What type of bank account does Richard have?
   a) Savings account
   b) Current account
   c) Fixed deposit account
   d) Recurring deposit account

Answer: b) Current account

2. What is the primary characteristic of a demand deposit account?
   a) Fixed interest rate
   b) Fixed maturity period
   c) Withdrawals can be made at any time
   d) Minimum balance requirement

Answer: c) Withdrawals can be made at any time

3. What is the benefit of Richard using a demand deposit account for his business?
   a) Earns interest on his deposited funds
   b) Can borrow money at a low interest rate
   c) Can manage his daily financial transactions efficiently
   d) Can invest in stocks and mutual funds

Answer: c) Can manage his daily financial transactions efficiently

4. Why demand deposits are considered a key component of a country's money supply?
   a) They are time deposits with a fixed maturity period
   b) They can be withdrawn at any time, making them highly liquid
   c) They earn a high interest rate
   d) They are not used for transactions

Answer: b) They can be withdrawn at any time, making them highly liquid.

Case 10

Priya, a small business owner, wants to expand her clothing boutique. She needs ₹500,000 to purchase new equipment and inventory. Priya approaches her bank, ICICI Bank, and applies for a formal loan. The bank evaluates her creditworthiness, business plan, and collateral (her property). After due diligence, ICICI Bank approves a loan of ₹500,000 with an interest rate of 12% per annum, repayable in 36 monthly installments. Priya accepts the offer and receives the loan amount in her bank account.

1. What type of lending is illustrated in this case story?
   a) Informal lending
   b) Formal lending
   c) Peer-to-peer lending
   d) Crowdfunding

Answer: b) Formal lending

2. What is the primary advantage of formal lending from a bank for Priya?
   a) Lower interest rate
   b) No collateral required
   c) Quick access to funds
   d) Formal lending provides a structured repayment plan

Answer: d) Formal lending provides a structured repayment plan

3. What is the role of collateral in Priya's loan application?
   a) To reduce the interest rate
   b) To increase the loan amount
   c) To provide security for the bank in case of default
   d) To waive the loan repayment

Answer: c) To provide security for the bank in case of default

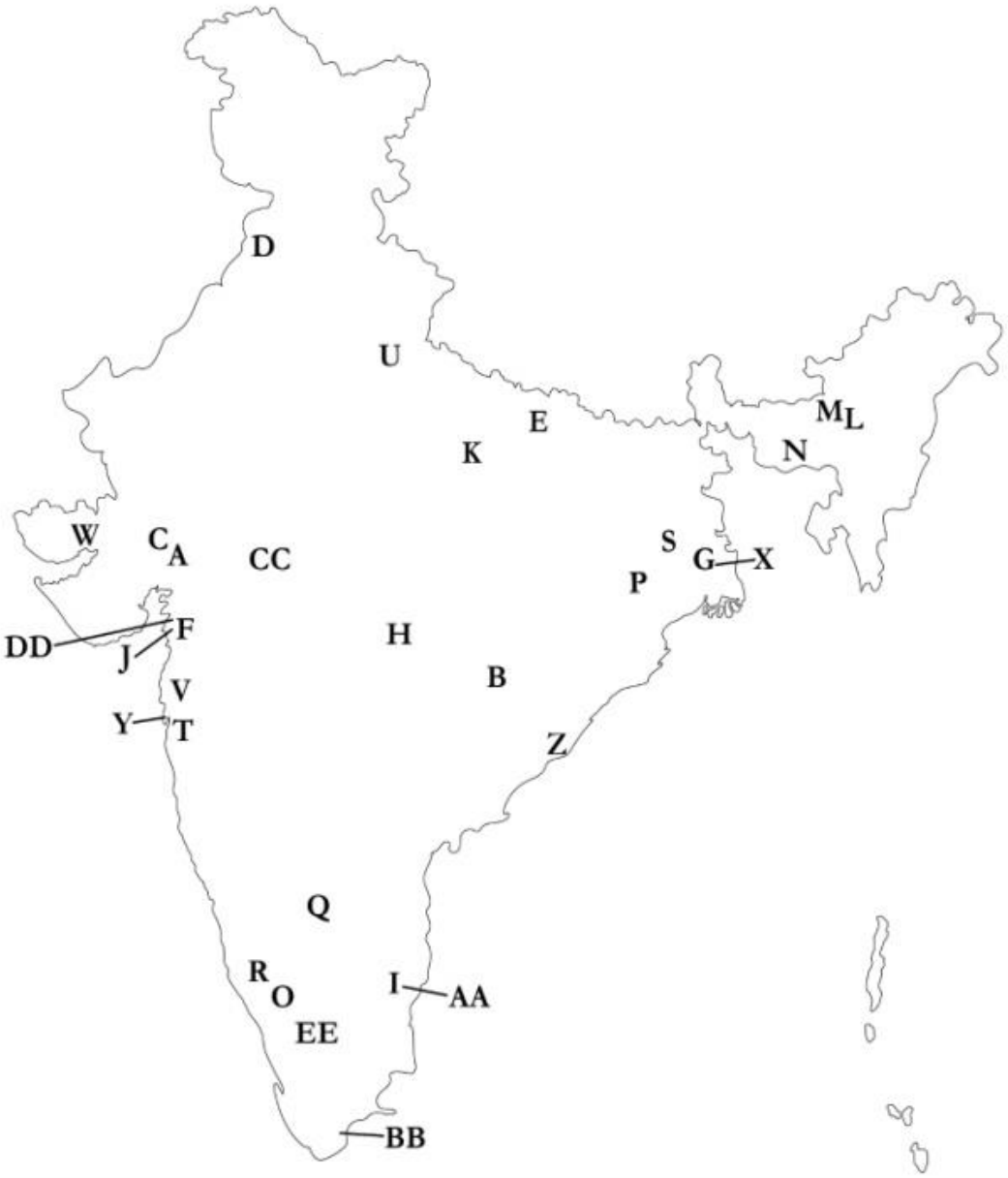
4. What is the benefit of Priya repaying the loan in instalments?
   a) Reduces her credit score
   b) Increases her debt burden
   c) Helps her manage cash flow and budget
   d) Waives the interest payment

Answer: c) Helps her manage cash flow and budget

Section-E

List of Map Items

Subjects	Name of the Chapter	List of areas to be located on the Political Map of India
History	Non- Cooperation and Civil Disobedience Movements	A. Kheda B. Champaran C. Ahmedabad Mill D. Jallianwalla Bagh E. Chauri Chaura Incident F. Dandi March G. Calcutta H. Nagpur I. Madras
	Industrialisation	J. Surat Port K. The Mills of Kanpur
Geography	Forest Resources	L. Kanziranga National Park M. Orang National Park N. Balpakram National Park O. Wayanad Wildlife Sanctuary
	Minerals and Energy Resources	P. Mayurbhanj Q. Bellary R. Kudremukh S. Raniganj T. Nuclear U. Narora V. Tarapur
	Major Sea Ports	W. Kandala X. Kolkata Y. Mumbai Z. Vishakhapathnam AA. Chennai BB. Tuticorin
	Cotton Textile Industries	CC. Indore DD. Surat EE. Coimbatore



List of Map Items

History

Non - Cooperation and Civil Disobedience Movements

A. Kheda
B. Champaran
C. Ahmedabad Mill
D. Jallianwalla Bagh
E. Chauri Chaura Incident
F. Dandi March
G. Calcutta
H. Nagpur
I. Madras

Industrialisation

J. Surat Port
K. The Mills of Kanpur

Geography

Forest Resources

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Cotton Textile Industries

CC. Indore
DD.Surat
EE. Coimbatore

Sample Question Paper

(SSLC Examination 2024-25)

Social Science

(Old Course)

by

Meghalaya Board of School Education (MBOSE)

A. The Scheme of Examination

	Maximum Marks	Pass Marks
Theory Examination	80	24
Internal Assessment	20	6
Total	100	30

B. Scheme of Theory Examination

Section	Type of Questions	Marks for Each Question	No. of questions to be attempted/ No. of questions given	Total Marks
Section-A	Multiple choice Questions (MCQs)	1	30/30	1x30=30
Section-B	Short Answer Questions	2	9/12	2x9=18
Section-C	Long Answer Questions	5	4/8	5x4=20
Section-D	Case Based Questions	4	2/4	4x2=8
Section-E	Map Pointing	1	4/7	1x4=4
Total Marks				**80**

Note: Questions of Section-D will be from Civics and Economics. Questions of Section-E will be from History and Geography. The overall weightage in all the sections as given below in "D. Content Weightage in Theory Examination".

C. Scheme of Internal Assessment

Marks for internal assessment can be internally assessed through anyone of the following:

1. Project Work
2. Written Tests
3. Assignments (Class or Home Work)

While Assessing equal weightage may be given to History, Civics, Economics and Geography.

Different types of Projects Works

- Class/Interclass discussion and debates.
- Preparations of a report based on newspapers/magazines clippings.
- Conducting a survey in the locality (activity to be accompanied by a brief report).
- Posters.
- Mock drills to deal with fire mishaps, earthquakes, flood and landslides to be practised for the topic, 'Disaster Management'.

D. Content Weightage in Theory Examination

The subject-wise weightage shown below is only indicative for the purpose of information of teachers while prioritising different chapters during teaching or assessment. Though the weightage in Theory Examination conducted by MBOSE would broadly follow the following pattern, there may still be some variation.

Subject	Syllabus	Marks (80)
History	• The Rise of Nationalism in Europe • Non – Cooperation and Civil Disobedience Movement • Industrialisation (1850s-1950s) • Urbanisation and Urban lives • Print Culture and Nationalism	20
Geography	• Resources • Land Resources • Water Resources • Forest Resources • Minerals and Energy Resources • Agriculture manufacturing Industries • Lifelines of National Economy • Meghalaya: an Overview	20
Civics	• Role of Caste in Indian Politics and Communalism • Nature of Indian Federal Structure • Popular Struggles and Movements • Political Parties • Challenges to Democracy • Voters awareness and its Importance • Women's Rights in India • Rights of Person with Disabilities Act, 2016	20
Economics	• Sectors of the Indian Economy • The Story of Development • Money and Financial System • Globalisation and the Indian Economy • Consumer Rights	20

Sample Question Paper

SOCIAL SCIENCE

CLASS – X

Question Paper Code: XY

Time: 3 hours

Max Marks: 80 (Pass Marks: 24)

General Instructions:

1. Please check that this Question Paper contains 55 Questions.
2. Question Paper Code given above should be written on the Answer Book, in the space provided, by the Candidate.
3. For candidates without an Internal Assessment, their marks will be multiplied by 1.25 to adjust their total to a maximum of 100 marks.
4. 15 minutes time is given for the candidates to read the Question paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.
5. The Question Paper contains 4 sections, Section A, B, C, D and E.
6. Section-A contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers provided anywhere else will not be counted for marking.
7. Section-B contains Short Answer Questions. Answer the questions briefly, in not more than 30 (thirty) words.
8. Section-C contains Long Answer Questions. Answer the questions in not more than 80 (eighty) words each.
9. Section-D contains Cased Based Questions.
10. Section-E contains Map skill based Questions. A Map provided with Answer Paper should be used for this section.

Section-A

Multiple Choice Questions: Attempt **ALL** Questions (30x1=30)

1. Which 19th Century movement sought to unify various German states into a single nation-state?
   A) Pan-Germanism
   B) German Nationalism
   C) The Frankfurt Parliament
   D) The Unification of Italy

2. Who led the Non-Cooperation Movement in India?
   A) Mahatma Gandhi
   B) Jawaharlal Nehru
   C) Subhas Chandra Bose
   D) Lala Lajpat Rai

3. The concept of "self-determination" is closely tied to:
   A) Nationalism
   B) Imperialism
   C) Federalism
   D) Globalization

4. Which European country is known for its historic nationalist movement led by Giuseppe Garibaldi?
   A) France
   B) Germany
   C) Italy
   D) Spain

5. Who were the primary beneficiaries of the Poona Pact?

A) Scheduled Castes (SCs)
B) Scheduled Tribes (STs)
C) Other Backward Classes (OBCs)
D) Depressed Classes (DCs)

6. What was the main objective of the HSRA?

A) To achieve independence through non-violent means
B) To establish a socialist republic in India
C) To promote communal harmony
D) To support British rule

7. Who invented the movable-type printing press?

A) Johannes Gutenberg
B) William Caxton
C) Martin Luther
D) Christopher Columbus

8. Who introduced printing to India in the 16th century?

A) Portuguese missionaries
B) British colonialists
C) French traders
D) Dutch explorers

9. What was the name of the first newspaper published by James Augustus Hickey?

A) Bengal Gazette
B) Calcutta Journal
C) Bombay Samachar
D) Sambad Kaumudi

10. A consumer buys a product with a label showing a picture of a recycle symbol. What does this label indicate?

A) The product is eco-friendly
B) The product can be recycled
C) The product is biodegradable
D) The product is reusable

11. What is the primary goal of consumer rights?
   A. To protect businesses
   B. To protect consumers
   C. To promote competition
   D. To regulate markets

12. Which of the following is an example of an unfair trade practice?
   A. Misleading advertising
   B. High prices
   C. Poor customer service
   D. All of the above

13. Which sector contributes the most to India's GDP?
   A. Agriculture
   B. Industry
   C. Services
   D. Manufacturing

14. Which industry is the largest consumer of power in India?
   A. Textiles
   B. Steel
   C. Cement
   D. Aluminium

15. What is the primary goal of sustainable development?
    A. Economic growth
    B. Environmental protection
    C. Social justice
    D. All of the above

16. Which of the following is a consequence of caste-based politics in India?
    A. Reduced social inequality
    B. Increased communalism
    C. Improved representation of marginalized groups
    D. Enhanced economic development

17. Which article of the Indian Constitution prohibits discrimination based on caste?
    A. Article 14
    B. Article 15
    C. Article 16
    D. Article 17

18. What is the basis of the Indian federal system?
    A. Linguistic states
    B. Religious states
    C. Geographical regions
    D. Cultural zones

19. What is the purpose of the Finance Commission?
    A. To allocate funds to states
    B. To advise the center on financial matters
    C. To oversee state finances
    D. To resolve financial disputes between states

20. Which party is led by Mamata Banerjee?
    A. All India Trinamool Congress (AITC)
    B. Indian National Congress
    C. Bharatiya Janata Party (BJP)
    D. Bahujan Samaj Party (BSP)

21. What is the role of the Election Commission of India in promoting voter awareness?
    A. To conduct elections
    B. To promote political parties
    C. To educate voters about the electoral process
    D. To monitor election expenses

22. Which of the following forest ecosystems is most vulnerable to climate change-induced die-offs?
    A) Tropical rainforests
    B) Boreal forests
    C) Temperate deciduous forests
    D) Montane cloud forests

23. What is the national flower of India?
    A) Lotus
    B) Rose
    C) Sunflower
    D) Marigold

24. Which of the following animals is the national animal of India?
    A) Bengal Tiger
    B) Asiatic Lion
    C) Indian Elephant
    D) Snow Leopard

25. What is the most common species of tree found in Indian forests?
    A) Teak
    B) Sal
    C) Mango
    D) Banyan

26. Which of the following birds is the national bird of India?
    A) Peacock
    B) Parrot
    C) Myna
    D) Sparrow

27. Which of the following plants is known for its medicinal properties in India?
    A) Neem
    B) Tulsi
    C) Turmeric
    D) All of the above

28. Which of the following birds is known for its distinctive call that sounds like laughter?
    A) Peacock
    B) Parrot
    C) Myna
    D) Hornbill

29. What is the primary goal of mineral conservation?
    A. To increase mineral production
    B. To reduce mineral waste
    C. To protect the environment
    D. To promote sustainable use of minerals

30. Which of the following is a primary classification of industries in India?
    A. Primary, Secondary, and Tertiary
    B. Light, Heavy, and Cottage
    C. Public, Private, and Joint
    D. Manufacturing, Service, and Agriculture

Section-B

Short Answer Questions: Answer **any 9 (nine)**. (9x2=18 marks)

31. Why did some industrialists in nineteenth-century Europe prefer hand labour over machines?
32. How did factories in England multiply in the late 18th Century?
33. How did the East India Company procure regular supplies of cotton and silk textiles from Indian weavers?
34. Define Urbanization? State the causes for urbanization?
35. Explain how print culture assisted the growth of nationalism in India
36. What are resources? Classify the resources
37. Compare the advantages and disadvantages of multipurpose river projects.
38. What do you know about the 'Bamboo-Drip Irrigation System'?
39. Discuss the geographical features of Meghalaya?
40. Mention any four challenges facing Indian democracy?
41. Highlight any two measures to deepening democracy in India?
42. Write any two Constitutional Rights of Women in India.

Section-C

Long Answer Questions: Answer **either A or B** for each question. (4x5=20 marks)

43. A. What steps did the French revolutionaries take to create a sense of collective identity among the French people?

OR

B. Briefly explain the process of unification of Italy.

44. A. Describe the main clauses of the Treaty of Vienna of 1815

OR

B. What action did the British government take after the famous Dandi March?

45. A. Explain the importance of the 'Salt march' of Gandhiji as a symbol to unite the nation.

OR

B. How did the industrial working classes participate in Civil Disobedience Movement?

46. A. What are the causes of land degradation? What are the ways to solve this problem?

OR

B. What is soil erosion? What are the main causes of soil erosion?

Section-D

Case Based Questions: Answer **either A or B** for each question. **(2x4= 8)**

47. Read the extract given below and answer the questions that follow.

A. Communal politics is based on the idea that religion is the principal basis of Social community. Communalism involves thinking along the following lines. The followers of a particular religion must belong to one community. Their fundamental interests are the same . Any difference that may have is irrelevant or trivial for community life. It also follows that people who follow different religions can not belong to the same Family laws. Those laws deals with family related matters such as marriage, divorce, adoption, inheritance, etc. In our country, different family laws to apply to the followers of different religious community. If the followers of a different religion have some commonalities these are superficial and immaterial. Their interest is bound to be different and involve a conflict. In extreme form of communalism leads to the belief that people belonging to a different religion cannot live as equal citizen within one nation. Either one of them has to dominate the rest or they have to form different nations.

(i) What is communal politics? (1 mark)
(ii) Who do believe that people belong to the different religion cannot live as equal citizen within one Nation? (1 mark)
(iii) What does the extreme form of communalism lead to? (2 marks)

OR

B. There are two or more levels (or tiers) of government in federalism. Different tiers of government govern the same citizens, but each tier has its own jurisdiction in specific matters of legislation, taxation and administration. The jurisdictions of the respective levels or tiers of government are specified in the constitution. So, the existence and authority of each tier of government is constitutionally guaranteed.

The fundamental provisions of the constitution cannot be unilaterally changed by one level of government. Such changes require the consent of both the levels of government. Courts have the power to interpret the constitution and the powers of different levels of government. The highest court acts as an umpire if disputes arise between different levels of government in the exercise of their respective powers. Sources of revenue for each level of government are clearly specified to ensure its financial autonomy. The federal system thus has dual objectives: to safeguard and promote the unity of the country, while at the same time accommodate regional diversity. Therefore, two aspects are crucial for the institutions and practice of federalism.

(i) Who acts as the guardian of Indian constitution? (1 mark)
(ii) In a federal system, the fundamental provisions of the constitution cannot be unilaterally changed by one level of government. Give one example to prove the statement. (1 mark)
(iii) Identify two crucial aspects for the success of federal system of government. (2 marks)

48. Read the extract given below and answer the questions that follow.

A. The contribution of Nobel Laureate Professor Mohammad Yunus, who introduced the concept of 'self-help group' as the 'Bangladesh Grameen Bank' in the 1970s to address economic issues faced by the impoverished and lower classes in Bangladesh, remains remarkable. Even today, self-help groups continue to hold great relevance. These groups enable members to provide loans to those in need from their collective savings fund, at the lowest interest rates, thereby fostering entrepreneurship and facilitating local economic activities for livelihood generation. During the period of economic liberalization in India (1991-1992), self-help groups received special encouragement, with NABARD playing a pivotal role in this process. Simultaneously, self-help groups were utilized in the implementation of grassroots development plans during India's Ninth Five Year Plan (1997-2002).

(i) What do you understand by Self Help Group? (2 marks)
(ii) How Self Help Group promotes economic inclusiveness? (2 marks)

OR

B. Anup purchased an ISI marked Heater from Bharti Appliances, Shillong. He made cash payment, but failed to get a Cash Memo. While making use of the heater he observed that it was not working properly. He contacted the shopkeeper immediately and told him the problem. Shopkeeper paid no heed to her complaint. Rather he marked that the goods in question was not bought from his shop. Anup had no evidence of proving that the heater was purchased from his shop only. He discussed the problem with her friend who advised him to approach Consumer Forum and lodge the complaint. Anup was convinced with the idea of lodging the complaint against the shopkeeper but due to lack of cash memo it was difficult for him to proceed.

(i) Under which Act Anup can seek to protect his rights being a consumer? (1 mark)
(ii) How does Anup ensure the quality of product while purchasing it? (1 mark)
(iii) Why Anup can't lodge a complaint against shopkeeper? (2 marks)

Section-E

Map skill based Questions: Answer any **4 (four)**

(4x1 = 4)

49. The District where Gandhiji offered Satyagraha along with the peasants in 1918.
50. Seth Hukumchand set up the first Indian jute mill here in 1917
51. The East India company set up a printing press here in 1684
52. Jallianwalla Bagh tragedy
53. One area growing fibre crop in Meghalaya
54. One nuclear power station in South India
55. A tidal port in the western part of India.

*** End of the Question Paper ***

CM IMPACT Guidebook for Students
(With Important Questions and Answers)

English
Class-X
(New Course – NCERT Textbook)
2024 – 2025

Published by
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An Initiative under
Chief Minister's Initiative to Maximize Pass Achievement and Classroom Triumph (CM IMPACT)

Section-A

***Multiple Choice Questions (MCQs)**:*

In the Board Examination, there will be 14 MCQs from the English Reader and the Supplementary Reader.

Chapter 1(a): A Letter to God (G.L. Fuentes)

1. What was the only thing that the earth needed according to Lencho?
   A. Shower
   B. Snowfall
   C. Strong winds
   D. Sunlight

Ans: A

2. What is Lencho's purpose of writing his first letter to God?
   A. To give answers
   B. To seek His help
   C. To show his gratitude
   D. To get in touch with the postmaster
   Ans: B

3. What was the only hope left in the hearts of Lencho's family?
   A. Compensation from government
   B. Help from relatives
   C. Help from God
   D. Help from farmer's association
   Ans: C

4. The postmaster – a fat, amiable fellow – what is the meaning of the word 'amiable'?
   A. Kind hearted
   B. Friendly
   C. Enthusiastic
   D. Humble
   Ans: B

5. How did Lencho feel when he counted the money?
   A. Grateful
   B. Joyful
   C. Relieved
   D. Angry
   Ans: D

Chapter 1 (b): Dust of Snow (by Robert Frost)

6. Why does the poet refer to snow as dust?
   A. Snow particles were tiny like dust
   B. The snow was dusty
   C. It made him uneasy
   D. It fell off the hemlock tree

   Ans: A. Snow particles were tiny like dust

7. Where was the crow sitting?
   A. On a banyan tree
   B. On a hemlock tree
   C. On a pine tree
   D. On a gulmohar tree

   Ans: B. On a hemlock tree

8. The poet says "Of a day I had rued". What is the meaning of 'rued'?
   A. Ruined
   B. Held in regret
   C. Ruled
   D. Conquered

   Ans: B. Held in regret

9. What does 'dust of snow' represent?
   (a) Healing power of nature
   (b) Particles of snow
   (c) Cool weather
   (d) Harsh aspects of nature
   Ans: a) Healing power of nature

10. What are the two negative creatures that Frost used as carriers of positivity?
    (a) Snow, dust
    (b) Hemlock tree, snow
    (c) Snow, crow
    (d) Hemlock tree, crow
    Ans: d) Hemlock tree, crow

Chapter 1 (c): Fire and Ice (Robert Frost)

11. Fire is a metaphor for
    (a) Desire
    (b) Dislike
    (c) Distaste
    (d) Revulsion
    Ans: a) Desire

12. ‘Ice’ is a metaphor for
    (a) Hatred
    (b) Love
    (c) Esteem
    (d) Admiration
    Ans: a) Hatred

13. “Some say the world will end in fire”. Identify the poetic device.
    (a) Alliteration
    (b) Assonance
    (c) Personification
    (d) Anaphora
    Ans: a) Alliteration

14. Who is the poet of the poem “Fire and Ice”?
    (a) Leslie Norris
    (b) Robert Frost
    (c) Carolyn Wells
    (d) Robin Klein
    Ans: b) Robert Frost

15. What emotion is represented by ‘ice’ in the poem?
    (a) Joy and happiness
(b) Indifference and hatred
    (c) Excitement and thrill
    (d) Sadness and despair
    Ans: b) Indifference and hatred

Chapter 2 (a): Nelson Mandela Long Walk to Freedom(by Nelson Rolihlahla Mandela)

16) In the autobiography, *Long Walk to Freedom*, the word ‘apartheid’ refers to _____
    a) a social system that separates people according to race
    b) a religious system that separates people according to race
    c) a political system that separates people according to race.
    d) an economical system that separates people according to race
    Ans: a) a social system that separates people according to race

17) What was Nelson Mandela’s profession before entering politics?
    a) Engineer
    b) Doctor
    c) Teacher
    d) Lawyer
    Ans: d) Lawyer

18) How many years did Mandela spend in prison?
    a) Ten years
    b) Twenty years
    c) Thirty years
    d) Forty years
    Ans: c) Thirty years

19) ‘We have, at last, achieved our political emancipation." What does the word ‘emancipation’ mean?
    a) Freedom from hunger
    b) Freedom from restriction
    c) Freedom from death
    d) Freedom from pride
    Ans: b) Freedom from restriction

20) What lesson did Mandela learn about courage?
    a) Anyone can show courage
    b) Courage is not found in the absence of fear
    c) Courage cannot be shown when one is afraid
    d) Courage can be found under any circumstances
    Ans: b) Courage is not found in the absence of fear

Chapter 2 (b): A Tiger in the Zoo(Leslie Norris)

21. Which of the lines from the poem points out that the tiger is in the zoo?
    (a) Locked in a concrete cell
    (b) Snarling around houses
    (c) Shadow, long grass
    (d) Baring his white fangs
    Ans: (a) Locked in a concrete cell

22. What has been personified in the poem ‘A Tiger in the Zoo’?
    (a) Tiger
    (b) Forest
    (c) Zoo
    (d) All of the above
    Ans: (a) Tiger

23. “He should be snarling around houses” the word snarling means _____
    (a) buzzing sound in the jungle
    (b) sound to make the animals afraid
    (c) sound in the water bodies
    (d) sound made by animals
    Ans: (d) sound made by animals

24. Who is the poet of the poem “A Tiger in the Zoo”?
    (a) Robert Frost
    (b) Leslie Norris
    (c) Robin Klein
    (d) W.B. Yeats
    Ans: (b) Leslie Norris

25. The tiger is sliding through long _____
    (a) stalks
    (b) hay
    (c) trees
    (d) grass
    Ans: (d) grass

Chapter 3 (a): His First Flight(Liam O’Flaherty)

26. The lesson ‘His First Flight’ is about a _____
    (a) pilot
    (b) seagull
    (c) parrot
    (d) pigeon
    Ans: b) seagull

27. What did the young seagull’s parents threaten him with if he didn’t fly away?
    (a) To punish him
    (b) To abandon him
    (c) To starve him
    (d) To never talk to him
    Ans: c) To starve him

28. The sight of _____maddened the young seagull.
    (a) his siblings enjoying without him.
    (b) food
    (c) his brother’s flying
    (d) the sea infront of him
    Ans: b) food

29. What was the seagull afraid of?
    (a) Running
    (b) Flying
    (c) Swimming
    (d) Playing
    Ans: b) Flying

30. The young seagull made his first flight down the _____.
    (a) tree
    (b) waterfall
    (c) cliff
    (d) house
    Ans: c) cliff

Chapter 3 (b): The Black Aeroplane(by Frederick Forsyth)

31. What is an old Dakota?
    (a) A town from where the pilot took off
    (b) A town where the pilot landed
    (c) The name of the plane
    (d) The other aeroplane
    Ans: c) The name of the plane

32. They looked like black mountains, standing in front of me across the sky? What looked like black mountains?
    (a) Black mountains
    (b) Storm clouds
    (c) Tall buildings
    (d) Black plateau
    Ans: b) Storm clouds

33. What was the name of the aeroplane that the pilot was flying?
    (a) Airbus
    (b) Boeing
    (c) Dakota
    (d) Apache
    Ans: c) Dakota

34. The pilot’s decision to follow the black aeroplane was driven by _____.
    (a) orders from Paris Control
    (b) a gut feeling

(c) a logical analysis
(d) previous experience
Ans: b) a gut feeling

35. What was the pilot's reaction to his instruments failing?
(a) Panic
(b) Denial
(c) Acceptance and quick thinking
(d) Immediate landing
Ans: c) Acceptance and quick thinking

Chapter 3 (c): How to Tell Wild Animals(Carolyn Wells)

36. Which of the following animals possesses a special characteristic of changing its colour?
(a) Crocodile
(b) Chameleon
(c) Deer
(d) Lizard
Ans: b) Chameleon

37. Which animal has a spotted hide?
(a) Asian Lion
(b) Bengal Tiger
(c) Leopard
(d) Bear
Ans: c) Leopard

38. Which animal is the poet referring to when she says, "A noble wild beast greets you"?
(a) Asian Lion
(b) Bengal Tiger
(c) Leopard
(d) Bear
Ans: b) Bengal Tiger

39. How does a bear kill you?
(a) By hugging you hard
(b) With its roar
(c) By taking a leap on you
(d) None of the above
Ans: a) By hugging you hard

40. Who cries while catching their prey?
(a) Hyena
(b) Crocodile
(c) Both of them
(d) None of them
Ans: b) Crocodile

Chapter 3 (d): The Ball Poem(John Berryman)

41. Where does the ball go?
(a) The drain
(b) The well
(c) The house
(d) The water
Ans: d) The water

42. What does 'in the world of possessions' mean according to the poem 'The Ball Poem' ?
(a) Love
(b) Lust
(c) Materialistic things
(d) None of the above
Ans: c) Materialistic things

43. The antonym of the word 'intrude' is _____.
(a) interfere
(b) meddle
(c) withdraw
(d) intervene
Ans: c) withdraw

44. The world, as mentioned in 'The Ball Poem', is one of ____
(a) balls
(b) friends
(c) fun
(d) possessions
Ans: c) possessions

45. The word 'epistemology' means _____.
(a) knowledge
(b) love
(c) hope
(d) sadness
Ans: a) knowledge

Chapter 4 (a): From the Diary of Anne Frank(Anne Frank)

46. Anne Frank was a German-born _____girl.
    (a) French
    (b) Jewish
    (c) Russian
    (d) English
    Ans: b) Jewish

47. According to Anne Frank, _____has more patience than people.
    (a) paper
    (b) books
    (c) animals
    (d) flowers
    Ans: a) paper

48. What prompted Anne to keep a diary?
    (a) Anne felt lonely as she had no friends
    (b) Anne was away from her family
    (c) Anne was shy and kept away from society
    (d) Anne had no family
    Ans: a) Anne felt lonely as she had no friends

49. What was the disease that Anne contracted while at the concentration camp?
    (a) Typhus
    (b) Tuberculosis
    (c) Scarlet fever
    (d) Diphtheria
    Ans: b) Tuberculosis

50. Who was Mr. Keesing?
    (a) Anne's uncle
    (b) Anne's Mathematics teacher
    (c) Anne's father
    (d) None of the above
    Ans: b) Anne's Mathematics teacher

Chapter 4 (b): Amanda(Robin Klein)

51. What is the meaning of the word 'slouching'?
    (a) bend (b) sit in a lazy manner (c) lie down (d) bend backwards
    Ans: b) sit in a lazy manner

52. What does Amanda want to do as an orphan?
    (a) Dance freely in the streets (b) Play in dust with bare feet (c) Climb the hills (d) Look after cattle
    Ans: b) Play in dust with bare feet

53. Amanda wanted
    (a) domination (b) freedom (c) love (d) wealth
    Ans: b) freedom

54. Why should Amanda not eat chocolate?
    (a) Because it would cause heart disease (b) Because it would damage the liver (c) Because it would cause acne (d) Because it would cause cancer.
    Ans: c) Because it would cause acne.

55. If Amanda were an orphan, what would she do?
    (a) She would roam about in the street
    (b) She would roam about in the forest
    (c) She would swim in the sea
    (d) She would join a group of thieves
    Ans: a) She would roam about in the street

Chapter 5 (a): A Baker from Goa(Lucio Rodrigues)

56. The 'jhangjhang' sound made by the baker comes from _____.
    (a) his basket
    (b) the parapet
    (c) his bamboo staff
    (d) the mixer
    Ans: c) his bamboo staff

57. _____was called kabai.
    (a) Baker's dress
    (b) Baker's basket
    (c) Baker's bamboo

(d) Baker's song
Ans: a) Baker's dress

58. What did the children long for?
(a) Bol
(b) Bread-bangle
(c) Cake
(d) bread
Ans: b) Bread-bangle

59. Where were the monthly accounts of the baker recorded?
(a) In a copy
(b) On a wall
(c) On a board
(d) On wooden board
Ans: b) On a wall

60. What can still be seen in Goa, according to the chapter 'A Baker from Goa'?
(a) Traditional Portuguese dress
(b) Old Portuguese bakers
(c) Traditional work of bakers
(d) None of the above
Ans: c) Traditional work of bakers

Chapter 5 (b): Coorg(LokeshAbrol)

61. Coorg is the smallest district of _____.
(a) Kerala
(b) Karnataka
(c) Gujarat
(d) Rajasthan
Ans: b) Karnataka

62. What are the activities available in Coorg?
(a) Canoeing
(b) River rafting
(c) Mountain biking
(d) All of the above
Ans: d) All of the above

63. What does the word 'rappelling' mean?
(a) Travelling in a river in a raft
(b) Travelling in a river in a canoe
(c) Going down a cliff by sliding down a rope
(d) None of the above
Ans: c) Going down a cliff by sliding down a rope

64. Which river obtains its water from Coorg?
(a) Narmada
(b) Yamuna
(c) Kaveri
(d) Tapi
Ans: c) Kaveri

65. What is the main crop of Coorg?
(a) Maize
(b) Coffee
(c) Rice
(d) Millet
Ans: b) Coffee

Chapter 5 (c): Tea from Assam(Arup Kumar Datta)

66. Pranjol and Rajvir were students in a school in _____.
(a) Dhekiabari
(b) Marian
(c) Delhi
(d) None of the above
Ans: c) Delhi

67. Tea was first drunk in China in _____.
(a) 2000 Bc
(b) 2300 Bc
(c) 3100 Bc
(d) 2700 Bc
Ans: d) 2700 Bc

68. What does the lesson 'Tea from Assam' give us?
(a) A vivid picture of how tea is grown
(b) A complete analysis of the plantation
(c) A graphic description of the tea bushes as far as the eyes can go in Assam
(d) All of the above
Ans: a) A vivid picture of how tea is grown

69. The sprouting season lasts from _____ as per the lesson 'Tea from Assam'.
(a) October to December

(b) May to July
(c) January to March
(d) None of the above
Ans: b) May to July

70. Which country was tea first consumed in?
(a) India
(b) China
(c) America
(d) Japan
Ans: b) China

Chapter 5 (d): The Trees(Adrienne Rich)

71. What does the poet compare the tree branches to?
(a) An old patient (b) a newly discharged patient (c) a doctor (d) none of the above
Ans: b) a newly discharged patient

72. Who has been personified in the line 'no sun bury its feet in shadow'
(a) sun (b) feet
(b) (c) shadow (d) none of the above
Ans: a) sun

73. What had been empty?
(a) Tree (b) Forest
(c) House (d) World
Ans: b) Forest

74. By morning, the forest will be full of_____.
(a) sun (b) trees
(c) birds (d) leaves
Ans – trees

75. Where are the decorative plants kept?
(a) In the open areas (b) In play areas
(c) In houses (d) On the roof.
Ans: c) In houses.

Chapter 6 (a): Mijbil the Otter(Gavin Maxwell)

76. The otter resembles a medieval
a. dragon b. dinosaur
c. hippo d. walrus
Ans: a. dragon

77. What kinds of habitats are Otters generally found in?
a. rivers b. desert
c. mountains d. Marshes
Ans: d. Marshes

78. The otter was brought in by the ____
a. narrator's friend b. Consulate General
c. Arab men d. Air hostess
Ans: c. Arab men

79. Opposite to the narrator's flat is _____
a. an elementary school
b. a primary school
c. a college
d. a university
Ans: b. a primary school

80. LutrogalePerspecillate Maxwell was a
a. writer b. scientist
c. zoologist d. wildlife photographer
Ans: c. zoologist

Chapter 6 (b): Fog(Carl Sandburg)

81. What has been personified in the poem, 'Fog'?
(a) fog (b) city
(c) cat (d) harbour
Ans: a) fog

82. How does the fog come?
(a) slowly and silently (b) loud and fast
(c) quickly (d) gently
Ans: a) slowly and silently

83. What does the fog do in the end?
(a) it dances (b) it jumps
(c) it moves on (d) it spreads
Ans: c) it moves on

84. Which of the following words is not a synonym of "Fog"?
(a) Mist (b) Haze
(c) Brume (d) Stupor
Ans: d) Stupor

85. The poem "Fog" is a ____.
(a) Sonnet (b) Lyric
(c) Ballad (d) Free verse
Ans: d) Free verse

Chapter 7 (a): Madam Rides the Bus(Vallikkannan)

86. What was Valli's desire?
a) to have friends (b) to top the class
c) to travel by bus (d) to own a bus
Ans: c) to travel by bus

87. Valli gave the conductor some..... as fare.
a) notes (b) coins
(c) notes (d) dollars
Ans: b) coins

88. "May we start now Madam?" Who said this?
a) The conductor (b) The driver
(c) The coolie (d) The passengers
Ans: a) The conductor

89. The seats of the bus were ...
a) hard (b) old
(c) uncomfortable (d) soft
Ans: d) soft

90. Suddenly Valli saw a..... lying dead by the roadside.
a) cat (b) dog
(c) cow (d) goat
Ans: c) cow

Chapter 7 (b): The Tale of Custard the Dragon(Ogden Nash)

91. Belinda was a _____girl
a. shy b. sweet
c. naughty d. brave
Ans: d. brave

92. Belinda's dog was as brave as a _____in rage
a. lion b. wolf
c. tiger d. leopard
Ans: c. tiger

93. The pirate carried _____in his hands
a. guns b. pistols
c. hatchets d. rifles
Ans: b. pistols

94. Belinda's dragon_____ the pirate.
a. chased away b. hurt
c. ate d. knocked out
Ans: c. ate

95. Belinda had a little ____wagon
a. black b. brown
c. white d. red
Ans: d. red

Chapter 8 (a): The Sermon at Benares(Source: Betty Renshaw)

96. Which of the following is NOT one of the sufferings that Siddhartha saw while he was out hunting?
(a) A sick man
(b) A monk begging for alms
(c) An injured man
(d) A funeral procession
Ans: c) An injured man

97. Where did Siddhartha vow to stay until his enlightenment came?
(a) in his palace
(b) at Benares
(c) under the peepal tree
(d) under the banyan tree
Ans: c) under the peepal tree

98. What did the Buddha name the peepal tree?
(a) Bodhi tree
(b) Buddha tree
(c) Gautama tree
(d) Siddhartha tree
Ans: a) Bodhi tree

99. What does the word, “Buddha” mean?
(a) The wise
(b) The clever
(c) The intelligent
(d) The enlightened
Ans: (d) The enlightened

100. According to the Buddha, both young and adults, fools and wise fall into the power of
(a) life
(b) death
(c) food
(d) enlightenment
Ans: b) death

Chapter 8 (b): For Anne Gregory (W. B. Yeats)
101. Anne wants to dye her hair so that young men may not love her for her ____.
(a) brown hair
(b) curly hair
(c) yellow hair
(d) black hair
Ans: c) yellow hair

102. What does Anne expect?
(a) to be loved for herself
(b) to be loved for her hair
(c) to be loved for her appearance
(d) to be loved for her riches
Ans: a) to be loved for herself

103. Who was it that the poet, W.B. Yeats, had heard?
(a) a priest
(b) an old religious man
(c) a King
(d) a young man
Ans: b) an old religious man

104. What did the 'text' say in the poem 'For Anne Gregory'?
(a) God and friends love you for your attractive appearance
(b) God alone loves you for yourself alone
(c) God and friends love you for yourself alone
(d) God loves you for your physical appearance
Ans: b) God alone loves you for yourself alone

105. Who can love us for who we are and not for how we look?
(a) the poet
(b) a young man
(c) God
(d) the religious man
Ans: c) God

Chapter 9: The Proposal(Anton Chekov)

106. What request did Chubukov think Lomov would make?
(a) To ask for his daughter’s hand in marriage
(b) To borrow money
(c) To borrow land
(d) All of the above
Ans: b) To borrow money

107. Why was Lamov wearing his evening dress?
(a) To pay New Year Eve’s visit
(b) To ask for Natalya’s hand in marriage
(c) To borrow money
(d) To borrow land
Ans: b) To ask for Natalya’s hand in marriage

108. “And it’s impossible for me not to marry”, why does Lomov say so?
(a) Because he is 35 already
(b) Because he suffers from palpitations
(c) He has trouble sleeping
(d) All of the above
Ans: d) All of the above

109. Why was Natalya arguing about the land?
(a) She could not stand unfairness
(b) It was worth a lot
(c) She was jealous of Lomov

(d) The land extended till Burnt March
Ans: a) She could not stand unfairness

110. With reference to the play "The Proposal" what was the real issue?
(a) The marriage proposal
(b) The land deal
(c) The purchase of dogs
(d) Future-in-laws
Ans: a) The marriage proposal

Supplementary Reader:

A Triumph of Surgery

111. Who is the narrator of the story "A Triumph of Surgery"?

(a) Tricki
(b) Mrs. Pumphrey
(c) A veterinary surgeon
(d) None of the above

Ans: (c) A veterinary surgeon

112. What problem does Mrs. Pumphrey think Tricki has?

(a) Diarrhoea
(b) Malnutrition
(c) Allergies
(d) Heart Worms

Ans: (b) Malnutrition

113. Who is Hodgkin?

(a) The dog owner
(b) The gardener
(c) The veterinary surgeon
(d) The dog

Ans: (b) The gardener

114. What was the dog unable to play?

(a) Ring-throw
(b) Ball-throw
(c) Hide-and-seek
(d) Tug-of-war

Ans: (a) Ring-throw

115. What was Mr. Herriot's final suggestion to Mrs. Pumphrey for Tricki's recovery?

(a) To hospitalise him
(b) To take him for a walk
(c) To let him have plenty of sugar
(d) To let him play with other dogs

Ans: (a) To hospitalise him

The Thief's Story

116. Anil made money 'by fits and starts'. What is meant by the phrase 'by fits and starts'.

(a) by working hard
(b) irregularly
(c) by acting
(d) by doing business

Ans: (b) irregularly

117. What did Anil do to the food cooked by Hari Singh the first day?

(a) Enjoyed eating it
(b) Put it in the cupboard
(c) Gave it to a stray dog
(d) Asked the boy to eat it all

Ans: (c) Gave it to a stray dog

118. How did the thief attempt at being friends with Anil?

(a) By flattering him
(b) By teasing him
(c) By introducing himself
(d) By being friendly

Ans: (a) By flattering him

119. How, according to the thief, would Anil feel upon finding out that he had been robbed?

(a) Angry
(b) Scared
(c) Repentant
(d) Sad

Ans: (d) Sad

120. ‘When the train had gone, I found myself standing alone on the deserted platform’. The antonym of the word ‘deserted’ is

(a) crowded
(b) empty
(c) solitary
(d) strange

Ans: (a) crowded

The Midnight Visitor

121. What story did Ausable cook up to Max?

(a) About the door
(b) About a balcony
(c) About his fatness
(d) About Fowler

Ans: (b) About a balcony

122. Why did Max enter Ausable’s room?

(a) To meet Ausable
(b) To snatch an important report
(c) To give information to Ausable
(d) To spend the night

Ans: (b) To snatch an important report

123. Who knocked at Ausable's door?

(a) A policeman
(b) Max
(c) The waiter
(d) Fowler

Ans: (c) The waiter

124. Who was Max?

(a) The manager of the hotel
(b) Another secret agent
(c) Ausable's friend
(d) Fowler’s friend

Ans: (b) Another secret agent

125. Who came to meet Ausable?

(a) Ausable's father
(b) Policeman
(c) Fowler
(d) Max

Ans: (c) Fowler

A Question of Trust

126. Horace was allergic to

(a) pollen
(b) milk
(c) dust
(d) smell of flowers

Ans: (d) smell of flowers

127. Why did Horace take off his gloves?

(a) To break the safe
(b) To leave that place
(c) To light the lighter
(d) To give the lady in red the jewels

Ans: (c) To light the lighter

128. Horace Danby was fond of

(a) watching movies
(b) listening to music
(c) going to public parties
(d) reading rare and expensive books

Ans: (d) reading rare and expensive books

129. Horace Danby was

(a) unmarried
(b) going to be married
(c) having a son
(d) having two sons and a daughter

Ans: (a) unmarried

130. How many times did Horace Danby make a theft in a year?

(a) Only once
(b) Twice
(c) Thrice
(d) Every month

Ans: (a) Only once

Footprints without Feet

131. Identify the option that aptly describes Griffin

(a) Greedy, yet kind
(b) Proud and honourable
(c) Considerate and selfless
(d) Brilliant, but lawless

Ans: (d) Brilliant, but lawless

132. Griffin wore bandages to outline his

(a) face
(b) nose
(c) mouth
(d) hair

Ans: (a) face

133. Griffin discovered a medicine that could make his body

(a) large
(b) small
(c) invisible
(d) tiny

Ans: (c) invisible

134. Why was it a bad time for Griffin to wander about in London?

(a) It was mid-winter
(b) He did not have clothes
(c) He wanted to be alone
(d) It was very hot

Ans: (a) It was mid-winter

135. Why did the clergyman and his wife creep downstairs?

(a) To drink water
(b) As they were awakened by Mrs. Hall
(c) As they received a call from Mrs. Hall
(d) As they heard some noise coming from their room

Ans: (d) As they heard some noise coming from their room

The Making of a Scientist

136. What was Richard Ebright's initial interest that led him to become a scientist?

(a) Collecting insects
(b) Reading science fiction
(c) Conducting chemistry experiments
(d) Watching birds

Ans: (a) Collecting insects

137. Richard Ebright was described as an astronomer because of his interest in

(a) rocks
(b) fossils
(c) coins
(d) stars

Ans: (d) stars

138. Who was Ebright's only companion until he started school?

(a) His mother
(b) His father
(c) His brother
(d) His room-mate, James R. Wong

Ans: (a) His mother

139. After losing in the county science fair, Ebrightrealised that winners

(a) had mainly concentrated on a neat display
(b) had strictly followed the proven steps
(c) had tried to do real experiments
(d) had been guided by great teachers

Ans: (c) had tried to do real experiments

140. What opened the world of science to Richard Ebright?

(a) Proceedings of the National Academy of Science
(b) The Travels of Monarch X
(c) Walter Reed Army Institute of Research
(d) Harvard Medical School

Ans: (b) The Travels of Monarch X

145. At the end of 'The Travels of Monarch X', readers were invited to

(a) take part in the county science fair
(b) subscribe for the upcoming issues of the book
(c) help study butterfly migrations
(d) write a review about the book

Ans: (c) help study butterfly migrations

The Necklace

146. Why did MmeLoisel need the jewels?

(a) For a photo shoot
(b) To get replica made
(c) For wearing them at home
(d) To go to a party of rich people

Ans: (d) To go to a party of rich people

147. What fresh problem disturbed MmeLoisel?

(a) Not finding matching shoes
(b) Not to have a jewel
(c) Not finding matching bangles
(d) Her friend was out of town

Ans: (b) Not to have a jewel

148. What solution did MmeLoisel's husband come up with to solve her problem?

(a) To find her matching shoes
(b) Telling her to wear natural flowers in the name of jewels
(c) Telling her to wear artificial flowers
(d) To buy a superb necklace of diamonds

Ans: (b) Telling her to wear natural flowers in the name of jewels

149. Why did MmeLoisel utter a cry?

(a) Seeing other ladies wrapping in fur
(b) Due to poverty
(c) The jewels were not to be seen
(d) None of the above

Ans: (c) The jewels were not to be seen

150. What did MmeLoisel's friend say when she was told the entire story?

(a) She was angry
(b) She hated her for that
(c) She cursed her
(d) She said that her necklace was false

Ans: (d) She said that her necklace was false

Bholi

151. Why was Bholi considered a 'simpleton'?

(a) Because she was very intelligent
(b) Because she stammered and had pockmarks
(c) Because she was very beautiful
(d) Because she was very wealthy

Ans: (b) Because she stammered and had pockmarks

152. What was Bholi's reaction on her first day of school?

(a) She was excited and happy
(b) She was scared and she cried
(c) She was indifferent
(d) She was angry

Ans: (b) She was scared and she cried

153. What change did education bring in Bholi's life?

(a) It made her more submissive
(b) It made her more confident and self-aware
(c) It made her rebellious
(d) It made her arrogant

Ans: (b) It made her more confident and self-aware

154. How did Bholi respond to Bishamber's demand for dowry?

(a) She agreed silently
(b) She protested and refused to marry him
(c) She asked her father to give the dowry
(d) She ran away from the ceremony

Ans: (b) She protested and refused to marry him

155. What was Bholi's decision about her future at the end of the story?

(a) She decided to marry someone else
(b) She decided to devote her life to teaching at the same school
(c) She decided to leave her village
(d) She decided to live with her parents forever

Ans: (b) She decided to devote her life to teaching at the same school

The Book That Saved the Earth

156. How did Think-Tank refer to Earth?

(a) Earth ball
(b) Primitive ball of mud
(c) A planet
(d) A star

Ans: (b) Primitive ball of mud

157. Where on Earth did Think-Tank's team arrive for invasion?

(a) Model Library
(b) A Square Place
(c) Centerville Public Library
(d) A Clock Tower

Ans: (c) Centerville Public Library

158. How did Omega describe the codes that appeared in the books?

(a) Little lines
(b) Squiggles and dots
(c) Thousands of them alongside the pictures
(d) All of the above

Ans: (d) All of the above

159. What did Oop and Think-Tank infer from the picture of Humpty Dumpty?

(a) Think-Tank's balloon brain
(b) Earthians are after Think-Tank
(c) Earthians have seen Think Tank
(d) All of the above

Ans: (d) All of the above

160. What is the theme of the story 'The Book that Saved the Earth'?

(a) Half-fed knowledge is always dangerous
(b) Arrogance leads to one's downfall
(c) Intelligent people can rule the planet
(d) Earthlings are more developed than Martians

Ans: (a) Half-fed knowledge is always dangerous

Grammar

In the Board Examination, Q. No. 15-20 (6 MCQs) will be on Grammar (Determiners, Tenses, Modals, Subject-verb concord and Reported Speech)

Determiners

161. Which of the following sentences uses a determiner correctly?

A. She has *a* apple and *an* orange.
B. I need *some* new books.
C. He is *the* best athlete of all.
D. All of the above.

Ans. D

162. Choose the correct determiner for the blank: "I don't have ___ money to buy the ticket."

A. many
B. much
C. few
D. several

Ans. B

163. Select the correct determiner for the blank: "___ students in the class are excited about the trip."

A. Few
B. A few
C. Several

D. Much

Ans. A

164. Which sentence contains a possessive determiner?

A. The cat is on the mat.
B. My dog is very friendly.
C. There are many apples on the table.
D. None of the above.

Ans. B

165. Choose the correct determiner: "She didn't eat ___ of the cake."

A) a lot B) much

C) many D) some

Ans. B

166. Identify the determiner in this sentence: "Those shoes are really expensive."

A) Those B) Shoes

C) Are D) Really

Ans. A

167. Fill in the blank with the correct determiner: "___ book on the shelf is mine."

A) Some B) This

C) Any D) These

Ans. B

168. Which determiner fits the blank in the sentence: "I have ___ idea what you're talking about."

A) any B) no

C) some D) few

Ans. B

169. Select the appropriate determiner: "I would like ___ coffee."

A) a B) an C) some D) many

Ans. C

170. Choose the correct determiner for the blank: "___ teacher is always on time."

A) A B)An C)The D)Some

Ans. C

171. Which sentence uses the determiner "each" correctly?

A. Each of the students have finished their homework.
B. Each student have finished their homework.
C. Each student has finished their homework.
D. Each of students has finished their homework.

Ans. C

172. Fill in the blank with the correct determiner: "I have visited ___ museums this year."

A) a few B) few

C) a little D) little

Ans. A

Tenses

173. Which sentence is in the past continuous tense?

A. I am reading a book.
B. I was reading a book.
C. I will read a book.
D. I read a book.

Ans. B

174. Choose the correct tense for the sentence: "She ___ to the store every Saturday."

A) go B) going

C) went D) goes

Ans. D

175. Identify the correct sentence in the present perfect tense.

A. They have been finishing their homework.
B. They finished their homework.
C. They have finished their homework.
D. They are finishing their homework.

Ans. C

176. Which sentence is in the future perfect tense?

A. By next year, she will have graduated.
B. She will graduate next year.
C. She is graduating next year.
D. She graduated last year.

Ans. A

177. Select the correct past simple tense form: "He ___ to the cinema last night."

A) goes B) going

C) went D) gone

Ans. C

178. Choose the correct form of the verb: "They ___ a movie when the power went out."

A) watch B) watched

C) were watching D) have watched

Ans. C

179. Which sentence is in the present continuous tense?

A) She writes a letter. B) She wrote a letter. C) She is writing a letter. D) She has written a letter.

Ans. C

180. Fill in the blank with the correct tense: "I ___ my homework by the time you arrive."

A) will finish B) will have finished

C) finished D) am finishing

Ans. B

181. Identify the sentence in the past perfect tense.

A. I had finished the book before the meeting.
B. I finished the book before the meeting.
C. I was finishing the book before the meeting.
D. I finish the book before the meeting.

Ans. A

182. Choose the appropriate tense for the sentence: "She ___ a book when I called her."

A) reads B) read

C) was reading D) has read

Ans. C

183. Which sentence is in the future continuous tense?

A.I will be studying at 8 PM.
B.I study at 8 PM.
C.I will study at 8 PM.
D.I was studying at 8 PM.

Ans. A

184. Select the correct form for the sentence: "He ___ (never/see) a movie like that before."

A) has never seen B) never saw

C) had never seen D) never sees

Ans. A

Modals

185. Which modal verb is used to express a strong obligation?

A) Can B) Must

C) Might D) Should

Ans. B

186. Choose the correct modal verb for the sentence: "You ___ finish your homework before going out."

A) might B) should

C) could D) would

Ans.B

187. Select the correct modal verb for expressing possibility: "It ___ rain later, so bring an umbrella."

A) can B) will

C) must D) might

Ans.D

188. Which sentence uses the modal verb for giving advice?

A. She must be at the office by now.
B. You should see a doctor.
C. He can play the guitar.
D. They might come to the party.

Ans. B

189. Identify the correct use of the modal verb "could":

A. She could swim when she was five.
B. She could to swim when she was five.
C. She could swims when she was five.
D. She could swim when she is five.

Ans. A

190. Which modal verb is used to express a future prediction?

A) Should B) Would

C) Might D) Will

Ans. D

191. Choose the appropriate modal verb: "He ___ solve the problem easily if he tries hard."

A) can B) should

C) might D) must

Ans. A

192. Select the sentence that uses "would" for a hypothetical situation:

A.If I had a car, I would drive to work.
B.I would like a cup of tea.
C.I would go to the market.
D.She would be studying now.

Ans. B

193. Which modal verb indicates a polite request?

A) Can B) Could

C) Must D) Should

Ans. B

194. Fill in the blank with the correct modal: "They ___ know the answer to the question."

A) should B) might

C) must D) could

Ans. C

195. Which sentence uses the modal verb "may" correctly?

A. You may leave once the meeting is over.
B. You may to leave once the meeting is over.
C. You may leaves once the meeting is over.
D. You may leave once the meetings are over.

Ans. A

196. Choose the correct modal verb for the sentence: "She ___ be at home right now; I'll check."

A) can B) should

C) must D) might

Ans. D

Subject-Verb concord

197. Choose the correct verb for the sentence: "Neither the teacher nor the students ___ ready for the test."

A) is B) are

C) was D) were

Ans. B

198. Select the correct form of the verb: "The team ___ playing well this season."

A) is B) are

C) was D) were

Ans. A

199. Which sentence has correct subject-verb agreement?

A. She don't like the new policy.
B. They doesn't know the answer.
C. He doesn't like the new policy.
D. I don't likes the new policy.

Ans. C

200. Fill in the blank with the correct verb: "The list of items ___ on the table."

A) are B) is

C) were D) have

Ans. B

201. Choose the correct verb: "Each of the dogs ___ barking loudly."

A) is B) are

C) were D) has

Ans. A

202. Select the correct form: "The couple ___ going to Paris for their honeymoon."

A) is B) are

C) was D) were

Ans. B

203. Identify the sentence with correct subject-verb concord:

A. The books on the shelf is dusty.
B. The news are exciting.
C. The criteria for selection are strict.
D. The music have been loud.

Ans. C

204. Which verb correctly completes the sentence? "Neither the manager nor the employees ___ aware of the new policy."

A) is B) are

C) was D) were

Ans. B

205. Choose the correct verb: "There ___ many reasons for the delay."

A) is B) are

C) was D) were

Ans. B

206. Fill in the blank with the correct form of the verb: "The class ___ interested in the new project."

A) is B) are

C) was D) were

Ans. A

207. Select the correct form: "Neither the book nor the magazines ___ on the table."

A) is B) are

C) was D) were

Ans. A

208. Which sentence uses correct subject-verb agreement?

A. She and her friends is coming to the party.
B. He and I were playing soccer.
C. The dog and the cat was sleeping.
D. The teacher and the student were in the room.

Ans. B

Reported Speech

209. Choose the correct reported speech form: He said, "I am going to the market."

A. He said that he is going to the market.
B. He said that he was going to the market.
C. He said that I am going to the market.
D. He said that I was going to the market.

Ans. B

210. Which sentence correctly reports the following speech? "I will finish the project tomorrow," she said.

A. She said she will finish the project the next day.
B. She said she would finish the project tomorrow.
C. She said she would finish the project the next day.
D. She said she will finish the project tomorrow.

Ans. C

211. Select the correct reported speech form: "Do you like ice cream?" he asked.

A. He asked if I liked ice cream.
B. He asked if I like ice cream.
C. He asked do I like ice cream.
D. He asked if did I like ice cream.

Ans. A

212. How should the following be reported? "I have been studying all day," she said.

A. She said that she has been studying all day.
B. She said that she had been studying all day.
C. She said that she is studying all day.
D. She said that she was studying all day.

Ans. B

213. Convert this sentence into reported speech: "Please close the door," he said.

A. He asked me to close the door.
B. He asked me closes the door.
C. He asked me close the door.
D. He asked me to closed the door.

Ans. A

214. Which is the correct reported speech for: "I don't know the answer," she said.

A. She said she didn't know the answer.
B. She said she don't know the answer.
C. She said she doesn't know the answer.
D. She said she hadn't known the answer.

Ans. A

215. Choose the correct reported speech form for: "We are leaving now," they said.

A. They said they are leaving now.
B. They said they were leaving then.
C. They said they were leaving now.
D. They said they are leaving then.

Ans. C

216. Convert to reported speech: "Where did you go?" she asked.

A. She asked where did I go.
B. She asked where I go.
C. She asked where I went.
D. She asked where I had gone.

Ans. C

217. Which sentence is correct in reported speech? "I will call you tomorrow," he said.

A. He said he would call me tomorrow.
B. He said he will call me the next day.
C. He said he would call you the next day.
D. He said he would called me tomorrow.

Ans. A

218. Convert this into reported speech: "I am tired," he said.
   A. He said that he was tired.
   B. He said that he is tired.
   C. He said that I was tired.
   D. He said that I am tired.

Ans. A

219. Select the correct reported speech for: "Don't touch that button!" she said.
   A. She told me not to touch that button.
   B. She told me don't touch that button.
   C. She told me not touch that button.
   D. She told me not to touching that button.

Ans. A

220. How should you report: "She has finished her homework," he said.
   A. He said that she has finished her homework.
   B. He said that she had finished her homework.
   C. He said that she finishes her homework.
   D. He said that she was finishing her homework.

Ans. B

Reading Comprehension

In the Board Examination Q.No. 21-30 (10 MCQs) will be based on the passage given. Since the passage will be an unseen passage, one such example is given below.

Passage

Habits are automatic responses to specific situations, learned through repetition and experience. They can be both beneficial and detrimental to our lives. Good habits, such as regular exercise or healthy eating, can improve our physical and mental well-being. On the other hand, bad habits, like smoking or procrastination, can harm our health and relationships. To change a habit, we must first become aware of it, then identify the trigger that sets it off, and finally replace it with a new, healthier habit. By understanding and controlling our habits, we can transform our lives and become more productive, confident, and successful individuals.

1. What are habits, according to the passage?
   A. Conscious decisions
   B. Automatic responses to specific situations
   C. Innate behaviours
   D. Learned skills

Ans. B

2. What can good habits improve?
   A. Only physical health
   B. Only mental well-being
   C. Both physical and mental well-being
   D. Neither physical nor mental well-being

Ans. C

3. What is the first step in changing a habit?
   A. Identify the trigger
   B. Become aware of the habit
   C. Replace the habit with a new one
   D. Ignore the habit

Ans. B

4. What is the trigger in the context of habits?
   A. The habit itself
   B. The situation that sets off the habit
   C. The consequence of the habit
   D. The replacement habit

Ans. B

5. What is the goal of replacing a bad habit with a new one?
   A. To eliminate the trigger
   B. To maintain the status quo
   C. To improve our lives

D. To please others

Ans. C

6. What can we become by controlling our habits?
   A. Less productive
   B. Less confident
   C. More productive, confident, and successful
   D. Unchanged

Ans. C

7. What is the author's attitude towards habits?
   A. Neutral
   B. Positive
   C. Negative
   D. Critical

Ans. D

8. What is the author's message about changing habits?
   A. It's impossible
   B. It's easy
   C. It requires awareness and effort
   D. It's unnecessary

Ans. C

9. What is the relationship between habits and our lives?
   A. Habits have no impact on our lives
   B. Habits can only harm our lives
   C. Habits can both benefit and harm our lives
   D. Habits can only benefit our lives

Ans. C

10. What is the ultimate result of understanding and controlling our habits?
    A. We become less successful
    B. We become more stressed
    C. We transform our lives
    D. We remain the same

Ans. C

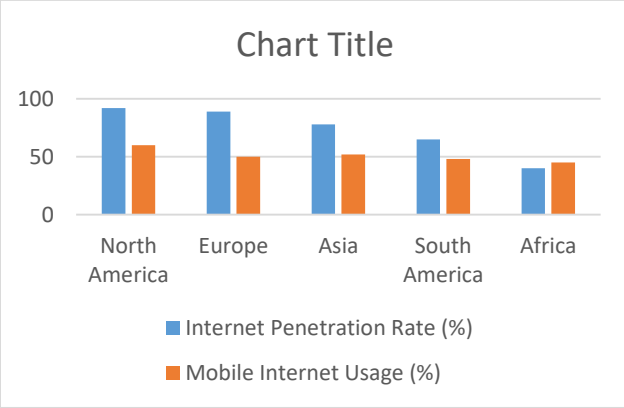
Section – B

This Section will contain one Question on Reading Comprehension through Case Based Factual Passage (with visual input –statistical data, chart, etc). At the end of the passage there will be 10 questions. Each question carries one mark. Read the passage and the statistical data carefully before answering. Below given three such questions for familiarity and practice ***only****.*

Passage-1.

The 2023 Global Internet Usage Report provides a comprehensive analysis of internet usage patterns worldwide. According to the accompanying chart, internet penetration rates and daily online usage vary significantly across regions. The chart below illustrates these differences:

Chart: Internet Usage Statistics (2023)



Region	Internet Penetration Rate (%)	Average Daily Online Time (Hours)	Mobile Internet Usage (%)
North America	92	4.2	60
Europe	89	3.8	50
Asia	78	4.5	52
South America	65	3.0	48
Africa	40	2.5	45

1. What is the internet penetration rate in North America?

Ans. 92%.

2. Which region has the highest average daily online time?

Ans. Asia.

3. What is the average daily online time for users in Africa?

Ans.2.5 hours.

4. What percentage of users in Europe access the internet through mobile devices?

Ans. 50%.

5. What is the mobile internet usage percentage in South America?

Ans. 48%.

6. Which region has the lowest internet penetration rate according to the chart?

Ans. Africa.

7. How many hours daily do users in South America spend online on average?

Ans. 3 hours.

8. What percentage of users in Asia use mobile internet?

Ans. 52%.

9. What is the average daily online time for users in North America?

Ans. 4.2 hours.

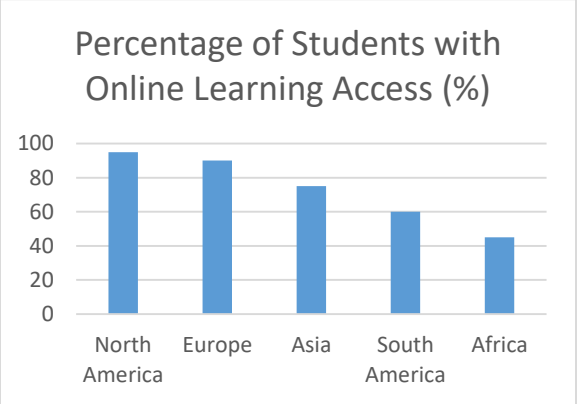
10. Which region has the second highest internet penetration rate?

Ans. Europe.

Passage-2:

The 2024 Global Education Access Report highlights disparities in educational access and digital learning tools across different regions. The accompanying chart provides a snapshot of the percentage of students with access to online learning platforms and the average number of hours spent on digital learning per week in various regions:

Chart: Educational Access and Digital Learning (2024)



Region	Percentage of Students with Online Learning Access (%)	Average Weekly Digital Learning Time (Hours)
North America	95	12
Europe	90	10
Asia	75	8
South America	60	6
Africa	45	4

1. What percentage of students in North America have access to online learning platforms?

Ans. 95%.

2. Which region has the highest average weekly digital learning time?

Ans. North America.

3. How many hours per week do students in South America spend on digital learning on average?

Ans. 6 hours.

4. What is the percentage of students with online learning access in Africa?

Ans. 45%.

5. What is the average weekly digital learning time for students in Europe?

Ans. 10 hours.

6. Which region has the lowest average weekly digital learning time?

Ans. Africa.

7. What percentage of students in Asia have access to online learning platforms?

Ans. 75%.

8. How many hours do students in Europe spend on digital learning weekly?

Ans. 10 hours.

9. What percentage of students in South America have access to online learning?

Ans. 60%.

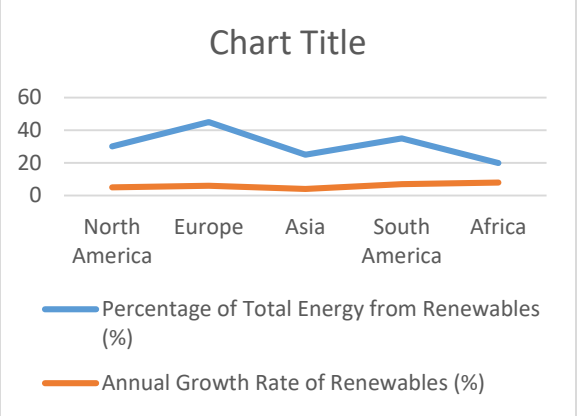
10. Which region has the second highest average weekly digital learning time?

Ans. Europe.

Passage-3:

The 2024 Global Renewable Energy Adoption Report provides insights into the adoption rates of renewable energy sources across different regions. The chart below displays the percentage of total energy consumption from renewable sources and the annual growth rate of renewable energy adoption in five key regions:

Chart: Renewable Energy Adoption (2024)



Region	Percentage of Total Energy from Renewables (%)	Annual Growth Rate of Renewables (%)
North America	30	5
Europe	45	6
Asia	25	4
South America	35	7
Africa	20	8

1. What percentage of total energy consumption in Europe comes from renewable sources?

Ans. 45%.

2. Which region has the highest annual growth rate of renewable energy adoption?

Ans. Africa.

3. What is the annual growth rate of renewable energy adoption in South America?

Ans. 7%.

4. What percentage of total energy consumption in North America is from renewable sources?

Ans. 30%.

5. Which region has the lowest percentage of total energy from renewable sources?

Ans. Africa.

6. How much does renewable energy consumption grow annually in Asia?

Ans. 4%.

7. What is the percentage of renewable energy in South America?

Ans. 35%.

8. Which region shows a 6% annual growth rate in renewable energy adoption?

Ans. Europe.

9. What is the annual growth rate for renewable energy in North America?

Ans. 5%.

10. Which region has a renewable energy adoption percentage of 25%?

Ans. Asia.

Section-C

[Letter Writing]

1. Write a letter in about 100 words to the Chairman of your local Electricity Board stating the problem of frequent breakdown of electricity in your locality.

Shillong – 793001

15th February 2025

To
The Chairman
Meghalaya Energy Corporation Limited
Shillong – 793001

Subject: Problem of frequent breakdown of electricity in our locality.

Respected Sir,

I want to highlight a serious problem in our area: frequent electricity breakdowns. These outages, which occur almost every week and sometimes last for hours or even days, cause significant disruptions to our daily lives. They affect household chores, threaten the safety of homes and businesses, and are especially challenging for students who need to study at night. The outages also lead to food and medicine spoilage, resulting in financial losses for many families.

I urge the authorities to address this issue urgently and ask the electricity department to upgrade the infrastructure to ensure a reliable and consistent power supply.

Yours sincerely

Mr./Ms. XYZ

2. You are Endrick / Erica, a student of M. G. School, Shillong. The toilets of your School are very dirty. Write a letter in about 100 words to your Principal drawing his attention and pointing out the foul smell emitting out of the toilets.

Shillong – 793001

15th February 2025

To,

The Principal
M.G. School
Shillong - 793001

Subject: Problem regarding School Toilets

Sir,

I am writing to bring attention to a serious problem with our school toilets. The toilets are poorly maintained, lack privacy, and smell bad. Students have no choice but to use them, which causes discomfort, stress, and possible health issues. I kindly request that you take immediate action to improve the condition of the toilets, ensuring they are clean, safe, and provide privacy for all students.

Thanking you in anticipation

Yours obediently

Endrick / Erica
Class X

3. You are Joy / Joyce and you are very concerned about the water leakage from broken pipes in your locality. Write a letter in about 100 words to the Municipal Board stating the problems and what might happen if further action is not taken.

Shillong – 793001

15th February 2025

To

The CEO
Shillong Municipal Board
Shillong – 793001

Subject: Persistent water leakage from broken pipes in our locality.

Dear Sir/Madam,

I am very concerned about the ongoing water leakage from broken pipes in our area. Despite many complaints, the problem has not been fixed and is getting worse. The leaks are wasting water, causing slippery roads, and creating unhygienic conditions that lead to mosquito breeding and disease spread.

If this issue is not addressed quickly, it could lead to serious problems like building damage, waterborne diseases, and disruption of daily life. I urge you to repair or replace the damaged pipes, inspect the water system thoroughly, and take steps to prevent future leaks. I hope for a swift resolution to this urgent issue.

Yours sincerely

Joy / Joyce

4. You are Andruf / Medari and you are deeply concerned about the menace of drug addiction among the youths of today's generation. Write a letter in about 100 words to the editor of "The Shillong Times" on the issue to create awareness among people.

Shillong – 793001 15th February 2025

To The Editor
The Shillong Times
Shillong – 793004

Sub: Growing menace of drug addiction among the youth of our society

Sir,

I am deeply concerned about the growing menace of drug addiction among the youth in our society. It is a pressing issue that demands immediate attention and action from all stakeholders.

Drug addiction is ravaging our community, destroying young lives, and shattering families. The ease with which drugs are available and the lack of awareness about its dangers have made our youth vulnerable to this scourge. The consequences are alarming, ranging from health problems to criminal behaviour, and even death. I urge the authorities to take stringent measures to increase awareness about the dangers of drug addiction, implement effective programs for rehabilitation and counselling, and enforce strict laws to curb the sale and distribution of drugs; provide support and resources to families affected by drug addiction. I also appeal to parents, educators, and community leaders to join hands in this fight. Let us work together to create a safe and healthy environment for our youth.

I hope that your esteemed newspaper will highlight this critical issue and inspire action to address it.

Yours sincerely

Andruf/Medari

5. Write a letter in about 100 words to the editor of a Newspaper, drawing attention to the plight of Commuters due to Heavy Traffic Jams in your city.

Shillong – 793001

15th February 2025

To

The Editor
The Shillong Times
Shillong – 793004

Subject: The Plight of Commuters: Heavy Traffic Jams in Shillong

Dear Editor,

As a daily commuter, I am frustrated with the severe traffic congestion in our city. The constant gridlocks make traveling a nightmare, wasting both time and fuel. Sometimes, it takes over an hour to travel just one kilometer.

The main causes are poor road infrastructure, limited public transportation, and rapid urbanization. It is up to the authorities to address these problems and find solutions. I urge them to improve road conditions, enhance public transportation, and implement effective traffic management strategies, such as the Odd-Even rotation policy. Please highlight this issue in your publication to encourage the authorities to take action and ease the struggles of commuters like me.

Thank you for your attention to this matter.

Yours sincerely,

Mr./Ms. XYZ

6. Your locality has witnessed a number of cases of theft in recent weeks. The local law and order authorities were approached but you find no change in the situation. Write a letter in about 100 words to the editor of local newspaper drawing the attention of the higher authorities to the problem. You are Sonia/Jack, Laban, Shillong, 793004

Laban, Shillong – 793001

15th February 2025

Editor
[Local Newspaper Name]

[Newspaper Address]

Dear Editor,

I am writing to express my concern about the recent surge in thefts in our locality. Despite numerous complaints to local law enforcement, there has been no noticeable improvement in the situation. The frequent thefts are causing fear and distress among residents. I urge higher authorities to intervene and take immediate action to address this growing problem. Enhanced police patrols and better security measures are urgently needed to ensure the safety of our community.

Please bring this critical issue to the attention of the relevant authorities.

Sincerely,
Sonia/Jack

7. You are Sonia/Jack Hawakhana, Tura, 794001. Last week you placed an order online for supply of Electric Kettle. On receiving the electric kettle you found that the handle is damaged and the power is not according to specifications. Describing the shortcomings, write a letter (100-150 words) of complaint to the supplier, Radiant Mart, Anna Nagar, Chennai asking for an immediate replacement.

Hawakhana
Tura, 794001

15th February 2025

To

Customer Service
Radiant Mart
Anna Nagar
Chennai

Dear Sir/Madam,

I am writing to express my dissatisfaction with an electric kettle I ordered from your store last week. Upon receiving the item, I discovered two major issues: the handle is damaged, and the power specifications do not match what was advertised.

The damaged handle makes the kettle unsafe to use, and the incorrect power specification affects its functionality. I request an immediate replacement for the defective product. Please arrange for the return of the faulty kettle and send a new one that meets the advertised specifications.

I look forward to your prompt resolution of this matter.

Thank you.

Sincerely,
Sonia/Jack

[Article Writing]

1. By 2050, India will be amongst the countries which will face acute water shortage. You are highly alarmed and terrified of the future world without water. Write an article on 'Save Water – Are we doing enough?' for the local daily, in 150 words.

Ans.

Save Water – Are we doing enough?
By XYZ

"Water-the elixir of life'. As water scarcity is prevalent all around in the metro cities, the situation is alarming. Water is essential for life, i.e., plant life, animal life as well as human life. Man's body is 70% water. It is also needed for many human activities, such as cooking and washing.

What would the future be without water? Are we doing enough to save it? Perhaps not. Human callousness towards the misuse of water is pushing him to a dangerous level of scarcity. Water pollution is also a contributing factor because the high level of contamination renders it unfit for human consumption.

The need of the hour is to use it judiciously. One should utilize used water for plants. Everyone should stop washing cars with running water. A pledge should be taken to conserve this universal solvent. The motto 'Save Water -Save Life' should be understood.

2. India is a tourist's dream destination. Give your views on the tourism potential of India in an article in 150 words. You are Navtej/Navita. Places of worship – religious tourism – foreigners – places of historical interest- the rich hill stations during summers – the sun-kissed beaches in winters – leisure tourism – medical tourism – world class hospitals.

Ans.

India- A Dream Destination
By Navita

India is a land of great diversity in culture, religion, language, food, and occupations. Its rich heritage, with stunning monuments, temples, and archaeological sites, makes it a fantastic destination for travelers. As the birthplace of religions like Buddhism, Jainism, and Hinduism, India is also a major spot for religious tourism. Cities such as Bodhgaya, Shirdi, and Rishikesh attract many visitors seeking spiritual experiences.

India offers a wide range of attractions: beautiful beaches, forests, wildlife, snowy peaks, and rivers for adventure tourism; technological parks and science museums for science tourism; and heritage trains and hotels for cultural tourism. Medical tourism is growing too, with top hospitals and natural health resorts attracting tourists interested in specialized care and wellness.

Tourism in India has huge potential to create jobs and boost the economy. Improvements in air and rail links, better roads, and more accommodation options, including heritage hotels and homestays, have greatly benefited the sector.

3. On the occasion of Earth Day, you participated in various eco-friendly campaigns initiated by your school. Write an article, in about 150 words, for your school magazine giving details of these campaigns and the impact on you. You are Akshay/ Akshita of Brightland Public School.

Ans.

Earth Day Celebrations
By Akshita

Earth Day is celebrated to remind us of the beautiful gift we have in our planet. We have often used Earth's resources carelessly, leading to problems like ozone depletion, extreme weather, global warming, and deforestation. These issues are pushing us closer to a crisis.

Earth Day helps us remember to care for our planet.

This year, our school organized a series of informative talks on "Save Earth" by the environmentalist Dr. Ramakant Mishra. We also participated in activities such as making posters, planting trees, and a cleanliness drive around the school. Additionally, we watched James Cameron's film "Avatar" to understand the importance of protecting our environment. Many students promised to help the planet by adopting small habits like turning off lights when not needed, avoiding plastic bags, saving fuel, and recycling. Let's all commit to protecting Earth this Earth Day.

4. India is a land of diversity. This makes us feel proud of the number of festivals we enjoy. Write an article, in 150-200 words, on 'Festivals of India'. You are Karuna /Karan.

Ans:

Festivals of India

By Karan

India is known for its many fairs and festivals, celebrated by people from diverse communities and religions. Each year, we have a variety of festivals, some of which are religious, seasonal, or national.

Religious festivals include Diwali, Dussehra, RakshaBandhan, Id-ul-Fitr, Id-ul-Zuha, Christmas, MahavirJayanti, Guru Nanak Jayanti, and Ganesh Chaturthi. These festivals are celebrated by different communities and are often marked by family and community gatherings, creating a festive atmosphere everywhere.

Seasonal or harvest festivals, such as Holi, Baisakhi, Basant Panchami, Bihu, Pongal, and Onam, celebrate the changing seasons and the harvest. Farmers give thanks for a good harvest by worshipping the sun, earth, and cattle.

National festivals like Independence Day, Republic Day, and Gandhi Jayanti are celebrated by all Indians. Independence Day on August 15th honors the freedom fighters who helped us gain independence from British rule. Republic Day features a grand parade from Vijay Chowk to the Red Fort.

These festivals add color to our lives, bringing people together and fostering joy, goodwill, and unity.

5. Write an article on Meghalaya in about 150 words. Write about its natural beauty, cultural diversity and unique features.

Ans.

Discovering Meghalaya: The Abode of Clouds

Meghalaya, known as the "Abode of Clouds," is a stunning state in northeastern India. Famous for its lush greenery, it receives some of the highest rainfall in the world, making it a paradise of rolling hills, dense forests, and beautiful waterfalls like Nohkalikai Falls.

The state is home to diverse tribes, including the Khasi, Garo, and Jaintia. Each tribe has its own unique culture and traditions. They follow a matrilineal system, where lineage is passed through the mother. The vibrant festivals like Ka Shad Suk Mynsiem of khasis, Wangala of garos, and Behdienkhlam festival of Jaintias fill everyone's heart with joy.

Meghalaya also boasts unique features such as living root bridges in Mawlynnong and clean, picturesque villages. It's a place where nature's beauty and rich cultural heritage come together, offering a memorable experience for all who visit.

6. Write an article on Technology in Education in about 150 words.

   Ans.

   The Role of Technology in Education

   Technology is transforming education in exciting ways. Computers, tablets, and the internet are now common in classrooms, making learning more interactive and engaging. Online resources, such as educational videos, e-books, and interactive exercises, help students understand difficult concepts in a fun way.

   Teachers use technology to create dynamic lessons and track student progress through educational software. Virtual classrooms and video conferencing allow students to attend classes from anywhere, making education more accessible. Additionally, educational apps and games can support learning outside the classroom.

   Technology also helps students develop essential digital skills needed for the future. While it brings many benefits, it's important for schools to ensure that all students have equal access to these resources. Overall, technology in education offers new opportunities for learning and prepares students for the digital world.

7. Write an article on School Library in about 150 words.

   Ans.

   The Library: The Best Place in School

   The school library is truly the best place on the school campus. It's a treasure trove of knowledge and a haven for students. With its wide collection of books, newspapers, and magazines, the library caters to all interests and needs. Whether you want to relax with a gripping novel or find reference books for a project, the library has it all.

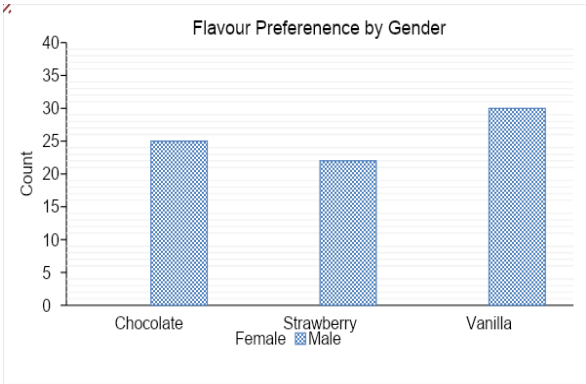
   In the library, students can escape into different worlds through fiction or stay informed with current events and articles. It's a quiet space perfect for studying or enjoying a book at your own pace. The library's resources are invaluable, providing essential information and fostering a love for reading.

   Overall, the library is more than just a room full of books; it's a center of learning and relaxation that enriches the school experience for everyone.

[Analytical Writing]

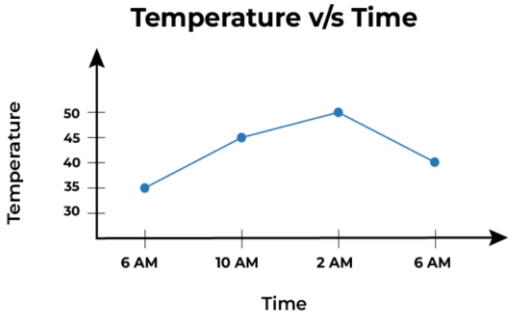
Analytical Paragraph Writing based on the Charts, Graphs or any visual representation. Two such examples are provided below.

1. The bar graph illustrates flavour preferences by gender. Write an analytical paragraph to describe the information in 100-120 words.



Ans. Based on the bar graph data depicting the flavour preferences by gender, it is evident that there are distinct patterns in taste preferences between males and females. Among females, chocolate emerges as the clear favourite, with 40 respondents choosing it compared to 18 for strawberry and 15 for vanilla. In contrast, males show a more balanced preference, with 20 respondents each favouring chocolate and strawberry, and a higher preference for vanilla chosen by 30 respondents. This data suggests that while females tend to prefer chocolate significantly more than other flavours, males show a more varied preference, favouring vanilla the most, but also showing considerable affinity towards chocolate and strawberry. These differences highlight potential gender related trends in flavour preference, which could be influenced by cultural, biological, or social factors

2. The line graph illustrates the temperature versus the time of day. Write an analytical paragraph to describe the information in 100-120 words.



Ans. The line graph depicts the variation in temperature throughout the day, showing distinctive trends at different times. At 6 the temperature starts at 35°C, indicating a relatively cool morning. As the day progresses to 2 a.m., there is a noticeable increase to 45°C, marking a significant rise in temperature by mid-morning. By 2 p.m., the temperature peaks to 50°C, signifying the hottest part of the day. As the afternoon transitions into the evening by 6 p.m., the temperature drops to 40°C, gradually decreasing as the day concludes. The graph illustrates a clear daily temperature cycle with morning lows, midday highs, and cool evenings, reflecting a typical diurnal temperature pattern in a warm climate.

Section- D

Short Answer type questions: *(2 marks each).* Write in about 20 words. Here you may find more than 20 words. But in the exam, you can express the answer in about 20 words.

1. What did Lencho hope for?

Ans: Lencho hoped for a good shower of rain as it was much needed for a good harvest.

2. Why was Lencho's soul filled with sorrow?

Ans: During the storm, large hailstones rained on the valley for an hour. It had left the field totally covered with snow. The sight of the destroyed crops filled Lencho's soul with sorrow.

3. What type of plant is a 'hemlock tree' and what fell off the tree on the poet?

Ans: A hemlock tree is a poisonous plant with small white flowers. Dust of snow fell off the tree on the poet.

4. What changes in the mood of the poet are reflected in the poem 'Dust of Snow'?

Ans: In the beginning, the poet's mood is sorrowful and depressive, highlighted by 'crow' and 'hemlock tree'. When the dust of snow is dropped on him by the crow, his mood is elevated.

5. What message does the poet wish to convey through the poem 'Fire and Ice'?

Ans: The poet presents two possibilities about the end of the world. It will be either due to 'fire' or 'ice'; he prefers the first, as he believes the world will end in fire but the ice will also not go away.

6. According to Robert Frost, how can fire destroy the world?

Ans: 'Fire' symbolizes passion or hatred. It also represents desire that is fervent, consuming, always wanting more. This will lead to conflicts and ultimately result in the destruction of the world.

7. What 'twin obligations' does Mandela mention?

Ans: Mandela mentions two fundamental obligations that every individual has in life. Firstly, the obligation to one's family including parents, wife and children. Secondly, the obligation to one's people, that is the community and country.

8. What does courage mean to Nelson Mandela?

Ans: According to Mandela, courage is not the absence of fear, but the triumph over it. A brave man is not one who does not feel afraid but one who conquers that fear. Fear must not stop us from achieving our goal. We must defeat our fear and move ahead in life.

9. How does the tiger act in the cage?

Ans: The Tiger paces back and forth in his cage, exhibiting restless and agitated behaviour. He conveys a sense of frustration, boredom and longing for freedom.

10. What message does the poet want to convey through the poem 'A Tiger in the Zoo'?

Ans: The poet wants to convey that it is cruel to keep wild animals in small enclosures of the zoo, away from their natural habitat. They feel angry, helpless and unhappy and long for the forest.

11. Briefly describe the seagull's first flight.

Ans: The young seagull was very hungry, so he dived at the fish that was in his mother's beak, but he fell into space and became terribly afraid. His heart stood still. He could hear nothing. However, it only lasted for a minute. The next moment he felt his wings spread outwards. He had stopped falling, instead, began to fly and was no longer afraid.

12. Why was the young seagull afraid to fly according to 'His First Flight'?

Ans: Whenever the young seagull took a little run forward to the extreme edge of the ledge and attempted to flap his wings, he became afraid. Seeing the vast expanse of the sea, he felt that his wings would not support him and he would fall from a great height.

13. 'I'll take the risk'. What is the risk? Why does the narrator in the chapter 'The Black Aeroplane' take it?

Ans. The risk referred to her is the decision of the narrator to fly through the storm clouds. The narrator takes the risk because he wanted to go home and have breakfast with his family in England the next day.

14. What do you think prompted the narrator of 'The Black Aeroplane'to act like 'an obedient child'?

Ans. The radio and compass of the Dakota plane were dead. The pilot could not reach the Paris Control Room nor did he know where he was. This situation prompted him to follow the black aeroplane like 'an obedient child'

15. How can you identify the Asian Lion and the Bengal Tiger?

Ans. The Asian Lion has a large body and a brownish – yellow coat. It roars loudly when it attacks its prey. On the other hand, the Bengal tiger has black stripes on its yellow coat. It silently attacks its prey.

16. Describe a few characteristics of a chameleon.

Ans. A chameleon is a garden lizard and is an expert at camouflage. It changes its colour as per its surroundings. This ability of camouflage helps to protect from predators. A chameleon does not have any ears or wings.

17. Why does the poet of 'The Ball Poem' say, 'I would not intrude on him'? Why doesn't he offer the money to buy another ball?

Ans: The poet wants the boy to experience the loss. He should learn that it is part of life. That is why the poet does not want to offer him money to buy another ball.

18. What does 'in the world of possessions' mean according to poem of 'The Ball Poem'?

Ans: 'In the world of possessions' means people like to possess all sorts of things. However, one should realize that money is external. It can only buy material objects but it cannot buy everything one loses.

19. Why does Anne want to keep a diary?

Ans. Anne wants to keep a diary because she had hardly anyone to confide in. She had no friends with whom she could share her thoughts and inner feelings. So she felt that a diary could help her pour out her thoughts and feelings freely.

20. How did Anne justify her being a chatterbox in her essay?

Ans. In her essay, Anne explained that she picked up the habit of talking from her mother. Since this was an inherited trait, nothing could be done about it.

21. Would you consider Amanda as a disrespectful girl?

Ans: In this context, Amanda is regarded as a disrespectful girl, because she is not paying any attention to the speaker. She was lost in a world of her own imagination.

22. Why does Amanda seem moody most of the time?

Ans: Amanda's mother constantly keeps a check on her activities and habits. She scolds her all the time and keeps correcting her errant ways. Therefore, Amanda gets annoyed and escapes into a

world of imagination and she seems moody most of the time.

23. What were the bakers in Goa called? How were they dressed?

Ans: The bakers in Goa were known as Pader. These bakers wore a peculiar dress known as the 'kabai'. It was a single piece long frock reaching down to the knees.

24. How can you say, 'bread-baking is still popular in Goa'?

Ans: Bread making is still very popular in Goa as mixers, moulders and those who bake the loaves can still be seen. Most of the Goan's festivals and other occasions are meaningless without the loaves of bread.

25. What sports and activities does Coorg offer to tourists?

Ans: Coorg offers a variety of adventure sports and activities to tourists. These include river rafting, canoeing, rappelling, rock climbing, mountain biking and trekking.

26. What is the story about the Kodavu people's descent?

Ans: It is believed that the Kodavu people are of possibly Greek or Arabic descent. It is said that a part of Alexander's army moved south and settled there. These people married amongst the locals. The theory of Arab origin draws support from the costume, accessories and rituals.

27. What was the Chinese legend that Rajvir narrated?

Ans: The Chinese legend was that there was a Chinese emperor who always drank boiled water. Once while boiling the water, some leaves of the burning twigs fell into the pot. The boiled water gave a delicious flavour. They were tea leaves.

28. What did Rajvir see while looking outside from the train?

Ans: Rajvir saw much greenery while looking outside from the train. He saw the soft green paddy fields and the green tea bushes.

29. What happens to the house when trees move out of it, as per the poem, 'The Trees'?

Ans: When the trees move out, the glass walls break due to the efforts of various parts of the tree to escape. The roots of the trees would have left cracks in the veranda floor. The poet said that she could still smell the lichens and leaves in the house.

30. How is the issue of deforestation raised in the poem, 'The Trees'?

Ans: The poet uses the trees to connote the significance of forests and raise the issue of deforestation. People keep plants and trees in their homes and have the false impression that it can replace the lost forests. The poet uses the tree as symbolism to convey that the issue of deforestation can be tackled only by planting trees in their natural habitat.

31. How was Mijbil transported to England?

Ans: The British Airline to England would not fly animals. So, Maxwell booked a flight to Paris and another airline from there to London. The airline insisted that Mijbil should be packed in a box not more than eighteen inches square. Thus, Mijbil was transported to England in that box which was kept on the floor at Maxwell's feet.

32. How did Mij behave outside the house in London?

Ans: Mij would follow the narrator while walking on the streets. He developed certain habits during those walks. He went with him like a child playing, running and touching things in the street. He would pull the author towards the wall of a primary school and then gallop on it.

33. How is the fog like a cat?

Ans: The poet makes the fog a living creature by comparing it to a cat. He says that the movement and mannerism of the fog is similar to that of a cat. The silence and

light footedness of the cat is replicated in the arrival and departure of the fog. The way the fog settles down is also very similar to the way a cat settles down on its haunches.

34. How does the fog spread over the harbour and the city?

Ans: The fog comes to the city silently just like a cat. It spreads over the harbour and the city and settles over them for some time. Then, it rises high and moves away stealthily just like a cat.

35. What was Valli's source of unending joy and what was her strongest desire?

Ans: The sight of the bus plying between Valli's village and the nearest town filled her with unending joy. Valli's strongest desire was to ride the bus one day.

36. How did Valli save up for her first bus journey?

Ans: Valli saved every penny and resisted the temptations to buy peppermints, toys, balloons etc. She even controlled her desire to be on the merry-go-round in the village fair and finally saved sixty paise for her first bus journey.

37. Name the characters of the poem 'The Tale of Custard the Dragon'
along with their pet names.

Ans: The characters in the poem are a little girl named Belinda and her pets – a kitten named Ink, a mouse called Blink, a dog called Mustard, a dragon called Custard and a pirate.

38. Describe the appearance of the dragon as per the poem 'The Tale of Custard the Dragon'.

Ans: The dragon called Custard had big sharp teeth with spikes on his head and scales on his chest. His mouth was like a fireplace with the nose emitting smoke and his toes were sharp like daggers.

39. What prompted Prince Siddhartha to leave his home?

Ans: One day when Prince Siddhartha was out for hunting, he came upon a sick man, then an elderly man, then a funeral procession and finally a monk begging for alms. These sorrowful sights moved him so much that he left his home at once to seek enlightenment.

40. How did Siddhartha attain enlightenment?

Ans: Siddhartha went out into the world to seek enlightenment. He wandered for seven years and finally sat down under a peepal tree, where he vowed to stay until enlightenment came. In this way, after seven days of prolonged meditation, he got enlightenment.

41. How does the poet describe Anne Gregory's hair?

Ans: The poet describes Anne's hair as honey-coloured. They are long and thick like the walls of a fort guarding her beautiful face. They make young men fall in love with her and drive them to despair.

42. Do you think Anne Gregory's golden hair is a boon or a curse for her? Give reason.

Ans: Anne Gregory's golden hair seems to be a curse for her. Young men are so obsessed with her golden hair that they are not able to see her inner beauty. Her outward appearance prevents the young men from seeing her internal beauty.

43. What was Chubukov's reaction on hearing the reason for which Lomov had come to his house?

Ans: When Chubukov came to know that the reason for Lomov's coming to their house was to marry Natalya, he was overwhelmed with joy. He embraced and kissed Lomov and told him that he was hoping for it for a long time. He told Lomov that he had always loved him as if he were his own son.

44. What justification did Lomov give to Natalya and Chubukov to prove that he was the rightful owner of the Oxen Meadows?

Ans: Lomov told Natalya and Chubukov that his aunt's grandmother gave the Meadows for the temporary and free use of Chubukov's grandfather's peasants. So he claims to be the rightful owner of the Meadows.

Supplementary Reader

45. Why was the vet shocked when he first saw Tricki?

Ans: The vet was shocked when he first saw Tricki because he had become hugely fat, like a bloated sausage with a leg at each corner. His eyes were bloodshot and rheumy; and he stared straight ahead with his tongue lolled from his jaws.

46. What steps did Mr. Herriot take to save Tricki?

Ans: Mr. Herriot hospitalisedTricki for about a fortnight as it was necessary to keep him away from his mistress. Tricki's only problem was due to over-feeding and he needed to control his diet which was only possible in the absence of Mrs. Pumphrey. Mr. Herriot stopped giving him food, but gave him plenty of water.

47. How did the thief introduce himself to Anil?

Ans: The thief met Anil during a wrestling match and introduced himself as Hari Singh which was not his real name. He found Anil easygoing, kind and simple enough to suit his purpose of robbing him. Therefore, he offered himself to work for Anil.

48. Why did Hari Singh feel bad after stealing Anil's money?

Ans: Anil had trusted Hari Singh completely and taught him how to cook, read and write. When Hari stole money from Anil, conscience pricked him as he had broken Anil's trust.

49. How was Ausable different from the other secret agents?

Ans: Ausable, unlike other secret agents, was a very fat man with an American accent. Fowler was expecting him to be a smart and an active agent having messages slipped into his hand by dark-eyed beauties. Instead, Ausable received a telephone call making an appointment in his room.

50. Though Horace planned everything meticulously, why did he fail?

Ans: Though Horace planned everything meticulously, he failed because of the smart lady. She posed herself to be the owner of the house and convinced him to open the safe as she had forgotten the numbers, which got Horace trapped in her plot.

51. What story did Horace tell the police when he was arrested?

Ans: When he was arrested, Horace told the police that he had not stolen any jewels. He said that he had broken open the safe for the young wife of the owner of the house. But the wife of the owner was an old lady of about sixty with grey hair; so no one believed his story.

52. Why were the two boys in London surprised and fascinated?

Ans: The two boys in London saw fresh muddy footprints appearing on the steps of a house but the barefooted man was not visible. So, they were surprised and fascinated.

53. What was the 'curious episode' that took place in the clergyman's study?

Ans: One morning, the clergyman and his wife were awakened by noise. They saw no person. They were shocked to find that their money had been stolen from the desk. This was the 'curious

episode' that took place in the clergyman's study.

54. Why did Richard Ebright admire his teacher Richard A. Weiherer?

Ans: Richard Ebright had great respect and admiration for his Social Studies teacher. He was Ebright's adviser to the Debating and Model United Nations clubs. Richard A Weiherer was the perfect person for Ebright who opened his mind to new ideas.

55. Why was MmeLoisel always unhappy?

Ans: MmeLoisel was always unhappy because she felt that she was, by mistake, born in the family of clerks. She felt that she was born for all the delicacies and luxuries in life. She felt tortured and angered with her present living conditions and suffered incessantly.

56. What was Bholi's reaction to her first day in school?

Ans: At first, Bholi was afraid. She even wept when her teacher asked her name. She just sat crying in a corner. However, the beautiful pictures on the classroom walls attracted her. She soon discovered that her teacher was a kind, gentle and loving lady who put her at ease. By the time the first day of school came to an end, Bholi began to look forward to her new life as a student.

57. Why was Bholi sent to school?

Ans: Ramlal, Bholi's father, was a government official. The Tehsildar had instructed Ramlal to send his daughters to the new school in his village. Ramlal's wife did not want to send her daughters to school for fear of adversity affecting their chances of marriage. Her father, however, could not refuse the Tehsildar and was forced to send Bholi to school.

58. Describe Think-Tank in your own words.

Ans: Think-Tank was the ruler of the planet Mars. His head is huge and egg-shaped. He wears a robe decorated with stars and circles. He considered himself very mighty and was very proud of his intelligence.

59. Why do the space probe crew take vitamins?

Ans: Think-Tank wanted the probe crew to find out what was in the books. So, the probe crew took vitamins to increase their intelligence. As a result, they were able to read the books after taking those vitamins.

Long Answer type Questions: (*5 marks each).* Write in about 100 words. Here you may find more than 20 words. But in the exam, you can express the answer in about 20 words.

1. Why did Lencho write a letter to God and what was the consequence?

Ans: The story "A Letter to God" shows Lencho's strong faith in God. He hoped for rain to help his corn field grow well, expecting a big harvest like in previous years. When rain did come, it turned into a hailstorm and ruined his entire crop. Worried about feeding his family, Lencho still trusted God. He wrote a letter to God, asking for help and sent it to the local post office.

The postman, amused by the letter, showed it to the postmaster, who was impressed by Lencho's faith. Wanting to support Lencho without breaking his faith, the postmaster and his staff decided to help. They collected 70 pesos from their own money and contributions from friends. They sent the money to Lencho with a note to keep his faith strong, even though it was less than the 100 pesos he had asked for.

2. There are times in life when we feel depressed and hopeless. We think that things will never change. Suddenly, a change comes in our mood and cheerfulness replaces the sense of regret. Justify the above statement in the context of the poem 'Dust of Snow'.

Ans: In his poem "Dust of Snow," Robert Frost describes a simple moment with a deeper meaning and impact. One day, when the poet was feeling down, something unexpectedly pleasant happened. While standing under a tree, a crow perched there shook, causing a light dusting of snow to fall on him. This gentle snowfall lifted his spirits, changing his mood from sadness to happiness. The poet felt refreshed and found joy in the rest of the day.

Frost suggests that small, unexpected moments can significantly improve our mood and make tough times easier to bear. Even in our own lives, when things seem bleak and hope feels lost, tiny surprises like a brief encounter with nature can lift our spirits. By appreciating these little joys, we can find beauty in everyday moments and handle challenges better, making our worries feel less overwhelming.

3. Discuss how extreme behaviour can hasten the end of the world with respect to the poem 'Fire and Ice'.

Ans: In the poem 'Fire and Ice', the poet highlights that extreme behaviours can lead to the end of the world. The poet points out the two different views regarding the end of the world. The first view is fire which symbolises deep emotions of desire, passion, etc. Desire, according to the poet, can become so intense that it can make people lose their calm. Fire of desires, if left uncontrolled, can lead to the destruction of humanity as well as the world.

The second view is ice which represents hatred, differentiation and insensitivity. Hatred, rigidity and icy reasoning give rise to contempt. It can end all positive human emotions such as human warmth, love, sympathy, kindness and consideration for others. This type of behaviour will only bring death to this world.

4. Show a character sketch of Nelson Mandela highlighting his struggle against the apartheid for the human rights of the people.

Ans: Nelson Mandela was a key figure in the fight against South Africa's oppressive racial regime, which lasted for centuries. He endured tremendous suffering and torture during his 30 years in prison. Despite numerous challenges, Mandela and his African National Congress played a crucial role in establishing South Africa's first democratically elected government.

Mandela initially didn't realize that his own freedom was limited. Over time, he understood that true freedom wasn't just for him but for everyone. This shift in perspective led him to join the African National Congress, transforming from a frightened young lawyer into a courageous leader. Mandela's personal struggle became a fight for the freedom of his entire people. He was grateful to those who sacrificed so much and recognized that freedom cannot be enjoyed by one person while others are oppressed.

The apartheid regime was a symbol of extreme injustice, causing immense suffering and death. Mandela's leadership and the sacrifices of many led to a victory for justice and dignity, marking a new era in South Africa's history.

5. How does the poem 'A Tiger in the Zoo' convey human cruelty to animals in captivity?

Ans: In the poem 'A Tiger in the Zoo', the poet wants to convey that it is cruel to keep wild animals in small enclosures of the zoo, away from their natural habitat. They feel angry, helpless and unhappy and remember their life and environment in the forest. Here, the tiger changed his natural self by controlling his natural instinctive fierce behaviour inside the zoo. His freedom to growl, hunt and terrorize were snatched away from him. It touches hearts and makes us empathize with the tiger when he is helpless, watching the stars at night and not even able to sleep due to the blaring sirens of patrolling cars. This shows the cruelty of man on the animals by keeping them in captivity.

6. Do you think hunger was a good motivation for the young seagull in his first flight? Comment.

Ans: Yes, I do think that hunger was a good motivation in the young seagull's attempt to start flying. He was left alone on the ledge by his family because he would not try to fly with them. His parents scolded him in a shrill voice and threatened him with starvation, but he was still afraid to fly. Then they left him alone. He was so hungry that he had to live on whatever he could find there on the ledge. When he saw his mother with a piece of fish in her beak, he begged her for food. He uttered a joyful scream when he saw his mother flying across towards him with a piece of fish in her beak. But she stopped when she came opposite him. When the young seagull realized that she did not intend to come nearer, he dived at the fish, maddened by hunger. This was his first attempt to fly. Gradually, when his hesitation and fear were removed, he started flying with great enjoyment.

7. 'The Black Aeroplane' is a mystery story. Explain.

Ans. 'The Black Aeroplane' is a mystery story. The pilot of an old Dakota was caught in the storm. He was helpless as the instruments in his aircraft had stopped functioning. He did not know what to do. Suddenly he saw a black aeroplane flying next to him. It was a strange plane flying in the storm without lights. The pilot of the black aeroplane helped him to land safely. On landing, he turned back to look for the friend but he had disappeared. The black aeroplane was gone. The lady in the control centre told him that he was the only one flying that night. There was no other plane. He could not understand who helped him. It was really a big mystery.

8. Every animal is unique and has some special characteristics. How does the poet of 'How to Tell Wild Animals' describe various wild animals?

Ans. The poet asserts that every animal is indeed unique. Every wild animal has its own traits, colour, size and characteristics.

The Asian Lion is found in the jungles of the eastern region. It is a huge and mighty creature with a brownish hide. Its roar is

enough to terrorise a person to death. The Bengal tiger is a 'noble' and impressive wild animal. It has a yellowish hide and black stripes all over it. The Leopard has dark spots all over its body. It is very agile. The moment it sees its prey, it pounces upon it without showing any mercy. The bear is known for its strong and tight hug.

It becomes rather difficult for a novice to distinguish among wild animals. However, hyenas and crocodiles can be easily recognized. Hyenas come smiling merrily while crocodiles appear to be weeping. The chameleon is a small creature like a lizard. It has no ears and does not even have a single wing. One can find a chameleon sitting on a tree.

9. According to poem 'The Ball Poem', why is it important for everyone to experience loss and stand up after it?

Ans: Experiencing loss is a key part of being human. It teaches us to be strong, empathetic, and resilient during tough times. Loss helps us appreciate how life changes and encourages personal growth. Recovering from loss shows our inner strength and the power to overcome challenges. It transforms grief into strength and helps us understand ourselves better.

For example, when a boy loses a ball, he learns about the world and how to handle difficult situations. If he can cope with this loss, he'll be better prepared to face other challenges in life. The ball represents something valuable that can't be replaced, highlighting the idea that everyone will face loss at some point. The poet wants us to understand that dealing with loss is a part of life, and facing it with patience and courage is essential for moving forward.

10. Give a brief description about Anne's life.

Ans: Anne Frank was a young Jewish girl who lived with her parents in Germany. During Adolf Hitler's rule, Jews faced severe persecution from the Nazis, who either killed them or forced them into concentration camps. In 1933, the Frank family fled to the Netherlands to escape this danger. However, in 1940, Germany invaded the Netherlands and occupied it.

As the Nazis began arresting Jews in the Netherlands, the Frank family went into hiding. They lived secretly in the upper floors of their business building for twenty-five months, with help from their non-Jewish friends who brought them food.

Anne had started a diary before going into hiding. In August 1944, the Nazis discovered their hiding place, arrested them, and sent them to Germany. Anne, her sister Margot, and her mother died in the concentration camps. Her father survived and published parts of Anne's diary, which provides a poignant account of their hardships. The diary excerpts in this chapter cover Anne's life as a schoolgirl before they went into hiding.

11. Give a brief description about the poem 'Amanda'.

Ans: The poem "Amanda" describes a little girl overwhelmed by her mother's constant instructions and criticisms. Amanda's mother continually tells her what not to do—like not biting her nails or slouching—which makes Amanda feel restricted and frustrated.

To escape her mother's endless commands, Amanda dreams of a fantasy world. She imagines being a mermaid swimming freely in the sea, enjoying the peaceful and carefree life underwater. She fantasizes about being a sea god with a fish tail, finding joy in the waves and the calm sea. Amanda even thinks that being an orphan would give her more freedom than she currently has. However, her daydreams are

interrupted when her mother pulls her back to reality with a barrage of questions.

12. 'During our childhood in Goa, the baker used to be our friend, companion and guide'. What does this statement imply in relation to the character of the baker?

Ans: This statement tells us that the baker was a very respected person in the Goan society because he would guide the children about good behaviour when he mildly rebuked them for peeping into his basket and giving respect to the elders when he wished "Good Morning" to the lady of the house, etc. He was very informal with the children and so the author considered him as a friend, companion and guide. According to the author, he was not simply a vendor interested in selling what he made. Thus, he was an important character in the Goan society of those days.

13. What does the writer of 'Coorg' say about the natural beauty of Coorg?

Ans. Coorg is situated in Karnataka midway between Mysore and the coastal town of Mangalore. It looks like a piece of heaven that must have drifted from the kingdom of God. This is a land of rolling hills. It is home to evergreen rainforests, spices, and coffee plantations. Evergreen forests cover thirty per cent of Coorg district. The river Kaveri flows through Coorg. Big elephants are also found here. Birds, bees, and butterflies are there to give the visitors company. The climb to the Brahmagiri hills brings visitors to a panoramic view of the entire misty landscape of Coorg. It is said that the people searching for the heart and soul of India find many surprises in Coorg.

14. What did Rajvir tell Pranjol about the discovery of tea?

Ans. Rajvir said that no one really knows who discovered tea. He told Pranjol that there were many legends attached to the discovery of tea. According to one story, a Chinese emperor discovered tea by chance. He always boiled water before drinking it. One day, a few leaves of the twigs burning under the pot fell into the water. As a result, the boiled water got a delicious flavour. It is said that they were tea leaves. According to another Indian legend, Bodhidharma, an ancient Buddhist monk, fell asleep during meditations. So, he cut off his eyelids. Ten tea plants grew out of the eyelids. The leaves of these plants when put in hot water and drank, banished sleep. It is believed that tea was first drunk in China in 2700 B.C. Words like 'chai' and 'chini' are Chinese. Tea came to Europe in the sixteenth century. At first, it was used more as a medicine than as a beverage.

15. What message does Adrienne Rich want to convey through the poem, 'The Trees'?

Ans: In her poem "The Trees," Adrienne Rich emphasizes the vital role trees play and advocates for planting more of them. She points out that without trees, birds would have nowhere to perch, insects would have no hiding spots, and the sun wouldn't cast shadows. While young trees add beauty to their surroundings, as they grow, they yearn for freedom. They spread their roots and branches, and their beauty is lost when they are confined indoors.

Trees are crucial for forests because they provide a habitat for various plants, animals, birds, and insects. They thrive in nature, where they are embraced by the wind and moon. Rich's poem suggests that trees should be kept alive but not trapped inside homes. They are meant to flourish outdoors, where they can truly thrive and contribute to the environment.

16. What were the strange and funny wild guesses that Londoners made about Mijbil?

Ans: It was rather difficult for an average Londoner to recognize such a strange animal as an Otter. Most of them had never seen such a unique animal. The

thing that surprised Maxwell was that Londoners made such funny and wild guesses about Mijbil, the otter. He faced a continuous barrage of questions from anxious ignorant people. They made random guesses about the animal. Some of them guessed that he was a 'baby seal' or a 'squirrel' or a 'walrus'. Others also made fantastic guesses. One called Mijbil a 'beaver' another called it a 'bear cub'. The third suggested that it was a 'leopard'. Mijbil was anything but an otter to them. The question that was awarded the highest score came from a labourer who, surprised by Mijbil, asked what it was supposed to be.

17. The poet says that the fog is like a cat with reference to the poem, 'Fog'. Explain this statement.

Ans: In the poem 'Fog' Carl Sandburg has metaphorically compared the fog to a cat. Perhaps, the poet wants to emphasise the silent nature and mysterious ways of the fog, hence he has compared the fog to a cat. The poet describes the advancement of the fog toward the city and harbour, he says the fog comes like a cat towards the city very slowly and calmly. A cat does not make a sound when it walks but its presence is apparent. The fog's 'silence' is very much like that of a cat moving on its little feet. The fog stays in its place looking over the harbour and the city which creates a hazy atmosphere all around. The way it sits is akin to a cat sitting on its haunches quietly surveying the area. The fog moves out of the city in the same quiet manner as that of a cat that moves silently without anybody noticing. Both the fog as well as a cat makes their presence felt.

18. How did Valli plan to go on her first bus ride?

Ans: Valli had a strong desire to travel by bus. She watched it every day and decided that she would go on the bus ride without anyone knowing about it. She started preparing by saving money for the bus ride. She saved every penny by not buying peppermints, toys, balloons etc. She also controlled her desire to be on the merry-go-round in the village fair and finally saved sixty paise for the bus fare. Then she planned to sneak out of the house after lunch when her mother would take her afternoon nap. She would go by the 1:00 pm bus and reach the town by 1:45 pm. She planned to remain sitting in the same bus and return home by 2:45 pm without anyone knowing about her adventure.

19. When and how did Custard prove everyone wrong?

Ans: Custard the dragon was considered a coward as he was not courageous like Belinda and her other pets. He proved them wrong when a pirate came inside Belinda's house. On seeing the pirate, Belinda and her pets were terrified. None of them were able to do anything. Just then Custard jumped up and charged at the pirate in rage. The pirate was taken aback and fired two bullets at Custard in defence which did not hit him. Custard then went ahead and gobbled the pirate and saved everyone's life. Thus Custard showed that he was not a coward and proved everyone wrong.

20. Narrate how the Buddha made KisaGotami understand about the reality of death?

(Or) How did KisaGotamirealise that life and death is a process?

Ans: KisaGotami's only son passed away, and she was devastated. She carried her lifeless child to her neighbours so that they might give him medicine to revive him. She was unwilling to accept the death, and her neighbours believed that she had lost her senses. Someone then proposed that she should meet Gautama Buddha. On meeting the Buddha, she received an exercise to collect mustard seeds from a house where no one had ever died. Kisa searched every

home but could not find a single one where nobody had passed away. She sat down by the side of the road, exhausted and dejected, and watched the city lights as they flickered on and off again. She came to the realisation that, like city lights, human lives also briefly glimmer before going out again. In this way, she came to understand that everyone who is born will eventually pass away.

21. What message does the poem, 'For Anne Gregory', convey?

Ans: Yeats is of the view that most people love others just because they attract them physically. The complexion of the skin and the colour of the hair are more important for us than the 'real' worth of a person. We rarely love people 'for themselves alone'. Even the beautiful Anne Gregory is not liked or loved for her internal beauty or her rare qualities of head and heart, but for her beautiful yellow hair. Shallow minded people adore only physical beauty. But inner beauty is far more important than physical beauty. One should look for inner beauty before falling in love with a lady. Physical beauty is superficial and momentary. Unfortunately, most people are attracted by the colour of skin and other physical attributes. Only God can love individuals for themselves alone.

22. In spite of being a good housekeeper, educated and not bad looking, Natalya is quarrelsome, vain and highly impulsive. Justify your answer.

Ans: Natalya is the twenty-five-year-old daughter of a wealthy Russian landlord named Chubukov. She knows it's important to marry and doesn't want to miss the chance to marry her neighbor, Lomov. Natalya is a good housekeeper, educated, and attractive, and Lomov himself recognizes her as a suitable wife. He even visits her home to propose marriage.

Despite her many positive qualities, Natalya has some flaws. She is as quarrelsome as her father and often lacks practicality. Although she is eager to marry Lomov, she gets distracted by pointless arguments. She fights over the ownership of Oxen Meadows and argues about which of their dogs is better—her dog, Squeezer, or his dog, Guess. Eventually, Natalya does accept Lomov's proposal as her father suggested, but her tendency to argue continues even after they are married.

Extract Based Questions:*(4 marks each)*

1. *'A plague of locusts would have left more than this'.*

   (a) Who spoke these words?(1)
   Ans: Lencho spoke these words.
   (b) What does the above line mean?(1)
   Ans:It means that even if a swarm of locusts had attacked his field, they would have left a few of his crops untouched.
   (c) What prompted the speaker to utter these words?(2)
   Ans:Lencho had been working hard for a good harvest but the sudden hailstorm destroyed his crops entirely. While standing in the withered field, he told his sons that the effect of the storm proved to be worse than that of crops being destroyed by a plague of locusts. The insects might have left behind something but the devastating storm had destroyed everything.

2. *The dust of snow*
   From a hemlock tree
   Has given my heart
   A change of mood.

(a) What changed the poet's mood?(1)
Ans: The particles of snow dropped by the crow from the hemlock tree changed the poet's mood.
(b) How has the poet's mood changed? (1)
Ans: The poet's mood has changed from dull to pleasant.
(c) What does the dust of snow represent?(2)
Ans: The dust of snow represents the fresh and rejuvenating form of nature. This fresh and pure form of nature has brought about a sudden shift in the poet's mood.

3. *Some say the world will end in fire*
   Some say in ice.
   From what I've tasted of desire
   I hold with those who favour fire.

   (a) According to the poet, fire refers to _____.
   Ans: desires, passions and jealousy
   (b) 'tasted of desire' the poet is talking about?
   Ans: The poet is talking about his experience of desiring something.
   (c) Find out the rhyming words in the given extract:
   Ans: fire; desire
   (d) Write one synonym of 'desire'.
   Ans: wish, want, aspiration, yearning, craving (Write any One in the exam)

4. *The ceremonies took place in the lovely sandstone amphitheatre formed by the Union Buildings in Pretoria. For decades this has been the seat of white supremacy, and now it was the site of a rainbow gathering of different colours and nations for the installation of South Africa's first democratic, non-racial government.*

   (a) Where did the ceremonies take place?
   Ans: The ceremonies took place in the amphitheatre formed by the Union Building in Pretoria.
   (b) What is an amphitheatre?
   Ans : An amphitheatre is a building without a roof with many rows of seats rising in steps (typical of ancient Greece and Rome).
   (c) What had been the significance of that place for so long?
   Ans : For decades the place had been the seat of white supremacy.
   (d) How was this government different from the previous one?
   Ans: The previous government was run only by the white people following the apartheid policy of racial segregation. The new government was a democratically elected non-racial government.

5. *But he's locked in a concrete cell,*
   His strength behind bars,
   Stalking the length of his cage,
   Ignoring visitors.

(a) According to the stanza, what is the cell made of?

Ans: The cell is made of something concrete.

(b) What does the line 'His strength behind bars' mean?

Ans: It means that the tiger cannot use its power and attack people because it is locked in a cell.

(c) Choose a synonym of "Walking" from the given stanza.

Ans: Stalking is the synonym of Walking

(d) Why is the tiger ignoring the visitors?

Ans: The tiger is ignoring the visitors because he is angry.

6. *Then he flapped his wings once and soared upwards, 'Ga, ga, ga, Ga, ga, ga, Gaw-col-ah,' his mother swooped past him, her wings making a loud noise. He answered her with another scream. Then his father flew over him screaming. He saw his two brothers and his sister flying around him curveting and banking the soaring and diving.*
Then completely forgot that he had not always been able to fly, and commended himself to dive and soar and curve, shrieking shrilly.

a. How did the seagull's mother respond to the seagull's excited scream?

Ans: His mother uttered ga, Ga, Ga and flew over him.

b. Why were they happy?

Ans: They were happy because the young seagull had learnt how to fly.

c. What did he forget completely?

Ans: He forgot completely that he was afraid of flying.

d. Give the synonym for 'shrilly'.

Ans: The synonym for 'shrilly' is loud.

7. *He turned the aeroplane slowly to the north, in front of my Dakota, so that it would be easier for me to follow him. I was very happy to go behind the strange aeroplane like an obedient child. After half an hour the strange black aeroplane was still there in front of me in the clouds. Now there was only enough fuel in the old Dakota's last tank to fly for five or ten minutes more. I was starting to feel frightened again. But then he started to go down and followed through the storm.*

a. Why did he turn his aeroplane?

Ans. He turned the aeroplane slowly to the north so that the author might follow him easily

b. How did the author behave?

Ans The author behaved like an obedient child.

c. How much fuel was left in his plane?

Ans. There was only enough fuel to fly for five or ten minutes more.

d. Pick out a word from the extract which means the same as 'submissive'.

Ans. Obedient.

8. *Or if sometime when roaming round,*
A noble wild beast greets you,
With black stripes on a yellow ground,
Just notice if he eats you.
This simple rule may help you learn
The Bengal tiger to discern.

(a) Who is the 'noble wild beast' here?
Ans. The noble wild beast is the Bengal Tiger here.

(b) How does this beast look?
Ans.This beast looks noble with black stripes on a yellow black ground.

(c) Pick out the word from the stanza that means the same as 'to recognise'.
Ans. 'discern'.

(d) Name the poem and the poet.

Ans. The name of the poem is 'How To Tell Wild Animals' and it is written by Carolyn Wells.

9. *People will take*
Balls, balls will be lost always, little boy.
And no one buys a ball back. Money is external

(a) What does the poet mean by 'money is external'?

Ans: In the poem, 'money is external' means that money can only buy all worldly or materialistic things. The poet wants to say that it cannot buy emotions, attachment, love, childhood, etc. Once these things are lost, they are lost forever and they never come back.

(b) What cannot compensate for the sense of loss?

Ans: Money cannot compensate for the sense of loss.

(c) The poet wants to say that the loss of dear things is ___.

Ans: a fact of life

(d) Identify the poet.

Ans: John Berryman

10. *All I think about when I'm with friends and having a good time. I can't bring myself to talk about anything but ordinary everyday things. We don't seem to be able to get any closer and that's the problem. Maybe it's my fault that we don't confide in each other. In any case that is how things are, and unfortunately they're not liable to change. That is why I've started the diary.*

(a) What are Anne's views on friends?

Ans: That she wasn't close with any of them

(b) What does 'unfortunately they're not liable to change 'mean?

Ans: "Unfortunately they're not liable to change' refers to her friends who were not likely to change.

(c) What is Anne's fault?

Ans: That she and her friends don't share secrets

(d) Why did Anne think that 'paper has more patience than people'?

Ans: Anne thought that paper has more patience than people because it never judges and never shows disinterest, and is better than people at keeping a secret.

11. *(There is a languid, emerald sea,*
where the sole inhabitant is me —
a mermaid, drifting blissfully.)

(a) How is the sea described in the given stanza?

Ans: The sea is described as peaceful and beautiful.

(b) What does Amanda not want to be?

Ans: Amanda does not want to be a normal girl

(c) What could Amanda do if she were a mermaid?

Ans: If Amanda were a mermaid, she would have drifted slowly on a languid emerald sea. She would have been the sole inhabitant of the relaxed green sea and would have moved slowly on it.

(d) Why does Amanda want to be drifting in the sea?

Ans: To find calm

12. *We kids would be pushed aside with a mild rebuke and the loaves would be delivered to the servant. But we would not give up. We would climb a bench or the parapet and peep into the basket, somehow. I can still recall the typical fragrance of those loaves.Loaves for the elders and the bangles for the children.*

(a) Why were the children pushed aside?

Ans: to deliver the bread to the servant.

(b) What did the children do when they were pushed aside by the baker?

Ans: When the children were pushed aside by the baker, they climbed a bench or the parapet to peep into the baker's basket.

(c) What was there in the Pader's basket?

Ans: Bread bangles for children

(d) Who are 'we' in the extract?

Ans. 'We' in the extract refers to the narrator and his friends.

13. *The river, Kaveri, obtains its water from the hills and forests of Coorg. Mahaseer – a large freshwater fish – abound in these waters. Kingfishers dive for their catch, while squirrels and langurs drop partially eaten fruit for the mischief of enjoying the splash and the ripple effect in the clear water. Elephants enjoy being bathed and scrubbed in the river by their mahouts.*

(a) Why do you think squirrels drop partially eaten fruit into the river?

Ans: The squirrels drop partially eaten fruit in the river because they enjoy the splash and ripple effect created by the fruit hitting the water.

(b) Find the word in the extract which means the same as 'wave'.

Ans: Ripple

(c) How does this passage describe Coorg's wealth of wildlife?

Ans: This passage mentions various wildlife creatures such as mahaseer, kingfishers, squirrels, langurs, and elephants. This description perfectly portrays the abundant wealth of wildlife present in Coorg.

(d) Which fish is found in abundance in the Kaveri waters?

Ans: Mahaseer – a large freshwater fish – is found in abundance in the Kaveri waters.

14. *The train pulled out of the station. Pranjol buried his nose in his detective book again. Rajvir too was an ardent fan of detective stories, but at the moment was keener on looking at the beautiful scenery. It was green, green everywhere. Rajvir had never seen so much greenery before. Then the soft green paddy fields gave way to tea bushes.*

It was a magnificent view. Against the backdrop of densely wooded hills a sea of tea bushes stretched as far as the eye could see. Dwarfing the tiny tea plants were tall sturdy shade-trees and amidst the orderly rows of bushes busily moved doll-like figures. In the distance was an ugly building with smoke billowing out of tall chimneys.

(a) How does the author describe the view outside?

Ans: The author describes the magnificent view of the landscape from the train window. It was a sea of tea bushes, fleeting against the backdrop of densely wooded hills. There were tall shade-trees and one could see women tea-pluckers picking tea leaves.

(b) What optical illusion were the tall sturdy shade trees causing?

Ans: They were making the tea plants look like dwarfs

(c) What was Pranjol doing while Rajvir watched the scenery outside?

Ans: He was reading a detective novel.

(d) How has the view been described overall?

Ans: Magnificent

15. *The trees inside are moving out into the forest,*
the forest that was empty all these days
where no bird could sit no insect hide
no sun bury its feet in shadow
the forest that was empty all these nights
will be full of trees by morning.

(a) What does the poet imagine in the stanza given above?

Ans: The poet imagines how the forest would appear with trees.

(b) The first line of the stanza reveals that ___.

Ans: the trees were captured and enslaved

(c) What does the last line of the stanza suggest?

Ans: It shows how the poet dreams about the new morning

(d) How does the poet use trees as a metaphor for human beings?

Ans: Just like trees, humans want to break free from the boundaries society puts on them.

16. *We were going to Basra to the Consulate-General to collect and answer our mail from Europe. At the Consulate-General we found that my friend's mail had arrived but that mine had not.*

a. Where were they going to get the otter? (1)

Ans: They were going to get the otter from Tigris marshes.

b. What did the author find at the Consulate-General? (1)

Ans: At the Consulate-General the author found his mail had not arrived while his friend's mail had.

c. How did he get his mail? (2)

Ans. Maxwell got his mail after five days. He cabled and tried to telephone in order to get his mail.

17. *I was rushed through to it by infuriated officials. Luckily the seat booked for me was at the extreme front. I covered the floor around my feet with newspapers.*

a. Why were the airport officials infuriated? (1)

Ans: The airport officials were infuriated as the narrator arrived late at the airport.

b. How did the narrator take the air hostess into confidence? (2)

Ans: The narrator told the air hostess about the events that had happened in the last half-an hour in order to take her into confidence.

c. Why did the author give fish to the air hostess? (1)

Ans: The author gave fish to the air hostess to be kept as food for Mij.

18. *Her favourite pastime was standing in the front doorway of her house, watching what was happening in the street outside. There were no playmates of her own age on her street, and this was about all she had to do.*

a) Who is being talked about in the above extract?

Ans: a) Valliammai or Valli is being talked about in the given extract.

b) What was the favourite pastime of the person?

Ans: b) Valli'sfavourite pastime was standing in front of her doorway and watching the happenings on the street outside.

c) Why did the person spend her time all alone?

Ans: c) Valli had no friends of her age and so she had to spend all her time alone.

d) Pick a word from the extract which means the same as 'friends'?

Ans: d) The word 'playmates' means the same as friends.

19. *The pirate gaped at Belinda's dragon,*
And gulped some grog from his pocket flagon,
He fired two bullets, but they didn't hit,
And Custard gobbled him, every bit.

a) What did the pirate gulp?

Ans: The pirate gulped gorg from his flagon.

b) How did the pirate attack Custard?

Ans: The pirate fired two bullets at Custard.

c) What did the dragon do to the pirate?

Ans: The dragon swallowed the pirate.

d) Which word in the given extract means the same as swallowed?

Ans: The word 'gulped' means the same as swallowed.

20. *"The Buddha preached his first sermon at the city of Benares, most holy of the dipping places on the River Ganges; that sermon has been preserved and is given here. It reflects the Buddha's wisdom about one inscrutable kind of suffering."*

(a) Where did the Buddha preach his first sermon?

Ans: The Buddha preached his first sermon at Benares.

(b) What does the sermon preached by the Buddha reflect?

Ans: The sermon preached by the Buddha reflects Buddha's wisdom about life, its sufferings and death which cannot be understood.

(c) Find the word from the extract which means 'something impossible to understand'.

Ans: The word which means 'something impossible to understand' is 'inscrutable'.

(d) How is Benares described in the context?

Ans: Benares is described in the context as the most holy of bathing places on the river Ganges.

21. *"But I can get a hair-dye*
And set such colour there,
Brown, or black, or carrot,
That young man in despair
May love me for myself alone
And not my yellow hair."

(a) Who speaks these lines and to whom?

Ans: The given lines are spoken by Anne Gregory to the poet.

(b) Why are the young men in despair?

Ans: The young men fall in love with Anne because of her beautiful golden hair and feel despair because they cannot win her heart.

(c) What is the antonym of the word 'despair'?

Ans: The antonym of 'despair' is 'hope'.

(d) Why does the speaker talk about changing the colour of hair?

Ans: Anne wants that she should be loved for what she is and not for the colour of her hair. Hence, she talks about changing the colour of her hair.

22. *"In the first place, I'm already 35- a critical age, so to speak. In the second place, I ought to lead a quiet and regular life. I suffer from palpitation …… I jump up like a lunatic, walk about a bit and lie down again, but as soon as I begin to get off to sleep there's another pull"!*

(a) Why is the speaker eager to marry?

Ans: The speaker is eager to marry because he is already 35 years old.

(b) What does the speaker think of Natalya?

Ans: The speaker thinks that Natalya is a good housekeeper.

(c) What sickness does the speaker suffer from?

Ans: The speaker suffers from Palpitations.

(d) Find a word from the extract which means 'mad"

Ans; 'Lunatic'

Supplementary Reader

1. *I tried to sound severe: "Now I really mean this. If you don't cut his food right down and give him more exercise he is going to be really ill. You must harden your heart and keep him on a very strict diet."*

(a) Who is the speaker of the above extract?

Ans: Mr. Herriot, the veterinary surgeon, is the speaker of the above extract.

(b) For whom was the advice given and why?

Ans: The advice was given for Tricki because he had become obese and listless.

(c) Why did the speaker try to sound severe?

Ans: Mr. Herriot tried to sound severe to make Mrs. Pumphrey take his advice seriously and act on it.

(d) What is the antonym of the word 'harden'?

Ans: 'Soften' is the antonym of the word 'harden'.

2. *Later, he patted me on the head and said never mind, he'd teach me to cook. He also taught me to write my name and said he would soon teach me to write whole sentences and to add numbers. I was grateful.*

(a) Who is the speaker in the above extract?

Ans: Hari Singh is the speaker in the above extract.

(b) When did the other person ask the speaker not to mind?

Ans: Anil got very angry with Hari Singh when he had cooked a terrible meal which could not be eaten and was given to a stray dog. But afterwards, being sympathised with Hari Singh, Anil asked him not to mind.

(c) Write the antonym of 'grateful'.

Ans: The antonym of grateful is 'ungrateful'.

(d) Why was Hari Singh grateful to Anil?

Ans: Hari Singh was grateful to Anil because Anil assured him to teach him how to cook. He would also teach Hari to write his own name, write whole sentences and add numbers.

3. *Ausable was, for one thing, fat. Very fat. And then there was his accent. Though he spoke French and German passably, he had never altogether lost the American accent he had brought to Paris from Boston twenty years ago.*

(a) Who is Ausable and to whom is he talking?

Ans: Ausable is a secret agent and is talking to Fowler.

(b) How is Ausable different from others of his class?

Ans: Ausable is different from other secret agents as he is very fat. Moreover, he lives in a small room on the top floor where there is no environment of romantic and thrilling adventure.

(c) Which word in the above passage means the same as the tone of speaking some particular language?

Ans: Accent

(d) Ausable was a native of?

Ans: Ausable was a native of the US

4. *By noon a policeman had arrested him for the jewel robbery at Shotover Grange. His fingerprints, for he had opened the safe without gloves, were all over the room, and no one believed him when he said that the wife of the owner of the house had asked him to open the safe for her. The wife herself, a gray-haired, sharp-tongued woman of sixty, said that the story was nonsense.*

Horace is now the assistant librarian in the prison.

(i) Though Horace was a brilliant thief, he was befooled. Who befooled him?

Ans: The lady in the red befooled Horace Danby.

(ii) How was he befooled?

Ans: The lady pretended to be the owner of the house and made Horace open the safe without gloves, leaving his fingerprints.

(iii) Find the word in the extract which means the same as 'a place where all the valuables are kept under lock and key'?

Ans: safe

(iv) What story was called 'nonsense'?

Ans: Horace's story that he broke open the safe for the young wife of the owner of the house was called nonsense.

5. *Brilliant scientist though he was, Griffin was rather a lawless person. His landlord disliked him and tried to eject him. In revenge Griffin set fire to the house. To get away without being seen he had to remove his clothes. Thus it was that he became a homeless wanderer, without clothes, without money, and quite invisible — until he happened to step in some mud, and left footprints as he walked!*

(i) How can you say that Griffin was a brilliant scientist?

Ans: Griffin was a brilliant scientist as he carried on experiments for years to prove that the human body could become invisible.

(ii) Who disliked Griffin?

Ans: Griffin was disliked by his landlord.

(iii) Find the word in the above extract which means the same as 'a being who roams around aimlessly'?

Ans: wanderer

(iv) How did Griffin get away without being seen?

Ans: Griffin got away without being seen by removing his clothes.

6. And that is one of the ingredients in the making of a scientist. Start with a first-rate mind, add curiosity and mix in the will to win for the right reasons.

(i) What is the first essential ingredient in the making of a scientist?

Ans: The first essential ingredient in the making of a scientist is a first-rate mind.

(ii) What quality drives a scientist to explore and discover?

Ans: Curiosity is the quality that drives a scientist to explore and discover.

(iii) What motivates a scientist to strive for excellence?

Ans: The will to win for the right reasons motivates a scientist to strive for excellence.

(iv) What does the author suggest as the key to success in science?

Ans: The author suggests that combining a first-rate mind, curiosity, and the will to win for the right reasons is the key to success in science.

7. *"I am vexed not to have a jewel, nothing to adorn myself with. I shall have such a poverty-stricken look. I would prefer not to go to this party."*

(i) Why was MmeLoisel unhappy?

Ans: MmeLoisel was unhappy because she did not have any jewel to wear for the party.

(ii) What does the word 'vexed' mean in the above line?

Ans: The word 'vexed' means annoyed.

(iii) Why did MmeLoisel think that she would look poverty-stricken?

Ans: MmeLoisel thought that she would look poverty-stricken as she had no jewel to wear for the occasion.

(iv) Why was MmeLoisel hesitant to go to the party?

Ans: MmeLoisel did not have a proper jewel to wear for the party and she thought that she would look poverty-stricken, so she decided not to go to the party.

8. *"What's the matter with you, you fool?" shouted Ramlal. "I am only taking you to school." Then he told his wife, "Let her wear some decent clothes today, or else what will the teachers and the other schoolgirls think of us when they see her?"*

(i) What was Ramlal concerned about when he asked his wife to dress Bholi decently that day?

Ans: Ramlal was concerned about his social reputation when he instructed his wife to dress Bholi decently that day.

(ii) How was Bholi treated at home?

Ans: Bholi was neglected at home because she was neither good-looking nor smart.

(iii) Why did Bholi refuse to go to school initially?

Ans: Bholi refused to go to school initially because she thought that she was being sold off by her parents.

(iv) What is the antonym of 'decent'?

Ans: indecent

9. OOP: I haven't a clue. I've been to seven galaxies, but I've never seen anything like this. Maybe they're hats. (He opens a book and puts it on his head.) Say, maybe this is a haberdashery!
   OMEGA: (bowing low) Perhaps the Great and Mighty Think-Tank will give us the benefit of his thought on the matter.
   THINK-TANK: Elementary, my dear Omega. Hold one of the items up so that I may view it closely. (Omega holds a book on the palm of her hand.) Yes, yes, I understand now. Since Earth creatures are always eating, the place in which you find yourselves is undoubtedly a crude refreshment stand.
   OMEGA: (to lota and Oop) He says we're in a refreshment stand.
   OOP: Well, the Earthlings certainly have a strange diet.

(i) Why did Omega bow low before Think-Tank?

Ans: Omega bowed low before Think-Tank as a mark of respect and recognition of supremacy to ask him to explain what they were.

(ii) What does Think-Tank mean by saying – 'Elementary, my dear Omega'?

Ans: By the given words, Think-Tank means to say that "It's quite obviously deducible, Omega."

(iii) The quality of being crude has been allotted to the refreshment stand because?

Ans: Because it produces food that is unrefined and unprocessed in nature.

(iv) Pick a word from the passage that means the same as 'a collection of star systems'.

Ans. galaxies

Sample Question Paper

(SSLC Examination 2024-25)

English

(New Course – NCERT Textbook)

by

Meghalaya Board of School Education (MBOSE)

A. The Scheme of Examination

	Maximum Marks	**Pass Marks**
Theory Examination	80	24
Internal Assessment	20	6
Total	100	30

B. Scheme of Theory Examination

Section	**Topics**	**Marks**
Section-A: Multiple Choice Questions (MCQs)	• Literature; • Grammar; and • Reading Skills (Conceptual)	30
Section-B: Reading Skills	Reading Comprehension through Unseen Passage *(Case Based Factual Passage with Visual Input, Statistical Data, Chart, Etc.)*	10
Section-C: Creative Writing Skills	• Letter Writing based on a given situation • Article Writing on the given topic • Writing an analytical Paragraph on a given Map / Chart / Graph / Cue, etc.	16
Section-D: English Reader and Supplementary Reader	• Short Answer Type Questions • Long Answer Type Questions • Extract from English Reader and Supplementary Reader	24
Total		**80**

C. Scheme of Internal Assessment

The Internal Assessment can be done through anyone of the following:

1. Project Work
2. Written Tests
3. Assignments (Class work or Home Work)

Sample Question Paper

English
Class-X

Question Paper Code: XY

Time: 3 hours **Max Marks: 80 (Pass Marks: 24)**

General Instructions:

1. Please check that this Question Paper contains 56 Questions.
2. Question Paper Code given above should be written on the Answer Book, in the space provided, by the Candidate.
3. 15 minutes time is given for the candidates to read the Question paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.
4. The Question Paper contains 4 sections, Section A, B, C and D.
5. Section-A contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers provided anywhere else will not be counted for marking.
   a. Questions 1 to 14 are from the English Reader and the Supplementary Reader.
   b. Questions 15 to 20 are from Grammar Section. Read the given instructions carefully before answering.
   c. Questions 21 to 30 are based on the passage given. Read the passage carefully before answering.
6. Section-B contains questions based on Reading Comprehension through Unseen Passage which is a Case Based Factual Passage with Visual Input, Statistical Data, or Chart. There are 10 (ten) questions. Each question carries 1 mark.
7. Section-C contains Creative Writing Questions.
8. Section-D contains Questions based on English Reader and Supplementary Reader

Section-A

Multiple Choice Questions: Attempt **ALL** Questions. (30 X 1 = 30 marks)

(Questions 1 to 14 are from the English Reader and the Supplementary Reader)

1. The only person who returned to Amsterdam from the concentration camp was
   A. Anne Frank
   B. Anne's sister
   C. Anne's father
   D. Anne's mother
2. What was the Pilot's reaction to his instruments failing?
   A. Panic
   B. Denial
   C. Acceptance and quick thinking
   D. Immediate landing
3. Which of the following is a reason why the field was white?
   A. It was a cotton field
   B. It was submerged in ocean water
   C. It was covered with hailstones
   D. All the above
4. What lesson did Mandela learn about courage?
   A. Anyone can show courage
   B. Courage is not found in the absence of fear
   C. Courage cannot be shown when one is afraid
   D. Courage can be found under any circumstances
5. 'The great expanse of the sea stretched down beneath". The word 'expanse' means –
   A. Large open area
   B. Huge
   C. 2-D surface enclosed with a boundary
   D. Inside scope
6. Coorg is also known as
   A. Kodagu
   B. Kondam
   C. Korallai
   D. Kanaru
7. What can still be seen in Goa, according to the Chapter 'A Baker from Goa'?
   A. Traditional Portuguese dress
   B. Old Portuguese bakers
   C. Traditional work of Bakers
   D. Traditional Portuguese sweets
8. What does the lesson, 'Tea from Assam' give us?
   A. A vivid picture of how tea is grown
   B. A complete analysis of tea planters
   C. A graphic description of the tea bushes as far as the eyes can go in Assam
   D. A detailed account of tea plantations around the world.
9. What lesson does the boy learn from losing his ball?
   A. To never play with a ball again
   B. The importance of being careful
   C. Acceptance of loss and moving on
   D. How to swim
10. "He should be snarling around houses" The word 'snarling' means
    A. Buzzing sound in the jungle
    B. Sound to make the animals afraid
    C. Sound in the water bodies
    D. Sound made by animals
11. The poet says, "Of a day I had rued". What is the meaning of "rued"?
    A. Ruined
    B. Held in regret
    C. Ruled
    D. Conquered
12. What emotion is represented by 'ice' in the poem, "Fire and Ice"?
    A. Joy and happiness
    B. Indifference and hatred
    C. Excitement and thrill
    D. Sadness and despair

13. What was Mr. Herriot's final suggestion to Mrs. Pumphrey for Tricki's recovery?
    A. To hospitalize him
    B. To take him for a walk
    C. To let him have plenty of sugar
    D. To let him play with other dogs
14. What did Anil do to the food cooked by the boy the first day?
    A. Enjoyed eating it
    B. Put it in the cupboard
    C. Gave it to a stray dog
    D. Asked the boy to eat it all

(Questions 15 to 20 are from Grammar Section. Read the given instructions carefully before answering)

15. I was waiting for my friend. (Choose the correct passive form) :
    A. My friend is being waited by me.
    B. My friend is being waited for by me.
    C. My friend was being waited for by me.
    D. My friend is waiting for me.
16. The opportunity to volunteer at the local food bank made me _____ the challenge faced by underprivileged communities. (Choose the correct option to fill in the blank)
    A. realising
    B. realises
    C. realised
    D. realise
17. He suddenly _____ a plan. (Choose the correct option to fill in the blank)
    A. hit upon
    B. hit at
    C. hit into
    D. hit off
18. I met Olivia _____ asked me to tell you about the accident. (Choose the correct option to fill in the blank).
    A. which
    B. who
    C. whom
    D. what
19. Since the Chief Minister did not approve with their demands, the employees decided to intensify their strike.

    (Which of the following options should replace the underlined part of the above sentence to make it grammatically correct?)
    A. approve of
    B. approve in
    C. approve at
    D. approve on
20. The idiomatic expression 'pushed to our limits' means
    A. made us walk
    B. took more than our share of difficulties
    C. pushed towards a wall
    D. reached a point where we could not endure the suffering

(Questions 21 to 30 are based on the passage given below. Read the passage carefully then choose the most appropriate options for the questions.)

Passage

Habits are automatic responses to specific situations, learned through repetition and experience. They can be both beneficial and detrimental to our lives. Good habits, such as regular exercise or healthy eating, can improve our physical and mental well-being. On the other hand, bad habits, like smoking or procrastination, can harm our health and relationships. To change a habit, we must first become aware of it, then identify the trigger that sets it off, and finally replace it with a new, healthier habit. By understanding and controlling our habits, we can transform our lives and become more productive, confident, and successful individuals.

21. What are habits, according to the passage?
    E. Conscious decisions
    F. Automatic responses to specific situations
    G. Innate behaviours
    H. Learned skills
22. What can good habits improve?
    E. Only physical health
    F. Only mental well-being
    G. Both physical and mental well-being
    H. Neither physical nor mental well-being
23. What is the first step in changing a habit?
    E. Identify the trigger
    F. Become aware of the habit
    G. Replace the habit with a new one
    H. Ignore the habit
24. What is the trigger in the context of habits?
    E. The habit itself
    F. The situation that sets off the habit
    G. The consequence of the habit
    H. The replacement habit
25. What is the goal of replacing a bad habit with a new one?
    E. To eliminate the trigger
    F. To maintain the status quo
    G. To improve our lives
    H. To please others
26. What can we become by controlling our habits?
    E. Less productive
    F. Less confident
    G. More productive, confident, and successful
    H. Unchanged
27. What is the author's attitude towards habits?
    E. Neutral
    F.Positive
    G. Negative
    H. Critical
28. What is the author's message about changing habits?
    E. It's impossible
    F.It's easy
    G. It requires awareness and effort
    H. It's unnecessary
29. What is the relationship between habits and our lives?
    E. Habits have no impact on our lives
    F.Habits can only harm our lives
    G. Habits can both benefit and harm our lives
    H. Habits can only benefit our lives
30. What is the ultimate result of understanding and controlling our habits?
    E. We become less successful
    F.We become more stressed
    G. We transform our lives
    H. We remain the same

Section-B

Read the following passage carefully and answer the questions after the passage. (1 x 10 = 10)

The education of a child starts from the family, where the mother is the first teacher.

But the irony in India is that although the deity of education is a female, that is, Goddess Saraswati, according to Hinduism, but unfortunately, in India, innumerable women remain illiterate. They do not remain uneducated by choice but are forbidden from receiving education because of the patriarchal system in society. Right from the early Vedic period, people have been celebrating the birth of a son, nevertheless, in those days, daughters were not neglected but were educated well. However, during the later Vedic period, daughters were considered a social burden. Only the girls belonging to upper class families enjoyed the right of education and got proper nourishment. In the medieval period, the conditions

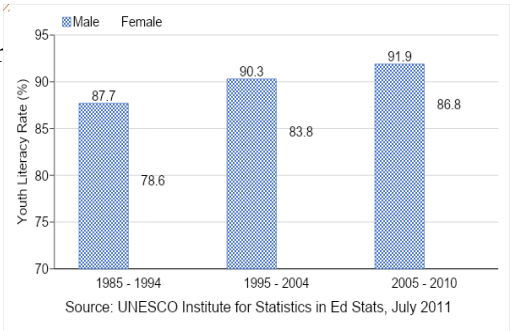
deteriorated for the females, even in royal families. Girls could not get the same status as the boys. In Muslim households, they were taught at their homes, while Hindu girls enjoyed the privilege of getting primary education along with the boys in schools.

The prevalence of child marriage was excessively pr ntury, many social refo female education.

Since then, there has been tremendous progress in l neglected. In most fa because, later on they would be compelled to spend a heavy amount on her dowry. So, the female literacy rate is unsatisfactory. This has a direct impact on the overall development of the nation.

On the basis of your reading of the given passage, answer the following.

31. Who is the first teacher for the child?
32. Why are women not allowed to receive education?
33. How is early Vedic period different from later Vedic period, according to the passage?
34. What happened to the status of girls in the medieval period?
35. How girl education was different in Muslim households compared to Hindu households?
36. Which social reformer advocated female education?
37. How has the patriarchal system of society affected education?
38. Why is the education of a girl child not considered important?
39. Look at the given graph. What is the difference in percentage between the male education in 1985-94 and the female education in 2005-10?
40. As per the graph, how is the trend of female education?



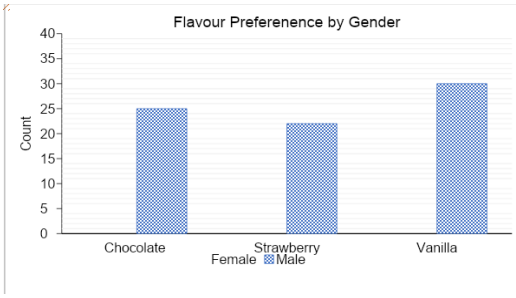
Section-C

Creative Writing Skill: **Answer any 2 (two)** (2x8 = 16 Marks)

41. You are Andruf / Medari and you are very concerned about the water leakage from broken pipes in your locality. Write a letter to the Municipal Board stating the problems and what might happen if further action is not taken.

42. India is a land of diversity. This makes us feel proud of the number of festivals we enjoy. Write an article, in about 150-200 words, on 'Festivals of India.' You are Kaushik / Kavita

43. The bar graph illustrates flavour preferences by gender. Write an analytical paragraph to describe the information in 100-200 words. (8 Marks)



Section-D

(READER & SUPPLEMENTARY READER)

Q. No. 44 -49: Short Answer Questions. Answer any **3 (three)**

44. Why was Lencho's soul filled with sorrow?
45. In the chapter 'Black Aeroplane', what do you think prompted the narrator to act like 'an obedient child'?
46. According to Robert Frost, how can fire destroy the world?
47. What does the line 'never let down my bright hair' tell us about Amanda?
48. How was Ausable different from the other secret agent?
49. Why was Mrs. Pumphrey worried about Tricki?

Q.No. 50-53: Long Answer Questions. Answer any **2 (two)**

50. Give a brief description of Anne Frank's Life
51. In the play 'The Proposal', Natalya, in spite of being a good housekeeper, educated and not bad looking is quarrelsome, vain and highly impulsive. Justify your answer.
52. In the poem 'For Anne Gregory', W. B. Yeats conveys that we should give importance to inner beauty and not to physical appearance. Elaborate.
53. How does the poet highlight human cruelty to animals in captivity in the poem 'A Tiger in the Zoo'?

Q.No. 54-56: Answer any 2(two)

54. Read the extract and answer the questions that follow. (4x1=4)

The ceremonies took place in the lonely sandstone amphitheatre formed by the Union Buildings in Pretoria. For decades this had been the seat of white supremacy, and now it was the site of a rainbow gathering of different colours and nations for the installation of South Africa's first democratic, non-racial government.

i. Where did the ceremonies take place?

ii. What is an amphitheatre? 3x2=6

iii. What has been the significance of that place so far?

iv. How was this government different from the previous one?

55. Read the extract and answer the questions that follow. (4x1=4)

The Dust of snow
From a hemlock tree
Has given my heart
A change of mood.

i. What has changed the poet's mood?

ii. What is a hemlock tree?

iii. What kind of change did the poet experience in his mood? 2x5= 10

iv. What does the dust of snow represent?

56. Read the extract and answer the questions that follow. (4x1=4)

"And this is one of the ingredients in the making of a scientist. Start with a first-rate mind, add curiosity and mix in the will to win for the right reasons."

i. What is the first essential ingredient in the making of a scientist?

ii. What quality drives a scientist to explore and discover?

iii. What motivates a scientist to strive for excellence?

iv. What does the author suggest as the key to success in science?

*** End of the Question Paper ***

CM IMPACT Guidebook for Students

(With Important Questions and Answers)

Mathematics

Class-X

(New Course – NCERT Textbook)

2024 – 2025

Published by

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Section-A
Multiples Choice Questions (MCQ) - 1 Mark

[Real Numbers]

1. For some integer p , every even integer is of the form:
   (A)p (B) p + 1 (C) 2p (D) 2p – 1
   Ans.(C)
2. The product of a non-zero rational number and an irrational number is:
   (A) An irrational number
   (B)a rational number(C) one
   (D) zero
   Ans.(A)
3. The sum or difference of a rational number and an irrational number is:
   (A) A rational number
   (B) Anirrational number (C) One
   (D) Zero
   Ans.(B)
4. For any two positive integers p and q, HCF (p, q) X LCM (p, q) is equal to:
   (A) p+ q(B) p – q(C) p x q(D) p/q
   Ans.(C)
5. Every composite number can be expressed as a product of:
   (A) Co-primes (B) primes (C) twin primes
   (D) none of these
   Ans. (B)
6. If p^2 is an even integer then p is a/an:
   (A) Odd integer (B) even integer
   (C) multiple of 3(D) none of these.
   Ans. (B)
7. The decimal expansion of a rational number is always:
   (A) Non-terminating
   (B) non-terminating and non- repeating
   (C)terminating or non- terminating repeated
   (D) none of these
   Ans. (C)
8. The HCF of p and q which are relatively primes is:
   (A) 1 (B) p (C) q (D)pxq
   Ans. (A)
9. The LCM of p and q which are relatively primes is:
   (A) 1 (B) p (C) q (D) pq
   Ans. (D)
10. The product of prime factors of 156 is:
    (A) 2 x 3 x 13 (B) 2^2 x 3 x 13
    (C) 2 x 3^2 x 13 (D) 2^2 x 3^2 x 13
    Ans. (B)
11. Prime factors of 4050 is:
    (A) 2 x 3^2 x 5 (B) 2 x 3^4 x 5
    (C) 2 x 3^4 x 5^2(D) 2 x 3^4 x 5^3
    Ans. (C)
12. If HCF (306,657) = 9, then the LCM (306, 657) is:
    (A) 2236 (B) 2338 (C) 22338 (D) 757
    Ans. (C)
13. A number which cannot beexpressed in the form a/b, where ‘a’ and ‘b’ are both integers and $b \neq 0$ is called a/an:
    (A) Rational number
    (B) irrational number
    (C) composite number
    (D) prime number
    Ans. (B)
14. A number which can be expressed in the form a/b, where ‘a’ and ‘b’ are both integers and $b \neq 0$ is called a/an:
    (A) Rational number
    (B) irrational number
    (C) composite number (D) prime number
    Ans.(A)
15. A number which is not divisible by 2 is called a/an:
    (A) Even natural number

(B) whole number (C) odd natural number
(D) prime number
Ans.(C)

16. A natural number which has exactly two factors i. e., 1 and the number itself is called a:
(A) Rational l number (B) whole number
(C) composite number (D) prime number
Ans. (D)
17. A natural number which is not prime and has more than two factors is called a/an:
(A) composite number (B) whole number
(C) odd natural number (D) prime number
Ans. (A)
18. A Prime number has exactly:
(A) One factor (B) two factors
(C) three factors (D) more factors
Ans. (B)

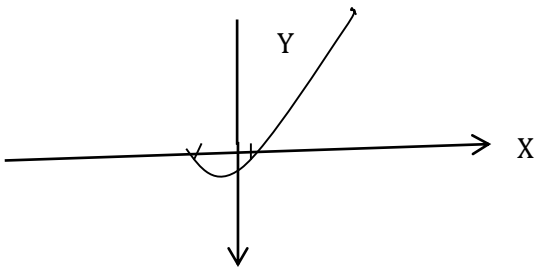
[Polynomials]

19. Which of the following is a quadratic polynomial?
(A) $x + 7$ (B)$x^2 - 2$ (C) $x^3 + 4x + 9$
(D) $x^4 + 3x^3 + 2x + 7$
Ans. (B)
20. A polynomial of degree 3 is called a:
(A) Linear polynomial
(B) quadratic polynomial
(C) cubic polynomial
(D) biquadratic polynomial
Ans. (B)
21. A quadratic polynomial can have at most:
(A) 1 zero (B) 2 zeroes (C) 3 zeroes
(D) 4 zeroes
Ans.(B)
22. The degree of a constant polynomial is:
(A) 2 (B) 1 (C) -1 (D) 0
Ans. (D)
23. The degree of a zero polynomial is:
(A) Always zero(B) never zero
(C) negative (D) undefined
Ans. (D)
24. The degree of the polynomial $p(x) = x^2 - 5x + 6$ is:
(A) 1 (B) 2 (C) 3 (D) 4
Ans. (B)
25. Sum of zeroes of the polynomial $p(x) = x^2 - 3x + 2$ is:
(A) 2 (B) 3 (C) -2 (D) -3
Ans. (B)
Hint: sum of zeroes of p(x) = $-\frac{co-effcient\ of\ x}{co-efficient\ of\ x^2}$
26. Product of zeroes of the polynomial $p(x) = x^2 - 3$ is:
(A)– 3 (B) 3 (C) $\sqrt{3}$
(D) $-\sqrt{3}$
Ans. (A)
Hint: product of zeroes of p(x) = $\frac{constant\ term}{co-efficient\ of\ x^2}$
27. Number of zeroes of a polynomial of degree n is:
(A) Equal to n (B) greater than n
(C) less than n(D) less than or equal to n
Ans. (D)less than or equal to n
28. If the graph of y = p(x), where p(x) is a polynomial, does not intersect the x- axis then the number of zeros is:
(A) 1 (B) 2 (C) 3 (D) No Zeros
Ans. (D)
29. If the graph of y = p(x) where p(x) is a polynomial, intersects the x- axis at one point only then the number of zeros is
(A) 1 (B) 2 (C) 3 (D) 4
Ans. (A)
30. At most how many zeroes a linear polynomial can have?
(A) 0 (B) 1 (C) 2 (D) 3
Ans.(B) 1

31. The zero of a linear polynomial P (x) = a x + b, where a, b are real numbers, is:
(A) - a/b (B) – b/a (C) – (ab) (D) a/b
Ans. (B) – b/a

32. For any polynomial p (x), if p (a) =0, then 'a' is called:
(A) Constant of the polynomial
(B) zero of the polynomial
(C) Degree of the polynomial
(D) coefficient of the polynomial
Ans.(B) zero of the polynomial

33. From the graph y = p (x) given below, for some polynomial p(x), the number of zeroes is:
(A) 1 (B) 2 (C) 3 (D) 4



Ans. B

34. A bi-quadratic polynomial is a polynomial of degree:
(A) 1 (B) 2 (C) 3 (D) 4
Ans. (D) 4

35. The sum and product of the zeroes of a quadratic polynomial $ax^2 + bx + c$ are:
(A)–b/a, c/a (B)b/a, –c/a (C) b/a, c/a
(D)–b/a, –c/a
Ans. (A)

36. The sum and product of the zeroes of a quadratic polynomial $k^2x^2 – k x + 1$ are:
(A) 1/k, - 1/k (B) – 1/k, $1/k^2$
(C) 1/k, $1/k^2$ (D) 1/k, - $1/k^2$
Ans. (C)

37. The zeroes of a quadratic polynomial $3x^2 – x – 4$ are:
(A) 1, - 4/3 (B) – 1, 3/4 (C) – 1, 4/3
(D) -1, - 4/3
Ans. (C)

38. The zeroes of a quadratic polynomial $x^2 – 15$ are:
(A) $\sqrt{15}, \sqrt{15}$ (B) $\sqrt{15}, -\sqrt{15}$
(C) $3\sqrt{5}, -3\sqrt{5}$ (D) $5\sqrt{3}, -5\sqrt{3}$
Ans. (B)

39. The quadratic polynomial with 2 as sum and – 8 as product of its zeroes is:
(A) $x^2 – 2x – 8$ (B) $x^2 + 2x – 8$
(C) $x^2 – 2x + 8$ (D) $x^2 + 2x + 8$
Ans. (A)

40. The quadratic polynomial with 0 and – 1/7 as its two zeroes is:
(A) $7x^2 + x$ (B) $x^2 – 7x$
(C) $x^2 + 7x$ (D) $7x^2 – x$
Ans. (A)

41. If the graph of $y = x^2 – 2x – 35$ cuts the x-axis at (7, 0) and (- 5, 0) then the zeroes of the polynomial $x^2 – 2x – 35$ are:
(A) 7, - 5 (B) 0, – 5 (C) 0, 7
(D) 0,0
Ans. (A)

[Pair of Linear Equations in two variables]

42. If the graphs of two lines pass through the same points, then the system of equations representing these lines is:
(A) consistent (B) inconsistent
(C) consistent dependent
(D) inconsistent and dependent
Ans. (C) consistent dependent

43. The pair of equations x = 0 and y = 0 has:
(A)no solution (B) one solution (C) two solutions (D) infinitely many solutions
Ans. (B)

44. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has an infinite number of
Solutions if:
(A) $a_1/a_2 \neq b_1/b_2$
(B) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$
(C) $a_1/a_2 = b_1/b_2 = c_1/c_2$ (D) none of these
Ans. (C)

45. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has a unique solution if:
(A) $a_1/a_2 \neq b_1/b_2$ (B) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$
(C) $a_1/a_2 = b_1/b_2 = c_1/c_2$ (D) none of these
Ans. (A)

46. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has no solution if:
(A) $a_1/a_2 \neq b_1/b_2$ (B) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$
(C) $a_1/a_2 = b_1/b_2 = c_1/c_2$ (D) none of these
Ans. (B)

47. The pair of equations x = a and y = b graphically represents lines which are:
(A) parallel (B) coincident
(C) intersecting at (a, b)
(D) intersecting at (b, a)
Ans. (C)

48. The system of equations $-3x + 4y = 5$ and $\frac{9}{2}x - 6y + \frac{15}{2} = 0$ has:
(A) Unique solution (B) infinite solutions
(C) no solutions (D) none of these
Ans. (B)

49. If x = a and y = b is the solution of the equations $x - y = 2$ and $x + y = 4$, then the values of a and b are respectively:
(A) 3 and 5 (B) 3 and 1 (C) 5 and 3
(D) -1 and -3
Ans. (B) 3 and 1

50. If (6, k) is a solution of the equation $3x + y - 22 = 0$ then the value of k is:
(A) - 4 (B) - 3 (C) 4 (D) 3
Ans. (C)

[Quadratic Equations]

51. Which of the following is a quadratic equation?
(A) $x^2 - 2x = (-2)(3 - x)$
(B) $x^2 + 3\sqrt{x} + 2 = 5$
(C) $(x - 2)(x + 1) = (x - 1)(x + 3)$
(D) $(x + 2)^3 = 2x(x^2 - 1)$
Ans. (A)

52. If the roots of the equation $ax^2 + bx + c = 0$ are equal, then c equals to:
(A) $\frac{b}{2a}$ (B) $-\frac{b}{2a}$ (C) $\frac{b2}{4a}$ (D) $-\frac{b2}{4a}$
Ans. (C)

53. If x = 3 is a solution of the quadratic equation $3x^2 + (k - 1)x + 9 = 0$, then k equals to:
(A) 11 (B) – 11 (C) 13 (D) -13
Ans.(B)

54. The roots of the equation $ax^2 + bx + c = 0$ are non-real if:
(A) $b^2 - 4ac = 0$ (B) $b^2 - 4ac > 0$
(C) $b^2 - 4ac < 0$ (D) b= 0
Ans. (C)

55. If x = 1is the common root of $ax^2 + bx + 2 = 0$ and $x^2 + x + b = 0$, then a equals:
(A) 1 (B) 0 (C) 3 (D) 4
Ans.(B)

56. A quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ will have equal roots if:
(A) $b^2 - 4ac = 0$ (B) $b^2 - 4ac > 0$
(C) $b^2 - 4ac < 0$ (D) b= 0
Ans. (A)

57. The roots of the quadratic equation $100x^2 - 20x + 1 = 0$ are:
(A)10, 10 (B)– 10, 10 (C)1/10, 1/10
(D)1/10, - 1/10
Ans. (C)

58. If ½ is a root of the quadratic equation $x^2 - kx + 6 = 0$ then the value of k is:
(A) 25 (B) -25 (C) 25/2 (D) 25/4
Ans. (C)

59. If the roots of a quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ are real and equal, then which of the following relation is true?
(A) $a = b^2/c$ (B) $b^2 = ac$ (C) $ac = b^2/4$ (D) $c = b^2/a$
Ans. (C)

60. If 5 pencils and 7 pen together cost ₹ 50, whereas 7 pencils and 5 pens together costs ₹ 46, then the cost of one pen is:
(A) ₹ 3 (B) ₹ 7 (C) ₹ 5 (D) ₹ 12
Ans. (C) ₹ 5

61. If 10 students of class X took part in a Mathematics challenge during the Talent Fest organized by the School, and if the number of girls is 4 more than the number of boys, then the number of boys is:
(A) 3 (B) 4 (C) 5 (D) 6
Ans. (A)

62. The Discriminant of the quadratic equation $x^2 + 8x + 16 = 0$ is:
(A) 3 (B) 2 (C) 1 (D) 0
Ans. (D)

63. The solution of $(x - 4)(x + 2) = 0$ is:
(A) 4, - 2 (B) – 4, 2 (C) 2, - 2 (D) 4, 2
Ans. (A)

64. If $b^2 - 4ac > 0$, then the quadratic equation $ax^2 + bx + c = 0$ has:
(A) real and equal roots
(B) real and unequal roots
(C) no real roots (D) none of the above
Ans. (B)

65. If $b^2 - 4ac = 0$, then the roots of the quadratic equation $ax^2 + bx + c = 0$ are:
(A) - b/2a, - b /2a (B) –b/2a, b/2a
(C) 2b/a, – 2b/a (D) a/2b, - a/2b
Ans. (A)

66. If $2x^2 - 2kx + 1 = 0$ has real and equal roots, then the value of k is:
(A) 1 (B) 2 (C) ± 2 (D) 4
Ans. (C)

67. The quadratic formula of the quadratic equation $ax^2 + b x + c$ where a, b, c are real numbers and $a \neq 0$ is given by x equals to:
(A) $\frac{-b \pm \sqrt{b^2+4ac}}{2a}$ (B) $\frac{-b \pm \sqrt{b^2+4ac}}{a}$
(C) $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$ (D) $\frac{b \pm \sqrt{b^2-4ac}}{2a}$
Ans. (C)

68. If the value of $(b^2 - 4ac)$ is negative for the quadratic equation $ax^2 + b x + c$ where a, b, c are real numbers and $a \neq 0$, then the nature of its roots are:
(A) not real (B) real and unequal
(C) real and equal (D)none of these
Ans. (A) not real

69. The nature of roots of the quadratic equation: $49x^2 + 21 x + 9/4$ are:
(A) not real (B) real and unequal
(C) real and equal (D)none of these
Ans. (C) real and equal

[Arithmetic Progression]

70. In an AP, if d= 2 and fourth term, $a_4 = 13$ then a is:
(A) 6 (B) 7 (C) 20 (D) 28
Ans. (B) 7

71. In an AP, if a= 2, d = 0, n = 1000 then a_n, is:
(A) 2 (B) 10 (C) 1000 (D) 2000
Ans. (A)

72. In an AP: 3, 1, -1, -3, …… the first term 'a' and common difference 'd' are respectively:
(A) 3, 2 (B) 1, -2 (C) 2, 3 (D) 3, -2
Ans. (D)

73. Which of the following series form an AP?
(A) 2, 4, 8, 16, ……(B) 0, -4, -8, -2,……
(C) 1, 3, 9, 27, …….

(D) 0.2, 0.22, 0.222, 0.2222,…..

Ans. (B)

74. The first three terms of an AP when the first term, a= 10 and common difference, d = 10 are:

(A) 10, 20, 30 (B) 0, 10, 100

(C) 10, - 10, - 20 (D) 10, 5, 0

Ans. (A)

75. If common difference of an AP is 5, then $a_{16} - a_{15}$ is:

(A) 1 (B) 31 (C) 5 (D) 15

Ans. (C)

76. Sum of first 20 natural numbers is:

(A) 210 (B) 120 (C) 55 (D) 15

Ans. (A)

77. The missing term in the box of the AP: 2, □, 26,……. Is:

(A) 6 (B) 12 (C) 13 (D) 14

Ans. (D)

78. The missing terms in the box of the AP: □, 13, □, 3,……. Is:

(A) 18, 8 (B) 14, 16 (C) 16, 10

(D) 18, 10

Ans. (A)

79. If k, 2k – 1, k + 4 are three consecutive terms of an AP, then the value of k is:

(A) – 2 (B) 3 (C) – 3 (D) 6

Ans. (B)

80. If 5n + 3 is the nth term of an AP, then the common difference is:

(A) 15 (B) 12 (C) 5 (D) 1

Ans. (C)

81. The first three terms of an AP if $a_n = 2n + 5$ are:

(A) 1, 2, 3 (B) 7, 10, 13 (C) 7, 9, 11

(D) 11, 13, 17

Ans. (C)

82. The sum of first n natural numbers is:

(A)n(n + 1)/2 (B) n(n + 1)

(C) $n^2 + 2n/2$ (D) n^3

Ans. (A)

83. The sum of first n terms of an AP, whose first term ‘a’ and last term ‘l’ is:

(A) n/2 (a + 2l) (B) n /2 (a + l)

(C) (a + l) (D) n/2

Ans. (B)

84. Wansuk saves some money from her pocket money, first month she saves ₹ 20; she decided to ₹ 10 more from second month onwards. She will be able to save ₹ 100 in:

(A) 6 months (B) 8 months

(C) 9 months (D) 10 months

Ans. (C)

85. In an A.P: a, a+ d, a + 2d, a + 3d, ……., its general term t_n equals to:

(A) a + n d (B) {a + (n - 1)d}

(C) (a + n)/2 (D) {n (a + n)d}

Ans. (B)

86. If ‘a’ is the first term ‘d’ the common difference of an A P, then sum of first n terms is:

(A) n/2 {(a + (n - 1) d}

(B) n/2 {(2a + n) d}

(C) n/2 {2a + (n -1) d}

(D) n { 2a + (n - 1) d}

Ans. (C)

87. In an AP, the difference between t_{n+1} and t_n is called the:

(A) First term (B) last term

(C) common difference (D) next term

Ans. (C)

88. If a = - 2, d = 5 then the value of t_{10} is equal to:

(A) 23 (B) 33 (C) 43 (D) 53

Ans. (C)

89. The common difference of the AP: 0, ¼, ½, ¾, …… is:

(A) 1/4 (B) 1/2 (C) 3/4 (D) 0

Ans. (A)

[Triangles]

90. All geometrical congruent figures are:

(A)Not similar (B) similar

(C) unequal (D) none of the above

Ans. (B)

91. The ratio of any two corresponding sides in two equiangular triangles is always:

(A)The same (B) different (C)similar

(D) none of the above

Ans. (A)

92. If two angles of one triangle are respectively equal to two angles of another triangles then the two triangles are similar. This is referred to as the:

(A) AA Similarity Criterionfor two triangles

(B) SAS Similarity Criterion for two triangles

(C)AAA Similarity Criterion for two triangles

(D) SSS Similarity Criterion for two triangles

Ans. (A)

93. If ΔABC and ΔDEF are two triangles in which $\frac{AB}{DE} = \frac{BC}{DF}$ then the two triangles are similar if:

(A)<A = <F (B)<B = <D (C)<A = <D

(D)<B = <E

Ans. (B)

94. The area of an equilateral triangle of side 'a' is:(A) $3a^2$(B) 2√3/a (C) √3/4 a (D) √3/4 a^2 Ans. (D)

95. The length of the altitude of an equilateral triangle of side 2 cm is:

(A) 3 (B) √3 (C) √3/2 (D) 2√3

Ans. (B)

96. If ΔABC~ΔDEF and < A = 47^0 and <E = 83^0, then <C is:

(A) 50^0(B) 47^0(C) 80^0(D) 83^0

Ans. (A)

97. In a triangle, if the perpendicular from the vertex to the base bisects the base. The triangle is:

(A) Scalene (B) isosceles

(C) obtuse –angled (D) right- angled

Ans. (B)

98. If the bisector of an angle of a triangle bisects the opposite side, then the triangle is:

(A) Scalene (B) isosceles (C) equilateral (D) right- angled

Ans. (C)

99. In a triangle, the line segment joining from one vertex to the mid -point of the opposite side is called its:

(A) Median (B) perpendicular

(C) hypotenuse (D) angle bisector

Ans. (A)

[Coordinate Geometry]

100. The perimeter of a circle is called its:

(A)Area (B) diameter (C) radius

(D) circumference

Ans. (D) circumference

101. The coordinates of a point on Y-axis is of the form:

(A) (x, y) (B) (x, 0) (C) (y, 0)

(D) (0, y)

Ans. (D)

102. The distance of any point P (x, y) from Origin is:

(A)$\sqrt{x^2 - y^2}$ (B)$\sqrt{y^2 - x^2}$

(C)$\sqrt{x^2 + y^2}$ (D)$\sqrt{x^3 + y^3}$

Ans. (C)

103. In which quadrant does the point (-3 , 5) lie?

(A) first quadrant (B) second quadrant

(C) third quadrant (D) fourth quadrant

Ans. (B)

104. The distance of the point P(3, 4) from the origin is:

(A) 4 unit (B) 3 units (C) 5 units

(D) 7 units

Ans. (C)

105. The coordinates of the midpoint of the line segment joining the points A(- 2, 8) and B(- 6, - 4) is:

(A) (4, 2) (B) (- 4, 2) (C) (4, - 2)

(D) (- 4, - 2)

Ans. (B)

106. The coordinates of the midpoint of the line segment joining the points A(a, b) and B(0, 0) is:

(A)(a + b/2, a) (B)(a + b, b) (C) (a/2, b/2)

(D) (a, b)

Ans. (C)

107. The coordinates of a point on X –axis are of the form:

(A) (0, x) (B) (x, 0) (C) (0, y)

(D) (y, 0)

Ans. (B)

108. If A (x_1, y_1), B (x_2, y_2) and C (x_3, y_3) are the three vertices of a triangle then area of a ΔABC is:

(A) ½ $|x_1 (y_2 – y_3) + x_2 (y_3 – y_1) + x_3 (y_1 – y_2)|$

(B) ½ $|x_2 (y_3 – y_1) + x_3 (y_1 – y_2) + x_3 (y_1 – y_2)|$

(C) ½ $|x_3 (y_2 – y_1) + x_2 (y_3 – y_1) + x_1 (y_3 – y_2)|$

(D) ½ $|x_1 (y_2 – y_1) + x_2 (y_3 – y_2) + x_3 (y_1 – y_3)|$

Ans. (A)

109. Three points in a plane are collinear if the area of a triangle is:

(A)Sum of distances

(B)Difference of distances

(C) 1(D) 0

Ans. (D)

110. Which one of the following is the Hero's Formula of finding the area of a triangle?

(A) ½ base X height (B) ½ $|x_1 (y_2 – y_3) + x_2 (y_3 – y_1) + x_3 (y_1 – y_2)|$

(C) √s(s-a)(s – b)(s - c), where a , b, c are the sides of a triangle and s = a + b + c/2

(D) None of the above

Ans. (C)

111. The point (3, - 4) lies in the:

(A) First quadrant (B) second quadrant

(C) third quadrant (D) fourth quadrant

Ans. (D)

112. The coordinates of the point P (x, y) which divides the line segment joining the points A(x_1, y_1) and B(x_2, y_2)in the ratio m:n is:

(A)$\left(\frac{mx_2+nx_1}{m-n} . \frac{my_2+ny_1}{m-n}\right)$

(B)$\left(\frac{mx_2-nx_1}{m+n} . \frac{my_2-ny_1}{m+n}\right)$

(C)$\left(\frac{mx_2+nx_1}{m+n} . \frac{my_2+ny_1}{m+n}\right)$

(D)$\left(\frac{mx_2-nx_1}{m-n} . \frac{my_2-ny_1}{m-n}\right)$

Ans. (C)

113. The coordinates of centroid of a triangle with vertices (x_1, y_1), (x_2, y_2) and (x_3, y_3)are:

(A)$\left(\frac{x_1+x_2+x_3}{2} . \frac{y_1+y_2+y_3}{2}\right)$

(B)$\left(\frac{x_1+x_2+x_3}{3} . \frac{y_1+y_2+y_3}{3}\right)$

(C)$\left(\frac{x_1+x_2+x_3}{6} . \frac{y_1+y_2+y_3}{6}\right)$

(D)$\left(\frac{x_1+x_2-x_3}{3} . \frac{y_1+y_2-y_3}{3}\right)$

Ans. (B)

114. The coordinates of a mid- point of the line segment AB with end points A (x_1, y_1), B (x_2, y_2) is:

(A) $\left(\frac{x_1-x_2}{2}.\frac{y_1-y_2}{2}\right)$ (B) $\left(\frac{x_1+x_2}{3}.\frac{y_1+y_2}{3}\right)$

(C) $\left(\frac{x_1+x_2}{4}.\frac{y_1+y_2}{4}\right)$ (D) $\left(\frac{x_1+x_2}{2}.\frac{y_1+y_2}{2}\right)$

Ans. (D)

115. The perpendicular distance of a point from Y- axis called:

(A) Ordinate (B) abscissa (C) altitude

(D) none of the above

Ans. (B)

116. The ordinates of all points on a horizontal line are:

(A) Parallel (B) perpendicular

(C) equal (D) coincident

Ans. (C)

117. The abscissa of any point on the Y – axis is:

(A) 1 (B) – 1 (C) 0 (D) 2

Ans. (C)

118. If P (a/3, 4) is the mid- point of the line segment joining the points A (- 6, 5) and B (- 2, 3) then 'a' equals:

(A) - 6 (B) – 4 (C) – 12 (D) 12

Ans. (C)

119. The distance between the points A (4, k) and B (1, 0) is 5 units then k equals:

(A) 4 (B) – 4 (C) 0 (D) ± 4

Ans. (D)

120. The distance between the points P (0, 5) and Q (- 5, 0) is:

(A) 5 units (B) 5 √2 units (C) 2√ 5 units

(D) √10 units

Ans. (B)

121. If the end points of a diameter of a circle are (1, 2) and (3, 4) then the coordinates of the Centre are:

(A) (2, 4) (B) (2, 3) (C) (1, 2)

(D) (4, 6)

Ans. (B)

123. The coordinates of reflection of the point P (- 1, - 3) in X –axis are:

(A) (- 1, 3) (B) (1, 3) (C) (1, - 3)

(D) none of the above

Ans. (A)

124. Centroid of a triangle is the point of concurrency of its three:

(A) Angle bisectors (B) medians

(C) altitudes (D) perpendicular bisectors

Ans. (B)

125. If 10 is the length of the line segment joining the origin from the point P (x, 8), then x is:

(A) 6 (B) 7 (C) 9 (D) 12

Ans. (A)

126. If A (- 1, 0), B (5, - 2) ad C (8, 2) are the vertices of a triangle ABC, then its centroid is:

(A) (6, 0) (B) (0, 6) (C) (4, 0)

(D) (12, 0)

Ans. (C)

[Introduction to Trigonometry]

127. The value of $1 + \tan^2 45^0$ is:

(A) - 1 (B) 0 (C) 1 (D) 2

Ans. (D)

128. If $\cos\theta = 1$, then the value of θ is:

(A) 0^0(B) 30^0(C) 60^0(D) 90^0

Ans. (A)

129. The value of $3\cot^2 A - 3\,\mathrm{Cosec}^2 A$ is equal to:

(A)- 3(B) 0 (C)3(D)3/2

Ans. (A)

130. In ΔABC right angle at B, if AC = 13cm, BC = 5 cm and AB = 12 cm then sin A is equal to:

(A) 13/5 (B) 5/13 (C) 12/13 (D) 13/12

Ans. (B)

131. The value of $9\sec^2\theta - 9\tan^2\theta$ is:

(A) 0 (B) 1 (C) 9 (D) 10

Ans. (C)

132. The value of $\frac{2\tan 30^o}{1-\tan^2 30^o}$ is equal to:

(A) $\cos 60^0$ (B) $\sin 60^0$

(C) $\tan 60^0$ (D) $\sin 30^0$

Ans. (C)

133. Sin 2A = 2 sin A is true when A equals to:

(A) 0^0 (B) 30^0 (C) 45^0 (D) 60^0

Ans. (A)

134. If $\cos(\alpha + \beta) = 0$, then the value of $\cos((\alpha + \beta)/2)$ is equal to:

(A) $1/\sqrt{2}$ (B) 1/2 (C) 0 (D) $\sqrt{2}$

Ans. (A)

135. The value of $\sec 60^0$ is:

(A) $\sqrt{3}/2$ (B) 1/2 (C) 2 (D) 1

Ans. (C)

136. The relation between $\sin\theta$, $\cos\theta$ and $\tan\theta$ is: 1

(A) $\cos\theta/\sin\theta = \tan\theta$

(B) $\sin\theta/\cos\theta = \tan\theta$

(C) $\tan\theta/\sin\theta = \cos\theta$

(D) $\tan\theta/\cos\theta = \sin\theta$

Ans. (B)

137. The relation between $\sin\theta$, $\cos\theta$ and $\cot\theta$ is: 1

(A) $\cos\theta/\sin\theta = \cot\theta$ (B) $\sin\theta/\cos\theta = \tan\theta$

(C) $\tan\theta/\sin\theta = \cos\theta$ (D) $\tan\theta/\cos\theta = \sin\theta$

Ans. (A)

138. If $\theta = 30^0$ then the value of $\cos^2\theta - \sin^2\theta$ is:

(A) 1 (B) 1/2 (C) -1/2 (D) -1

Ans. (B)

139. The reciprocal of cosine θ is:

(A) $\tan\theta$ (B) $\sec\theta$ (C) $\operatorname{cosec}\theta$ (D) $\sin\theta$

Ans. (B)

140. $\tan^2\theta + 1$ is equal to:

(A) $\cot^2\theta$ (B) $\sec^2\theta$

(C) $\operatorname{cosec}^2\theta$ (D) $\cos^2\theta$

Ans. (B)

141. $1 - \sin^2\theta$ is equal to:

(A) $\cot^2\theta$ (B) $\sec^2\theta$ (C) $\operatorname{cosec}^2\theta$

(D) $\cos^2\theta$

Ans. (D)

[Circles]

142. If tangents PA and PB from a point P to a circle with Centre O are inclined to each other at an angle of 80^0 then <POA is equal to:

(A) 50^0 (B) 60^0 (C) 70^0 (D) 80^0

ANS. (A)

143. From a point Q, the length of the tangent to a circle is 4 cm and the distance of Qfrom the Centre is 5 cm, then the radius of a circle is:

(A) 1 cm (B) 5 cm (C) 3 cm

(D) 4 cm

Ans. (C)

144. The tangents drawn at the end points of a diameter of a circle are:

(A) Equal (B) parallel

(C) perpendicular (D) intersecting

Ans. (B)

145. The distance between two parallel tangents of a circle of radius 8 cm is:

(A) 8 cm (B) 12 cm (C) 14 cm

(D) 16 cm

Ans. (D)

146. A part of the circle whose end points are end point of a diameter is called a:

(A) Circumference (B) segment

(C) semicircle (D) perimeter

Ans. (C)

147. The perimeter of a scalene triangle having sides 15 cm, 14 cm, 13 cm is:

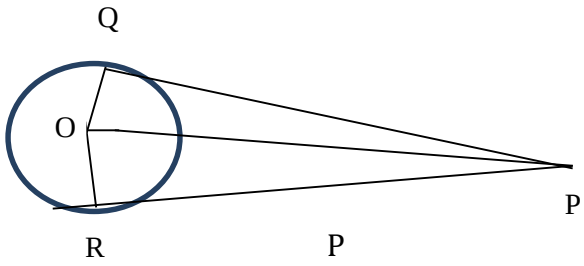
(A) 42 cm (B) 52 cm (C) 72 cm

(D) 84 cm

Ans. (A)

148. The perimeter of an equilateral triangle with side 9 cm is:
(A) 9 cm (B)18 cm (C) 27 cm
(D) 36 cm
Ans. (C)27 cm

149. In the figure, PQ and PR are tangents to a circle with Centre O and radius 5 cm. if OP = 13 cm, then perimeter of a quadrilateral PQOR is:
(A) 20 cm (B) 34 cm (C) 18 cm (D) 24 cm



Ans. (B)

[Area related to Circles]

150. The portion (or part) of a circular region enclosed between a chord and the corresponding arc is called a/an:
(A)Arc of the circle
(B) perimeter of a circle
(C) sector of a circle (D) segment of a circle.
Ans. (D)

151. The portion (or part) of the circular region enclosed by two radii and the corresponding arc is called the/an:
(A) Arc of the circle
(B) perimeter of a circle
(C) sector of a circle
(D) segment of a circle
Ans. (C)

152. Ifr is the radius of a circle and θ is the angle subtended by an arc of length l , then area of the sector of a circle is:
(A)1/2 l r (B) 2π r l (C) 2/3 r l
(D) 1/2 l r θ
Ans. (A)

153. The Area of a circle is 49π cm^2. Its circumference is:
(A) 7π cm (B) 14π cm (C) 21π cm
(D) 28π cm
Ans. (B)

154. In a circle of radius 21cm, an arc subtends an angle of 60^0 at the centre. The length of an arc is:(take π = 22/7)
(A) 22 cm (B) 44 cm (C) 132 cm
(D) 231 cm
Ans. (A)

155. The angle made by the minute hand of a clock at its centre in 15 minutes duration is:
(A) 60^0(B) 80^0(C) 90^0(D) 180^0
Ans. (C)

156. If the area and circumference of a circle are numerically equal, then its diameter is:
(A) 2 units (B) 3 units (C) 4 units
(D) 6units
Ans. (C)

157. If the circumference of a circle increases from 2π to 4π, then its area is:
(A) four times (B) tripled (C) doubled
(D) halved
Ans. (A)

158. The total surface area of a hemispherical object of radius r, is:
(A) π r^2 (B) 2π r^2 (C) 3π r^2
(D) 4π r^2
Ans. (C)

159. The length of a diagonal of a cube of side 'a' is:

(A) a √3 (B) 3 √a (C) √3a
(D) a/√3
Ans. (C)

160. The area of square is the same as the area of circle. Their perimeters are in the ratio of:
(A) 1:1 (B) 2:π (C) π: 2
(D) 2: √π
Ans. (D)

161. A Bicycle wheel makes 1000 revolutions in moving 88000 m. the diameter of a wheel is: (take π = 22/7)
(A) 14 m (B) 24 m (C) 28 m (D) 40 m
Ans. (C)

162. A garden roller has circumference of 4 m. the number of revolutions it makes in moving 40 m is:
(A) 8 (B) 10 (C) 12 (D) 16
Ans. (B)

163. The angle described by a minute hand in 1 hour is:
(A) 60^0(B) 120^0(C) 180^0(D) 360^0
Ans. (D)

164. The circumference of a circle of diameter D units is:
(A) π D (B) 2πD (C) 4π/2 (D) πD/2
Ans. (A) π D

165. If 'r' and 'h' represent the radius of the base and height of a right circular cone respectively then its curved surface area is:
(A)π r h(B) π r^2 h(C) π r (√ r^2 + h^2)(D) π r h^2
Ans. (C)

166. The area of a sector whose perimeter is four times its radius 'r' units is:
(A) $r^2/4$ (B) $2r^2$(C) r^2(D) $r^2/2$
Ans. (C)

167. Distance covered by a wheel in one revolution is equal to:
(A) Diameter of a wheel
(B)radius of a wheel
(C) Circumference of a wheel
(D) none of these
Ans. (C)

168. The circumference of a bicycle wheel that makes 5000 revolutions in moving 11 km is: (take π = 22/7)
(A) 500 cm(B)250 cm (C) 220 cm
(D) 150 cm
Ans. (C)

169. The area of a circle when area and circumference are numerically equal is:
(A) 2π (B) 4π (C) 6π (D)8π
Ans. (B)

170. When area and circumference are numerically equal then the radius of the circle is equal to:
(A) 1 unit (B) 2 units (C) 3 units (D) 4 units
Ans. (B)

171. The difference between circumference and diameter of a circle is 90 cm, then the radius of a circle is:
(A) 24. 5 cm (B) 23 cm (C) 22. 5cm
(D) 21 cm
Ans. (D)

[Surface Area and Volumes]

172. The total surface area of a hemisphere with radius 'R' is:
(A) π R^2(B) 2π R^2(C) 3π R^2(D) 4π R^2
Ans. (C)

173. The volume of a sphere of radius R is:
(A) 2/3 π R^3(B) 4/3π R^3(C) 3π R^3(D) 4π R^3
Ans. (B)

174. During the conversion of a solid from one shape to another, the volume of the new shape will:
(A)Increase(B) decrease
(C) remain unaltered
(D)depends on the shape

Ans. (C)

175. If the radius of a sphere becomes 3 times, then its volume will becomes:
(A) 3 times (B) 6 times (C) 9 times
(D) 27 times
Ans. (D)

176. Thee surface areas of two spheres are in the ratio 16:9. The ratio of their volume is:
(A) 64:27 (B) 16:9 (C) 4:3 (D) $16^3:9^3$
Ans. (A)

177. A solid metallic sphere of radius 9 cm is melted to form a solid cylinder of radius 9 cm. the height of the cylinder is:
(A) 12 cm (B) 18 cm (C) 36 cm
(D) 96 cm
Ans. (A)

178. If a cone and a sphere have equal radii and equal volumes then the ratio of the diameter of the sphere to the height of the cone is:
(A) 3:4 (B) 2:3 (C) 2:1 (D) 1:2
Ans. (D)

179. The volume of a cube of an edge of 4 cm is:
(A) 16 cm^3(B) 64 cm^3(C) 128 cm^3
(D) 256 cm^3
Ans.(B)

180. Eight metallic sphere each of radius 2mm are melted and recast into a single sphere. Then the radius of the new sphere is:
(A) 4 mm (B) 4.5 mm (C) 5.5 mm
(D) 6 mm
Ans. (A)

181. The total surface area of a cube of length 'a' units is:
(A) $3a^2$ sq. units (B) $4a^2$ sq. units
(C) $6a^2$ sq. units (D) $8a^2$ sq. units
Ans. (C)

182. The total surface area of a right circular cylinder of radius 'r' and height 'h' is:
(A)2π r (r +h) (B) 2π r h (C) 2π r(r - h)
(D) 3π r (r +h)
Ans. (A)

183. If the curved surface area of a cone is 308 cm^2 and its slant height is 14 cm, then radius of the base is:
(A) 14 cm (B) 7 cm (C) 21 cm
(D) 28 cm
Ans. (B)

184. If the radius of a sphere is doubled then the ratio of the volumes of the first sphere to the new sphere is:
(A) 1:2 (B)1:4 (C) 1:6 (D) 1:8
Ans. (D)

185. Let 'r' and 'h' be the radius and height respectively of a right circular cylinder, then its curved surface area is:
(A) 2π r(r + h) (B) $2\pi rh^2$(C) 2πr h
(D)2πr (r - h)
Ans. (C)

186. Let 'r' and 'h' be the radius ad height respectively of a cone, then its volume is equal to:
(A) π r^2 h (B) πr^2 (C) 1/3 πr^2h
(D)2/3πrh
Ans. (C)

187. Let R and r be the outer and inner radii of the spherical shell, then its volume is equal to:
(A) 4/3 π ($R^3 - r^3$) (B) 4/3 π ($R^2 - r^2$)
(C) 2/3 π ($R^3 - r^3$) (D) 2/3 π ($R^2 - r^2$)
Ans. (D)

[Statistics]

188. The empirical relationship between mean, mode and median in asymmetrical distribution is:
(A) Mode = 3 Median – 2 Mean
(B) Mode = 3 Median + 2 Mean
(C) Mode = 2 Median – 3 Mean
(D) Mode = Median – 2 Mean

Ans. (A)

189. Mode is:
(A)Least frequent value
(B) middle most value
(C)Most frequent value
(D) none of the above
Ans. (C)

190. The cumulative frequency table is useful in determining the:
(A) Mean (B) Median (C) Mode
(D) All of the above
Ans. (B)

191. If the mode of 16, 15, 17, 16, 15, x, 19, 17, 14 is 15 then x is:
(A) 15 (B) 16 (C) 17 (D) 19
Ans. (A)

192. Which of the following cannot be the probability of an event?
(A) 2/3 (B) 1.5 (C) 1/2(D) 0.7
Ans. (B)

193. The sum of the values of all the observations divided by the total number of observations is called:
(A) Mean (B) mode (C) median
(D) frequency
Ans. (A)

194. In a frequency distribution, the class having the maximum frequency is called:
(A) Class mark (B) class size
(C) median class (D) modal class
Ans. (D)

195. The wickets taken by a bowler in 10 cricket matches are as follows:2, 6, 4, 5, 0, 2, 1, 3, 2, 3
Then the mode of the data is:
(A) 3 (B) 2 (C) 4 (D) 5
Ans. (B)

196. For some data $x_1, x_2, \ldots\ldots x_n$ with respective frequencies $f_1, f_2, \ldots\ldots f_n$, the value of $\sum f_i (x_i - x')$is equal to, where x' is mean:
(A)nx' (B) 1 (C) $\sum f_i$(D) 0
Ans. (D)

197. The middlemost observation of every data arranged in order is called:
(A) Mode (B) median (C) mean
(D) deviation
Ans. (B)

198. The mean of first 10 natural numbers is:
(A) 5.5 (B)5 (C)6 (D)10
Ans. (A)

199. The difference between the minimum and maximum values of the data is called:
(A) class limits (B) class interval
(C) class size (D) range of data
Ans.(D)

200. The value, (Lower Limit + Upper Limit)/2, is called:
(A) Class size (B) class limits
(C) class mark (D) class interval
Ans. (C)

201. In a T20 International Cricket match, a batsman played 40 balls and the runs scored are as follows:

Runs scored	No. of ball faced
0	4
1	15
2	5
3	1
4	4
6	1

The probability that a batsman will score 1 or 2 runs is:
(A) 1/4 (B) 1/8 (C) 1/2 (D) 1/10
Ans. (C)

202. If l = lower limit of the median class, N/2 = half of the cumulative frequency c =

cumulative frequency of the preceding class, h= height of each class f = frequency of the median class. Then the formula for finding median is median equals:

(A) $l + (N/2 - c)h/f$ (B) $l - (N/2 - c)h/f$

(C) $l + (N/2 + c)h/f$ (D) $l + (N/2)h/f$

Ans. (C)

203. The median of the following data:

6, 8, 15, 16, 9, 22, 21, 25, 18 is:

(A) 21 (B) 18 (C) 16 (D) 9

Ans. (C)

204. If the mean of 6, 8, 5, 7,4 and x is 7, then x equals to:

(A) 12 (B) 24 (C) 28 (D) 30

Ans. (A)

205. If the mean of x, x + 3, x + 6, x + 9 and x + 12 is 10, then x is:

(A) 1 (B) 2 (C) 4 (D) 6

Ans. (C)

206. Which of the following is not the measure of central tendency?

(A) Mean (B) mode (C) median

(D) standard deviation

Ans. (D)

207. The formula for finding mean by direct method is:

(A) $x' = \sum f_i x_i/\sum f_i$ (B) $x' = \sum f_i x_i/f_i$

(C) $x' = \sum x_i/\sum f_i$ (D) $x' = \sum f_i x_i$

Ans. (A)

208. The data which have two modes are called:

(A) Unimodal (B) multimodal

(C) bimodal (D) trimodal

Ans. (C) bimodal

[Probability]

209. A die is thrown once. The probability of getting a number less than 3 is:

(A)1/2 (B) 1/3 (C)1/4 (D) 1/6

Ans. (B)

210. A die is thrown once. The probability of getting a prime number is:

(A) 1/2 (B) 1/3 (C) 2/3 (D) 1/6

Ans. (A) 1/2

211. The probability of a sure Event is:

(A) 0 (B) 1/2 (C) 1 (D) non-existent

Ans. (C)

212. The probability of an impossible Event is:

(A) 0 (B) 1/2 (C) 1 (D) non-existent

Ans. (A)

213. If P(E)= 0.05, then P(E') equals:

(A) 0.05 (B) 0.5 (C) 0.9 (D) 0.95

Ans. (D)

214. A jar contains 6 red, 5 black, and 3 green marbles of equal size. The probability that a randomly drawn marble would be green in colour is:

(A) 5/14 (B) 11/14 (C) 3/14 (D)1/3

Ans. (C)

215. If the probability of a player winning a game is 0. 79, then the probability of his losing the same game is:

(A) 1. 79 (B) 0. 31 (C) 0. 21%

(D) 0. 21

Ans. (D) 0. 21

216. A die is thrown once, then the probability of getting an even prime number is:

(A) 1/6 (B) 1/2 (C) 1/3 (D) 2/3

Ans. (A)

217. A letter is selected at random from the letters of the words 'MATHEMATICS' then the probability of getting the letter M is:

(A) 2/11 (B) 6/11 (C) 4/11 (D) 5/11

Ans. (A)

218. In a musical chair game, the person playing the music has been advised to stop playing the music at any time within 2 minutes after the play starts. Then the probability that the music will stop within one and half minutes after starting the game is:
(A) 1/2 (B) 1/4 (C) 3/4 (D) 1/3
Ans. (C)

219. The probability that a non- leap year has 53 Sundays is:
(A) 1/7 (B) 2/7 (C) 5/7 (D) 6/7
Ans. (A) 1/7

220. The probability that a number selected at random from the numbers 3,4,5,6,7, 8, 9 is a multiple of 4 is:
(A) 1/7 (B) 2/7 (C) 5/7 (D) 6/7
Ans. (B)

221. A jar contains 25 marble with 10 green marbles and the rest are blue marbles. If a marble is drawn at random from the jar, then the probability that the drawn marble is blue is:
(A) 2/5 (B) 3/5 (C) 4/5 (D) 1/5
Ans. (B)

Section-B

Very Short Answer Questions (2 Marks)

1. Express 5005 as a product of its prime factors

Ans.

5	5005
7	1001
11	143
	13

$\therefore$ $5005 = 5 \times 7 \times 11 \times 13$

2. Find the least Number which is exactly divisible by 15, 24 and 30.

Ans

	3	15		2	24		2	30
5		2	12	3	15		
		2	6	5			
		3					

$\therefore$ $15 = 3 \times 5$

$24 = 2^3 \times 3$

$30 = 2 \times 3 \times 5$

$\therefore$ $LCM = 2^3 \times 3 \times 5 = 120$

$\therefore$ The required least number = 120

3. Find the LCM of the smallest two digit number and the smallest composite number.

Ans The smallest two digit number = 10

The smallest composite number = 4

$\therefore$ $10 = 2 \times 5$

$4 = 2^2$

$\therefore$ LCM (10, 4) $= 2 \times 2 \times 5$

$= 20$

4. Find the HCF and LCM of 336 and 54 by applying the fundamental theorem of Arithmetic

Ans

	2	336		2	54
2	168		3	27
2	84		3	9
2	42			3
3	21			
	7			

$\therefore$ $336 = 2^4 \times 3 \times 7$

$54 = 2 \times 3^3$

$\therefore$ $HCF = 2 \times 3 = 6$

$$LCM = \frac{Product\ of\ two\ numbers}{HCF}$$

$$= \frac{336 \times 54^{9}}{\cancel{6}_{1}}$$

$= 3024$

5. Given that HCF (306, 657) = 9, find the LCM (306, 657)

Ans We know,

HFC × LCM = Product of two numbers

$\Rightarrow$ $9 \times LCM = 306 \times 657$

$$\Rightarrow LCM = \frac{\cancel{306}^{34} \times 657}{\cancel{9}_{1}}$$

$\Rightarrow LCM = 22338$

6. Prove that $7\sqrt{5}$ is irrational.

Ans Let us assume, to the contrary, that $7\sqrt{5}$ is rational

$\therefore 7\sqrt{5} = \frac{a}{b}$, where a and b are integers and $b \neq 0$

$\Rightarrow 7\sqrt{5}\ b = a$

$\Rightarrow \sqrt{5} = \frac{a}{7b}$

But $\frac{a}{7b}$ is rational and so $\sqrt{5}$ is rational

But this contradicts the fact that $\sqrt{5}$ is irrational

Hence, $7\sqrt{5}$ is irrational

Hence Proved

7. Find the HCF and LCM of 21 and 315 by prime factorisation method.

Ans

3	21
7	

3	315
3	105
5	35
	7

$\therefore$ $21 = 3 \times 7$

$315 = 3^2 \times 5 \times 7$

$\therefore$ HCF $= 3 \times 7 = 21$

LCM $= 3^2 \times 5 \times 7 = 315$

8. Check weather 6^n can end with the digit 0 for any natural number n.

Ans If 6^n ends with the digit zero, then it should be divisible by 10

So, the prime factorization of 6^n must contain the primes 2 and 5. This is not possible as the only primes in the factorisation of 6^n are 2 and 3. Thus, there is no value of n in natural numbers for which 6^n ends with the digit zero.

9. Find the HCF and LCM of 12, 15 and 21 by applying the prime factorisation method.

Ans

2	12
2	6
	3

3	15
5	

3	21
7	

$\therefore$ $12 = 2^2 \times 3$

$15 = 3 \times 5$

$21 = 3 \times 7$

$\therefore$ HCF $= 3$

LCM $= 2^2 \times 3 \times 5 \times 7 = 420$

10. In a class there are 24 girls and 20 boys. Find the minimum number of books that can be distributed equally among girls and boys.

Ans

2	24
2	12
	6
	3

2	20
2	10
	5

$\therefore$ $24 = 2^3 \times 3$

$20 = 2^2 \times 5$

$\therefore$ LCM $= 2^3 \times 3 \times 5 = 120$

$\therefore$ Minimum number of books that can be distributed equally among girls and boys = 120

11. Check whether the system of linear equations $5x - 4y + 8 = 0, 7x + 6y - 9 = 0$ intersect at a point or not.

Ans Here,

$a_1 = 5, b_1 = -4, c_1 = 8$

$a_2 = 7, b_2 = 6,\ c_2 = -9$

$\frac{a_1}{a_2} = \frac{5}{7}$

$\frac{b_1}{b_2} = \frac{-4}{6} = \frac{-2}{3}$

$\frac{c_1}{c_2} = \frac{-8}{9}$

$\because \frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

$\therefore$ The given system of linear equations intersects at a point.

12. Find out whether the lines representing a pair of linear equations $2x - 3y - 8 = 0$, $4x - 6y - 9 = 0$ has a unique solution or not.

Ans Here,

$a_1 = 2, b_1 = -3, c_1 = -8$

$a_2 = 4, b_2 = -6, c_2 = -9$

$\frac{a_1}{a_2} = \frac{2}{4} = \frac{1}{2}$

$\frac{b_1}{b_2} = \frac{-3}{-6} = \frac{1}{2}$

$\frac{c_1}{c_2} = \frac{-8}{-9} = \frac{8}{9}$

Here, $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

∴ The given system of linear equations does not have a unique solution.

13. Determine whether the following system of linear equations is consistent or inconsistent.

$$2x - 3y = 8$$

$$4x - 6y = -5$$

Ans Here,

$a_1 = 2, b_1 = -3, c_1 = -8$
$a_2 = 4, b_2 = -6, c_2 = 5$
$\frac{a_1}{a_2} = \frac{2}{4} = \frac{1}{2}$
$\frac{b_1}{b_2} = \frac{-3}{-6} = \frac{1}{2}$
$\frac{c_1}{c_2} = \frac{-8}{5}$

Here, $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

∴ The given system of linear equations is inconsistent.

14. Check whether the following system of linear equations $9x + 3y + 12 = 0, 18x + 6y + 24 = 0$ represent co-incident lines or not.

Ans Here,

$a_1 = 9, b_1 = 3, c_1 = 12$
$a_2 = 18, b_2 = 6, c_2 = 24$
$\frac{a_1}{a_2} = \frac{9}{18} = \frac{1}{2}$
$\frac{b_1}{b_2} = \frac{3}{6} = \frac{1}{2}$
$\frac{c_1}{c_2} = \frac{12}{24} = \frac{1}{2}$

Here, $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

∴ The given system of linear equations represents co-incident lines.

15. Find the value of k for which the system of linear equations $kx + 2y = 5, 3x + y = 1$ has a unique solution.

Ans $kx + 2y = 5 \Rightarrow kx + 2y - 5 = 0$

$3x + y = 1 \Rightarrow 3x + y - 1 = 0$

Here,

$a_1 = k, b_1 = 2, c_1 = -5$

$a_2 = 3, b_2 = 1, c_2 = -1$

For the system of linear equations to have a unique solution, we must have

$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

$\Rightarrow \frac{k}{3} \neq \frac{2}{1}$

$\Rightarrow k \neq 6$

16. Solve the system of linear equations $x + y = 14, x - y = 4$ by substitution method.

Ans $x + y = 14$ ----------(i)

$x - y = 4$ ----------(ii)

$\Rightarrow x = 4 + y$

Substituting the value of x in eqn (i), we get

$x + y = 14$

$\Rightarrow 4 + y + y = 14$

$\Rightarrow 4 + 2y = 14$

$\Rightarrow 2y = 14 - 4$

$\Rightarrow 2y = 10$

$\Rightarrow y = \frac{10}{2}$

$\Rightarrow y = 5$

Putting $y = 5$ in eqn (i), we get

$x + y = 14$

$\Rightarrow x + 5 = 14$

$\Rightarrow x = 14 - 5$

$\Rightarrow x = 9$

$\therefore x = 9$ and $y = 5$

17. Solve the system of linear equations $3x + 4y = 10, 2x - 2y = 2$ by elimination method.

Ans $3x + 4y = 10$ ----------(i) × 2

$2x - 2y = 2$ ----------(ii) $\times 3$

Multiplying eqn (i) by 2 and eqn (ii) by 3, we get

$6x + 8y = 20$

$6x - 6y = 6$

(-) (+) (-)

(Subtracting) $14y = 14$

$\Rightarrow y = \frac{\cancel{14}^{1}}{\cancel{14}_{1}}$

$\Rightarrow y = 1$

Putting $y = 1$ in eqn (i), we get

$3x + 4y = 10$

$\Rightarrow 3x + 4 \times 1 = 10$

$\Rightarrow 3x + 4 = 10$

$\Rightarrow 3x = 10 - 4$

$\Rightarrow 3x = 6$

$\Rightarrow x = \frac{\cancel{6}^{2}}{\cancel{3}_{1}}$

$\Rightarrow x = 2$

$\therefore x = 2$

$y = 1$

18. The difference between two numbers is 26 and one number is three times the other. Find them.

Ans : Let the two number be x and y $(x > y)$

$\therefore$ According to the question,

$x - y = 26$ ----------(i)

$x = 3y$ ----------(ii)

Putting $x = 3y$ in eqn (i), we get

$x - y = 26$

$\Rightarrow 3y - y = 26$

$\Rightarrow 2y = 26$

$\Rightarrow y = \frac{\cancel{26}^{13}}{\cancel{2}_{1}}$

$\Rightarrow y = 13$

Putting $y = 13$ in eqn (ii), we get

$x = 3y$

$\Rightarrow x = 3 \times 13$

$\Rightarrow x = 39$

$\therefore$ The two numbers are 39 and 13

19. 10 students of class X took part in a Mathematics quiz. If the number of girls is 4 more than the number of boys, find the number of boys and girls who took part in the quiz.

Ans Let the number of boys and girls be $'x'$ and $'y'$ and respectively

$\therefore$ According to the question,

$x + y = 10$ ----------(i)

$y = 4 + x$ ----------(ii)

Putting $y = 4 + x$ in eqn (i), we get

$x + y = 10$

$\Rightarrow x + 4 + x = 10$

$\Rightarrow 2x + 4 = 10$

$\Rightarrow 2x = 10 - 4$

$\Rightarrow 2x = 6$

$\Rightarrow x = \frac{\cancel{6}^{3}}{\cancel{2}_{1}}$

$\Rightarrow x = 3$

Putting $x = 3$ in eqn (ii), we get

$y = 4 + x$

$\Rightarrow y = 4 + 3$

$\Rightarrow y = 7$

$\therefore$ Number of boys $= x = 3$

Number of girls $= y = 7$

20. From a pair of linear equations in the given problem:
The coach of a cricket team buys 7 bats and 6 balls for ₹ 3800. Later, she buys 3 bats and 5 balls for ₹ 1750.

Ans Let the cost of each bat be ₹ x and the cost of ball be ₹ y

$\therefore$ The cost of 7 bats is ₹ $7x$ and the cost of 6 balls is ₹ $6y$ and their total cost is ₹ 3800

$$\therefore 7x + 6y = 3800$$

Again, the cost of 3 bats is ₹ $3x$ and the cost of 5 balls is ₹ $5y$ and their cost is ₹ 1750

$$\therefore 3x + 5y = 1750$$

21. Find the discriminant and nature of roots of the quadratic equation $2x^2 - 3x - 2 = 0$.

Ans Here,

$$a = 2, b = -3, c = -2$$

$\therefore$ Discriminant$= b^2 - 4ac$

$= (-3)^2 - 4 \times 2 \times (-2)$

$= 9 + 16$

$= 25 > 0$

Thus, the nature of roots are real and unequal

22. Solve the quadratic equation$2x^2 = 9x$.

Ans $2x^2 = 9x$

$\Rightarrow 2x^2 - 9x = 0$

$\Rightarrow x\,(2x - 9) = 0$

$\therefore$ Either, or,

$x = 0$ $2x - 9 = 0$

$\Rightarrow \quad 2x = 9$

$\Rightarrow \quad x = \frac{9}{2}$

$\therefore x = 0, \frac{9}{2}$

23. Check whether $(x + 4)(x - 4) = x(x + 2) + 8$ is a quadratic equation or not.

Ans $(x + 4)(x - 4) = x(x + 2) + 8$

$\Rightarrow (x)^2 - (4)^2 = x^2 + 2x + 8$

$\Rightarrow x^2 - 16 - x^2 - 2x - 8 = 0$

$\Rightarrow -2x - 24 = 0$

It is not in the form $ax^2 + bx + c = 0$

$\therefore$ The given equation is not a quadratic equation

24. Find the roots of the quadratic equation $2x^2 + x - 6 = 0$ by factorization.

Ans $2x^2 + x - 6 = 0$

$\Rightarrow 2x^2 + 4x - 3x - 6 = 0$

$\Rightarrow 2x(x + 2) - 3(x + 2) = 0$

$\Rightarrow (x + 2)(2x - 3) = 0$

$\therefore$ Either, or,

$x + 2 = 0$ $2x - 3 = 0$

$\Rightarrow x = -2$ $\Rightarrow 2x = 3$

$\Rightarrow x = \frac{3}{2}$

Hence the roots are $-2, \frac{3}{2}$

25. Represent the given situations in the form of a quadratic equations.
The area of a rectangular plot is 528m^2. The length of the plot (in metres) is one more than twice its breadth.

Ans Let the length (in metres) of the plot be x and the breadth (in metres) of the plot be y

$\therefore$ Area of the plot$= (xy)m^2$

$\therefore xy = 528$ ……(i)

Also, $x = 1 + 2y$ …… (ii)

Using (ii) in (i), we get

$(1 + 2y)\, y = 528$

⇨ $2y^2 + y - 528 = 0$, is a quadratic equation

26. Find the nature of the quadratic equation $x^2 + 7x + 10 = 0$.

Ans The quadratic equation is $x^2 + 7x + 10 = 0$

Here,

$$a = 1, b = 7, c = 10$$

$\therefore$ Discriminant $(D) = b^2 - 4ac$

$$= (7)^2 - 4 \times 1 \times 10$$

$$= 49 - 40$$

$$= 9$$

$\because D > 0$

$\therefore$ The given equation has two real and distinct roots

27. State any two conditions that decides the nature of roots of a general quadratic equation $ax^2 + b\,x + c = 0$ where a, b, c are real numbers and $a \neq 0$

Ans . Any two conditions that decides the nature of roots of general quadratic equation are:

1) If $D > 0$, the equation has real and unequal roots
   If D is a perfect square, the equation has unequal rational roots
2) If $D = 0$, the equation has real and equal roots and each root is $\frac{-b}{2a}$

$D = b^2 - 4ac$

28. The coach of a cricket team buys 3 bats and 2 balls for ₹ 5700. Later he buys 2 bats and 3 balls for ₹ 4050. Find the cost of one bat?

Ans Let ₹x and ₹y be the cost of each bat and each ball respectively

$\therefore$ By question,

$3x + 2y = 5700$ ----------(i) x 3

Also, $2x + 3\,y = 4050 \ldots\ldots\ldots\ldots (ii)$ x 2

Multiplying (i) by 2 and (ii) by 3 we get

$9\,x + 6\,y = 17100$

$4\,x + 6y = 8100$

Subtracting, $5\,x = 9000$

$\Rightarrow x = 9000/5$

$\Rightarrow x = 1800$

Thus, cost of one bat = ₹ 1800

29. Is the following situation possible? If so, determine their present ages. The sum of the ages of two friends is 20 years. Four years ago, the product of their ages (in years) was 48.

Ans Let the age of one of two friends be x.

Then the age of the other friend $= (20 - x)$

$[\because$ *the sum of the ages of two friends is* 20 *years*$]$

4 yr ago, age of one of two friends $= (x - 4)$

And age of the other friend $= (20 - x - 4) = (16 - x)$

According to the question,

$$(x - 4)(16 - x) = 48$$

$$\Rightarrow 16x - x^2 - 64 + 4x = 48$$

$$\Rightarrow x^2 - 20x + 112 = 0$$

On comparing with $ax^2 + bx + c = 0$, we get

$$a = 1, b = -2, and\ c = 112$$

Now, discriminant, $D = b^2 - 4ac$

$$= (-20)^2 - 4 \times 1 \times 112$$

$$= 400 - 448$$

$$= -48 < 0$$

Which implies that the real roots are not possible as this condition represents imaginary roots. So, the solution does not exist and hence given situation is not possible.

30. Find two consecutive positive numbers whose square have the sum 85.

Ans Let the two consecutive positive numbers be $x \; and \; x+1$

$\therefore$ According to the question,

$x^2+(x+1)^2=85$

$\Rightarrow x^2+x^2+2x+1=85$

$\Rightarrow 2x^2+2x+1-85=0$

$\Rightarrow 2x^2+2x-84=0$

$\Rightarrow \; 2(x^2+x-42)=0$

$\Rightarrow x^2+x-42=0$

$\Rightarrow x^2+7x-6x-42=0$

$\Rightarrow \; x(x+7)-6(x+7)=0$

$\Rightarrow (x+7)(x-6)=0$

$\therefore$ Either, or,

$x+7=0$

$x-6=0$

$\Rightarrow x=-7$ $\Rightarrow x=6$

(Rejected)

$\therefore$ The two positive numbers are 6 and 7

31. In the adjoining figure, $DE \parallel BC$. Find EC where $AD=1.5cm, DB=3cm \; and \; AE=1cm.$

Ans $\because DE \parallel BC$

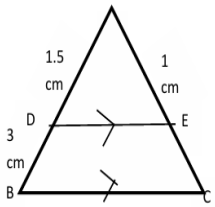
$\therefore$ By Basic Proportionality Theorem,

$\frac{AD}{DB}=\frac{AE}{EC}$

$\Rightarrow \frac{1.5}{3}=\frac{1cm}{EC}$

$\Rightarrow EC=\frac{3}{1.5}=\frac{3^1\times 10^2}{15_1}$

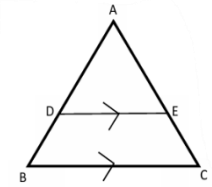
$\Rightarrow EC=2cm$



32. In $\Delta ABC, D \; and \; E$ are points on the sides AB and AC respectively such that $DE \parallel BC$. If $\frac{AD}{DB}=\frac{2}{3}$ and $AE=7.2cm$, find AC.

Ans $\because DE \parallel BC$

$\therefore$ By Basic Proportionality Theorem,



$\frac{AD}{DB}=\frac{AE}{EC}$

$\Rightarrow \frac{2}{3}=\frac{7.2\;cm}{EC}$

$\Rightarrow EC=\frac{3\times \cancel{7.2}^{3.6}}{\cancel{2}_1}cm$

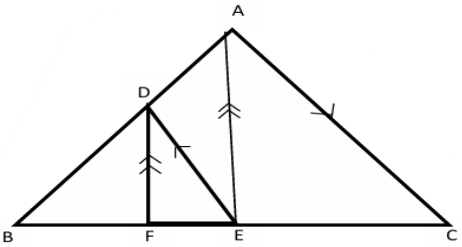
$\Rightarrow EC=10.8\;cm$

$\therefore AC=AE+EC$

$=7.2\;cm+10.8\;cm$

$=18\;cm$

33. In the adjoining figure, $DE \parallel AC$ and $DE \parallel AE$. Prove that $\frac{BF}{FE}=\frac{BE}{EC}$.



Ans In ΔABC,

$DE \parallel AC$

$\therefore$ By Basic Proportionality Theorem

$\frac{BD}{DA}=\frac{BE}{EC}$ ----------(i)

Again, in ΔABE,

$DF \parallel AC$

$\therefore$ By Basic Proportionality Theorem

$\frac{BD}{DA}=\frac{BF}{FE}$ ----------(ii)

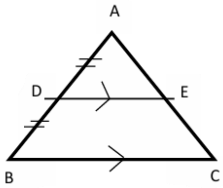
$\therefore$ From eqn (i) and (ii), we get

$$\frac{BF}{FE} = \frac{BE}{EC}$$

Hence Proved

34. rove that the line drawn from the mid-point of one side of a triangle parallel to another side bisects the third side.

Ans Given:- ΔABC, in which D is the mid-point of AB and $DE \parallel BC$



To Prove:- $AE = EC$

Proof:- In ΔABC,

$\because DE \parallel BC$

$\therefore$ By Basic Proportionality Theorem

$\frac{AD}{DB} = \frac{AE}{EC}$ ----------(i)

$\because$ D is the mid-point of AB

$\therefore$ AD = DB ----------(ii)

$\therefore$ From eqn (i) and (ii), we get

$$\frac{AD^1}{AD_1} = \frac{AE}{EC}$$

$$\Rightarrow 1 = \frac{AE}{EC}$$

$$\Rightarrow AE = EC$$

$\Rightarrow DE$ bisects AC

Hence Proved

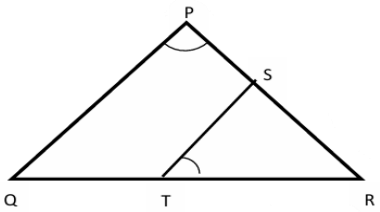
35. S and T are points on side PR and QR of ΔPQR such that $\angle P = \angle RST$. Show that $\Delta RPQ \sim \Delta RST$.

Ans In $\Delta RPQ \text{ and } \Delta RTS$

$\angle P = \angle RTS\ (Given)$

$\angle PRQ = \angle SRT\ \ (Common\ angle)$

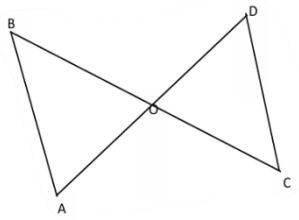
$\therefore \Delta RPQ \sim \Delta RTS\ \ [AA\ Similarity]$



Hence Showed

36. In the adjoining figure, $\Delta OAB \sim \Delta OCD$. When $AB = 8cm, BO = 6.4cm, OC = 3.5cm \text{ and } CD = 5cm$, find $OA \text{ and } DO$.

Ans $\because \Delta OAB \sim \Delta OCD$



$\therefore \frac{AB}{CD} = \frac{OA}{OC} = \frac{OB}{OD}$

$\Rightarrow \frac{8}{5} = \frac{OA}{3.5\ cm} = \frac{6.4\ cm}{OD}$

Taking, $\frac{8}{5} = \frac{OA}{3.5\ cm}$

$\Rightarrow 5 \times OA = 8 \times 3.5\ cm$

$\Rightarrow OA = \frac{8 \times 3.5^{0.7}\ cm}{5_1}$

$\Rightarrow OA = 5.6\ cm$

Taking, $\frac{8}{5} = \frac{6.4\ cm}{OD}$

$\Rightarrow 8 \times OD = 5 \times 6.4\ cm$

$\Rightarrow OD = \frac{5 \times \cancel{6.4}^{0.8} cm}{\cancel{8}_1}$

$\Rightarrow OD = 4\ cm$

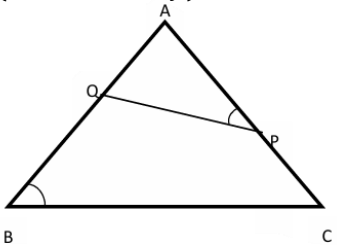
37. In the adjoining figure, $\angle APQ = \angle B$. Prove that $\Delta APQ \sim \Delta ABC$. If $AP = 3.8cm, AQ = 3.6cm, BQ = 2.1cm \text{ and } BC = 4.2cm\ find\ PQ$.

Ans In $\Delta ABC \text{ and } \Delta APQ$,

$\angle APQ = \angle B \quad (Given)$

$\angle A = \angle A \quad (Common\ angle)$

$\therefore \Delta ABC \sim \Delta APQ \quad (AA\ Similarity)$



$\therefore \frac{AP}{AB} = \frac{PQ}{BC}$

$\Rightarrow \frac{3.8}{3.6 + 2.1} = \frac{PQ}{4.2}$

$\Rightarrow \frac{3.8}{5.7} = \frac{PQ}{4.2}$

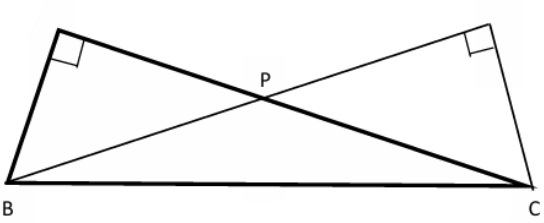
$\Rightarrow 5.7 \times PQ = 3.8 \times 4.2\ cm$

$\Rightarrow PQ = \frac{\cancel{3.8}^{0.2} \times \cancel{4.2}^{1.4}}{\cancel{5.7}_{0.3}} \text{ cm}$

$\Rightarrow PQ = 2.8\ cm$

38. Two $\Delta s\ BAC\ and\ BDC$, right angled at A and D respectively are drawn on the same base BC and on the same side of BC. If AC and DB intersect at P, prove that AP × PC = DP × PB.

Ans



In $\Delta s\ PAB\ and\ PDC$

$\angle A = \angle D \quad (Each\ 90^0)$

$\angle APB = \angle DPC \quad (Vertically\ opposite\ angles)$

$\therefore \Delta PAB \sim \Delta PDC \quad (AA\ Similarity)$

$\therefore \frac{AP}{DP} = \frac{PB}{PC}$

$\Rightarrow AP \times PC = DP \times PB$

Hence Proved

39. X and Y are points on side PQ and PR of a ΔPQR. If PX = 2cm, XQ = 4cm and $XY \parallel QR$, prove that $3XY = QR$.

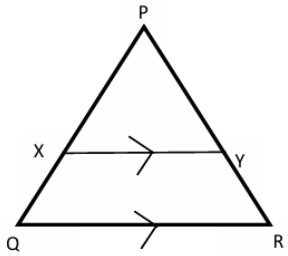
Ans In $\Delta PXY\ and\ \Delta PQR$

$\angle P = \angle P \quad (Common\ angle)$

$\angle Q = \angle PXY \quad (\because XY \parallel BC)$

$\therefore \Delta PXY \sim \Delta PQR \quad (AA\ Similarity)$

$\therefore \frac{PX}{PQ} = \frac{XY}{QR}$



$\Rightarrow \frac{PX}{PX + XQ} = \frac{XY}{QR}$

$\Rightarrow \frac{2}{2+4} = \frac{XY}{QR}$

$\Rightarrow \frac{2}{6} = \frac{XY}{QR}$

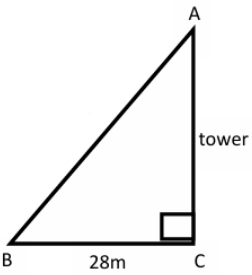
$\Rightarrow \frac{1}{3} = \frac{XY}{QR}$

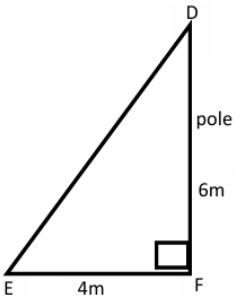
$\Rightarrow 3XY = QR$

Hence Proved

40. A vertical tower of length 6m casts a shadow 4cm long on the ground and at the same time a tower casts a shadow 28m long. Find the height of the tower.

Ans





Let AC be the height of the tower and BC = 28 m be the length of its shadow.

Let DF = 6 m be height of the pole and EF = 4 m be the length of its shadow.

In $\Delta ABC\ and\ \Delta DEF,$

$\angle B = \angle E \quad (same\ inclination\ at\ the\ same\ time)$

$\angle C = \angle F \quad (each\ 90^0)$

$\therefore \Delta ABC \sim \Delta DEF \quad (AA\ Sililarity)$

$\therefore \frac{AC}{DF} = \frac{BC}{EF}$

$\Rightarrow \frac{AC}{6\ m} = \frac{28}{4}$

$\Rightarrow AC = \frac{28^7 \times 6m}{4_1}$

$\Rightarrow AC = 42m$

$\therefore$ The height of the tower is $42\ m$

41. In ΔABC, right angled at B, AB = 24cm, BC = 7cm, find Sin A.

Ans By Pythagoras Theorem in ΔABC, we get

$AC^2 = AB^2 + BC^2$

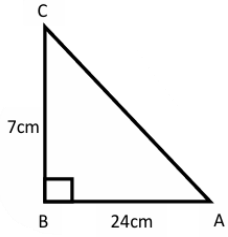
$\Rightarrow AC^2 = (24cm)^2 + (7cm)^2$

$\Rightarrow AC^2 = 576cm^2 + 49cm^2$

$\Rightarrow AC^2 = 625cm^2$

$\Rightarrow AC^2 = \sqrt{625cm^2}$

$\Rightarrow AC^2 = 25cm$



$\therefore \sin A = \frac{BC}{AC} = \frac{7}{25}$

42. Find the value of $Sin60^0Cos30^0 + Sin30^0Cos60^0$

Ans $Sin60^0Cos30^0 + Sin30^0Cos60^0$

$= \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{2}$

$= \frac{3}{4} + \frac{1}{4}$

$= \frac{3+1}{4}$

$= \frac{4}{4}$

$= 1$

43. Prove that $2Cos^2 30^0 - 1 = Cos60^0$

Ans L H S $= 2Cos^2 30^0 - 1$

$= 2 \times \left(\frac{\sqrt{3}}{2}\right)^2 - 1$

$= 2 \times \frac{3}{4} - 1$

$= \frac{3}{2} - 1$

$= \frac{3-2}{2}$

$= \frac{1}{2}$

$= Cos60^0$

= R H S

Hence Proved

44. If $A = 60^0, B = 30^0$, verify that $Cos(A + B) = CosACosB - SinASinB$

Ans L H S $= Cos(A + B)$

$= Cos(60^0 + 30^0)$

$= Cos90^0 = 0$

R H S $= CosACosB - SinASinB$

$= Cos60^0Cos30^0 - Sin60^0Sin30^0$

$= \frac{1}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} \times \frac{1}{2}$

$= \frac{\sqrt{3}}{4} - \frac{\sqrt{3}}{4}$

$= \frac{\sqrt{3}-\sqrt{3}}{4}$

$= \frac{0}{4}$

$= 0$

$\therefore$ L H S = R H S

Hence Verified

45. Prove that $(1 - Sin^2\theta)Sec^2\theta = 1$

Ans L H S $= (1 - Sin^2\theta)Sec^2\theta$

$= Cos^2\theta \times Sec^2\theta$

$= \cancel{Cos^2\theta} \times \frac{1}{\cancel{Cos^2\theta}}$

$= 1$

= R H S

Hence Proved

46. Prove that $(Sec^2A - 1)(Cosec^2A - 1) = 1$

Ans L H S $= (Sec^2A - 1)(Cosec^2A - 1)$

$= tan^2A \times cot^2A$

$= \cancel{tan^2A} \times \frac{1}{\cancel{tan^2A}}$

$= 1$

= R H S

Hence Proved

47. If $SinA = \frac{3}{4}$, calculate $TanA$

Ans Let ABC be a right Δ, right angled at C

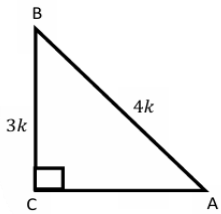
$SinA = \frac{BC}{BA} = \frac{3}{4}$

$\therefore$ BC = $3k$ and BA = $4k$, where k is a positive number

$\therefore$ By using Pythagoras Theorem, we get

$AB^2 = BC^2 + AC^2$

$\Rightarrow (4k)^2 = (3k)^2 + AC^2$



$\Rightarrow 16k^2 = 9k^2 + AC^2$

$\Rightarrow 16k^2 - 9k^2 = AC^2$

$\Rightarrow 7k^2 = AC^2$

$\Rightarrow \sqrt{7k^2} = AC$

$\Rightarrow \sqrt{7}\, k = AC$

$\therefore tanA = \frac{BC}{AC}$

$= \frac{3k}{\sqrt{7}\, k}$

$= \frac{3k}{\sqrt{7}}$

48. Find the value of $\frac{1-tan^2 45^0}{1+tan^2 45^0}$

Ans $\frac{1-tan^2 45^0}{1+tan^2 45^0}$

$= \frac{1 - 1^2}{1 + 1^2}$

$= \frac{1-1}{1+1}$

$= \frac{0}{2}$

$= 0$

49. Prove that $\frac{1}{1+tan^2\theta} + \frac{1}{1+cot^2\theta} = 1$

Ans L H S $= \frac{1}{1+tan^2\theta} + \frac{1}{1+cot^2\theta}$

$= \frac{1}{sec^2\theta} + \frac{1}{cosec^2\theta}$ [$\because 1 + tan^2\theta = sec^2\theta \; and \; 1 + cot^2\theta = cosec^2\theta$]

$= cos^2\theta + sin^2\theta$

$= 1$

= R H S

Hence Proved

50. Express $\frac{1+tan^2 A}{1+cot^2 A}$ in terms of $tanA$

Ans $\frac{1+tan^2 A}{1+cot^2 A}$

$= \frac{sec^2 A}{cosec^2 A}$

$= \frac{\frac{1}{cos^2 A}}{\frac{1}{sin^2 A}}$

$= \frac{1}{cos^2 A} \times \frac{sin^2 A}{1}$

$= \frac{sin^2 A}{cos^2 A}$

$= tan^2 A$

51. A die is thrown once. What is the probability of getting a number less than 3?

Ans Total number of possible outcomes $\{ie\ 1, 2, 3, 4, 5, 6\} = 6$

Number of favourable outcomes less than 3 $\{ie\ 1, 2\} = 2$

$\therefore$ P (less than 3) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{2}{6}$

$= \frac{1}{3}$

52. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the possible that the drawn ball is not red.

Ans Total number of possible outcomes = 3 + 5 = 8

Number of favourable outcomes of not red = 5

$\therefore$ P (not red) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{5}{8}$

53. A box contains 20 cards number 1 to 20. A card is drawn at random from the box. Find the probability that the number on the drawn card is a prime number.

Ans Total number of possible outcomes = 20

Prime numbers are 2, 3, 5, 7, 11, 13, 17, 19

$\therefore$ Number of favourable outcomes of a prime number = 8

$\therefore$ P (prime number) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{\cancel{8}^{2}}{\cancel{20}_{5}}$

$= \frac{2}{5}$

54. A bag contains lemon flavoured candies only. Maline takes out one candy without looking into the bag. What is the probability that she takes out an orange flavoured candy.

Ans Let the number of lemon flavoured candies be x

$\therefore$ Total number of favourable outcomes $= x$

Number or orange flavoured candies $= 0$

$\therefore$ P (orange flavoured candies) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{0}{x}$$

$$= 0$$

55. A box contains balls numbered 3 to 50. A ball is drawn at random from the box. Find the probability that the drawn ball has a number which is a perfect square.

Ans Total number of possible outcomes = 50 – 3 + 1 = 48

The perfect squares are 4, 9, 16, 25, 36, 49

$\therefore$ Number of favourable = 6

$\therefore$ P (perfect square) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{\cancel{6}^{1}}{\cancel{48}_{8}}$$

$$= \frac{1}{8}$$

56. One card is drawn at random from a well shuffled deck of 52 cards. Find the probability of getting a king of red colour.

Ans Total number of possible outcomes = 52

Number of favourable outcomes of a king of red colour = 2

$\therefore$ P (king of red colour) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{\cancel{2}^{1}}{\cancel{52}_{26}}$$

$$= \frac{1}{26}$$

57. A game of chance consists of spinning an arrow which comes to rest pointing to one of the number 1, 2, 3, 4, 5, 6, 7, 8 and these are equally likely outcomes. What is the probability that it will point greater than 2.

Ans Total number of possible outcomes $\{ie\ 1, 2, 3, 4, 5, 6, 7, 8\} = 8$

Number of favourable outcomes $\{ie\ 3, 4, 5, 6, 7, 8\} = 6$

$\therefore$ P (number greater than 2) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{\cancel{6}^{3}}{\cancel{8}_{4}}$$

$$= \frac{3}{4}$$

58. Five cards-the ten, jack, queen, king and ace of diamonds are well-shuffled with then face downwards. One card is drawn at random. What is the probability that the card drawn is a queen.

Ans Total number of possible outcomes = 5

Number of favourable outcomes = 1

$\therefore$ P (a queen) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{1}{5}$$

59. A lot of 144 ball pens of which 20 are defective and the others are good. Nuri will buy a pen if it is good, but not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. What is the probability that she will buy it.

Ans Total number of ball pens = 144

$\therefore$ Total number of possible outcomes = 144

Number of defective ball pens = 20

$\therefore$ Number of good ball pens = 144 – 20 = 124

$\therefore$ Number of favourable outcome of good ball pens = 124

$\therefore$ P (buy it) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{\cancel{124}^{\cancel{62}^{31}}}{\cancel{144}_{\cancel{72}_{36}}}$$

$$= \frac{31}{36}$$

60. A die is thrown twice. What is the probability that 5 will not come up either time.

Ans Total number of possible outcomes = 6 × 6 = 36

Number of possible outcomes when 5 will come up either time

$\{ie\ (5,1), (5,2), (5,3), (5,4), (5,5), (5,6), (1,5), (2,5), (3,5), (4,5), (6,5)\} = 11$

$\therefore$ P (5 will come up either time) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{11}{36}$

$\therefore$ P (5 will not come up either time) $= 1 - \frac{11}{36}$

$= \frac{36-11}{36}$

$= \frac{25}{36}$

Section – C
Short Answer Question (3 Marks)

1. Find a quadratic polynomial whose sum and product of zeroes are $\frac{1}{4}$ and -1 respctively.

Soln.: Given: Sum of the zeroes $= \frac{1}{4}$

Product of the zeroes$= -1$

$\therefore$ A quadratic polynomial is -

$x^2 - (sum\ of\ the\ zeroes)x +$
$Product\ of\ the\ zeroes$

$= x^2 - \frac{1}{4}x + (-1)$

$= \frac{4x^2 - x - 4}{4}$

$= \frac{1}{4}(4x^2 - x - 4)$

$\Rightarrow 4x^2 - x - 4$, where$\frac{1}{4}$ is a constant.

Hence, the required quadratic polynomial is $4x^2 - x - 4$.

2. Find the zeroes of the quadratic polynomial $10x^2 + 3x - 1$ and verify the relationship between the zeroes and the coefficients.

Soln.: Let $p(x) = 10x^2 + 3x - 1$

$= 10x^2 + (5 - 2)x - 1$

$= 10x^2 + 5x - 2x - 1$

$= 5x(2x + 1) - 1(2x + 1)$

$= (2x + 1)(5x - 1)$

$\therefore p(x) = 0$

$\Rightarrow (2x + 1)(5x - 1) = 0$

Either, $2x + 1 = 0$ $or,$ $5x - 1 = 0$

$\Rightarrow x = \frac{-1}{2}$ $or,$ $x = \frac{1}{5}$

$\therefore$ The zeroes of $p(x)\ are\ \frac{-1}{2}\ and\ \frac{1}{5}$

Verification:

Sum of the zeroes $= \frac{-1}{2} + \frac{1}{5}$

$= \frac{-5+2}{10}$

$= \frac{-3}{10}$

$= \frac{-(coefficient\ of\ x)}{coefficient\ of\ x^2}$

Product of the zeroes $= \frac{-1}{2} \times \frac{1}{5}$

$= \frac{-1}{10}$

$= \frac{constant\ term}{coefficient\ of\ x^2}$

Hence, verified.

3. Find a quadratic polynomial whose zeroes are $\frac{2}{\sqrt{3}}$ and $\frac{-4}{\sqrt{3}}$.

Soln.: Sum of the zeroes$= \frac{2}{\sqrt{3}} + \left(\frac{-4}{\sqrt{3}}\right) = \frac{2-4}{\sqrt{3}} = \frac{-2}{\sqrt{3}}$

Product of the zeroes$= \frac{2}{\sqrt{3}} \times \left(\frac{-4}{\sqrt{3}}\right) = \frac{-8}{3}$

$\therefore$ A quadratic polynomial is -

$x^2 - (sum\ of\ the\ zeroes)x + Product\ of\ the\ zeroes$

$= x^2 - \left(\frac{-2}{\sqrt{3}}\right)x + \left(\frac{-8}{3}\right)$

$= x^2 + \frac{2}{\sqrt{3}}x - \frac{8}{3}$

$= \frac{3\sqrt{3}x^2 + 6x - 8\sqrt{3}}{3\sqrt{3}}$

$= \frac{1}{3\sqrt{3}}\left(3\sqrt{3}x^2 + 6x - 8\sqrt{3}\right)$

$\Rightarrow 3\sqrt{3}x^2 + 6x - 8\sqrt{3}$,where$\frac{1}{3\sqrt{3}}$ is a constant.

Hence, the required quadratic polynomial is $3\sqrt{3}x^2 + 6x - 8\sqrt{3}$.

4. One zero of the quadratic polynomial $2x^2 - 8x - m\ is\ \frac{5}{2}$. Find the other zero and the value of m.

Soln.: Given, one of the zeroes is $\frac{5}{2}$.

Let the other zero be y.

Now,

Sum of the zeroes $= \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$\Rightarrow \frac{5}{2} + y = \frac{-(-8)}{2}$

$\Rightarrow y = \frac{8}{2} - \frac{5}{2}$

$\Rightarrow y = \frac{8-5}{2}$

$\Rightarrow y = \frac{3}{2}$

Also,

Product of the zeroes $= \frac{Constant\ term}{Coefficient\ of\ x^2}$

$\Rightarrow \frac{5}{2} \times y = \frac{-m}{2}$

$\Rightarrow \frac{5}{2} \times \frac{3}{2} = \frac{-m}{2}$

$\Rightarrow \frac{15}{4} = \frac{-m}{2}$

$\Rightarrow m = \frac{-15 \times 2}{4}$

$\Rightarrow m = \frac{-15}{2}$

Hence, the other zero is $\frac{3}{2}$ and$m = \frac{-15}{2}$.

5. If α and β are zeroes of the polynomial $p(x) = ax^2 + bx + c$,then evaluate$(\alpha - \beta)^2$.

Soln.: Since, α and β are zeroes of the polynomial,

$$p(x) = ax^2 + bx + c$$

$\therefore$ Sum of the zeroes $= \frac{-b}{a}$

$\Rightarrow \quad \alpha + \beta = \frac{-b}{a}$

And, Product of the zeroes$= \frac{c}{a}$

$\Rightarrow \quad \alpha\beta = \frac{c}{a}$

Now,

$$(\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta$$
$$= \left(\frac{-b}{a}\right)^2 - 4.\frac{c}{a}$$
$$= \frac{b^2}{a^2} - \frac{4c}{a}$$
$$= \frac{b^2 - 4ac}{a^2} \quad \text{(Ans)}$$

6. Find the value of 'p' if the quadratic polynomial $p(x) = x^2 + 8x + p$ has zeroes whose difference is 4.

Soln.: Let $\alpha \ and \ \beta$ be the zeroes of $p(x) = x^2 + 8x + p$.

$\therefore \alpha + \beta = \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$\Rightarrow \quad \alpha + \beta = \frac{-8}{1}$

$\Rightarrow \quad \alpha + \beta = -8$ ----------(i)

And,

$$\alpha\beta = \frac{Constant\ term}{Coefficient\ of\ x^2}$$

$\Rightarrow \quad \alpha\beta = \frac{p}{1}$

$\Rightarrow \quad \alpha\beta = p$ ----------(ii)

Also, By the question, we have

$\alpha - \beta = 4$----------(iii)

Adding equations (i) and (iii), we have

$\alpha + \beta + \alpha - \beta = -8 + 4$

$\Rightarrow \quad 2\alpha = -4$

$\Rightarrow \quad \alpha = -2$

Putting $\alpha = -2$ in eqn. (iii), we have

$$\alpha - \beta = 4$$

$\Rightarrow \quad -2 - \beta = 4$

$\Rightarrow \quad -\beta = 4 + 2$

$\Rightarrow \quad -\beta = 6$

$\Rightarrow \quad \beta = -6$

Putting the values of $\alpha \ and \ \beta$ in eqn. (ii), we get

$$\alpha\beta = p$$

$\Rightarrow \quad (-2)(-6) = p$

$\Rightarrow \quad p = 12$

Hence, $p = 12$. (Ans)

7. If the zeroes of the quadratic polynomial $p(x) = 3x^2 + (2k - 1)x - 5$ are equal in magnitude but opposite in sign then find the value of k.

Soln.: Given polynomial is-

$$p(x) = 3x^2 + (2k - 1)x - 5$$

Let the zeroes be $y \ and \ -y$.

$\therefore$ Sum of the zeroes $= \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$\Rightarrow \quad y + (-y) = \frac{-(2k-1)}{3}$

$\Rightarrow \quad y - y = \frac{-2k+1}{3}$

$\Rightarrow \quad 0 = \frac{-2k+1}{3}$

$\Rightarrow \quad 0 \times 3 = -2k + 1$

$\Rightarrow \quad 0 = -2k + 1$

$\Rightarrow \quad 2k = 1$

$\Rightarrow \quad k = \frac{1}{2}$ (Ans)

8. If one zero of the polynomial $(a^2 + 9)x^2 + 15x + 6a$ is reciprocal of the other, find the value of a.

Soln.: Given polynomial is $(a^2 + 9)x^2 + 15x + 6a$

Let the other zero be y

$\therefore$ One zero $= \frac{1}{y}$

Now,

Product of the zeroes $= \frac{Constant\ term}{Coefficient\ of\ x^2}$

$\Rightarrow \quad y \times \frac{1}{y} = \frac{6a}{a^2+9}$

$\Rightarrow \quad 1 = \frac{6a}{a^2+9}$

$\Rightarrow \quad a^2 + 9 = 6a$

$\Rightarrow \quad a^2 - 6a + 9 = 0$

$\Rightarrow \quad a^2 - (3 + 3)a + 9 = 0$

$\Rightarrow \quad a^2 - 3a - 3a + 9 = 0$

$\Rightarrow \quad a(a - 3) - 3(a - 3) = 0$

$\Rightarrow \quad (a - 3)(a - 3) = 0$

Either, $a - 3 = 0 \quad or, \quad a - 3 = 0$

$\Rightarrow \quad a = 3 \quad or, \quad a = 3$

Hence, the value of a is 3. (Ans)

9. Find the sum and product of the zeroes of the quadratic polynomials:

(i) $x^2 - 8$ (ii) $x^2 - (c - ab)x - abc$

Soln.:(i) Given polynomial is: $x^2 - 8$

$\therefore$ Sum of the zeroes $= \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$$= \frac{0}{1}$$
$$= 0$$

And, Product of the zeroes $= \frac{Constant\ term}{Coefficient\ of\ x^2}$

$= \frac{-8}{1}$

$= -8$

(ii) Given polynomial is: $x^2 - (c - ab)x - abc$

$\therefore$ Sum of the zeroes $= \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$= \frac{-\{-(c-ab)\}}{1}$

$= c - ab$

And, Product of the zeroes $= \frac{Constant\ term}{Coefficient\ of\ x^2}$

$= \frac{-abc}{1}$

$= -abc$ (Ans)

10. Find the value of k such that the quadratic polynomial $x^2 - (k + 6)x + 2(2k + 1)$has sum of the zeroes as half of their product.

Soln.: We have $p(x) = x^2 - (k + 6)x + 2(2k + 1)$

Let $\alpha\ and\ \beta$ be the zeroes of $p(x)$

Then,

$\alpha + \beta = \frac{-(Coefficient\ of\ x)}{Coefficient\ of\ x^2}$

$= \frac{-\{-(k+6)\}}{1}$

$= k + 6$

And,

$\alpha\beta = \frac{Constant\ term}{Coefficient\ of\ x^2}$

$= \frac{2(2k+1)}{1}$

$= 4k + 2$

But, According to the question, we have

$\alpha + \beta = \frac{1}{2}(\alpha\beta)$

$\Rightarrow\ k + 6 = \frac{1}{2}(4k + 2)$

$\Rightarrow\ 2k + 12 = 4k + 2$

$\Rightarrow\ 4k - 2k = 12 - 2$

$\Rightarrow\ 2k = 10$

$\Rightarrow\ k = 5$ (Ans).

11. The age of a man is twice the square of the age of his son. Eight years hence, the age of the man will be 4 years more than three times the age of his son. Find their present ages.

Soln.: Let the present age of the son be x years

Then, the age of the man $= 2x^2$ years

$\therefore$ 8 years hence, the age of the son $= (x + 8)$ years

&8 years hence, the age of the man $= (2x^2 + 8)$ years

Now, According to the question, we have

$\Rightarrow\ (2x^2 + 8) = 3(x + 8) + 4$

$\Rightarrow\ 2x^2 + 8 = 3x + 24 + 4$

$\Rightarrow\ 2x^2 + 8 = 3x + 28$

$\Rightarrow\ 2x^2 - 3x + 8 - 28 = 0$

$\Rightarrow\ 2x^2 - 3x - 20 = 0$

$\Rightarrow\ 2x^2 - (8 - 5)x - 20 = 0$

$\Rightarrow\ 2x^2 - 8x + 5x - 20 = 0$

$\Rightarrow\ 2x(x - 4) + 5(x - 4) = 0$

$\Rightarrow\ (x - 4)(2x + 5) = 0$

Either, $x - 4 = 0$ or, $2x + 5 = 0$

$\Rightarrow\ x = -4$ or, $x = \frac{-5}{2}$ (Rejected as age cannot be negative)

Hence, son's present age $= 4\ years.$

& man's present age $= 2 \times 4^2 = 2 \times 16 = 32\ years.$ (Ans)

12. Find the value of 'k' for which $2x^2 + kx + 3 = 0$ have equal roots.

Soln.: Comparing $2x^2 + kx + 3 = 0$with $ax^2 + bx + c = 0$, we have

$a = 2,\ b = k,\ and\ c = 3$

We know, for equal roots,

Discriminant, D $= 0$

$\Rightarrow\ b^2 - 4ac = 0$

$\Rightarrow\ k^2 - 4 \times 2 \times 3 = 0$

$\Rightarrow\ k^2 - 24 = 0$

$\Rightarrow\ k^2 = 24$

$\Rightarrow\ k = \pm\sqrt{24}$

$\Rightarrow\ k = \pm\sqrt{2 \times 2 \times 6}$

$\Rightarrow\ k = \pm\sqrt{2^2 \times 6}$

$\Rightarrow\ k = \pm 2\sqrt{6}$

$\therefore k = 2\sqrt{6}, -2\sqrt{6}$. (Ans)

13. A cottage industry produces a certain number of pottery articles in a day. It was observed on a particular day that the cost of production of each article (in rupees) was 3 more than twice the number of articles produced on that day. If the total cost of production on that day was Rs 90, find the number of articles produced and the cost of each article.

Soln.:Let the number of pottery articles produced on a particular day be x.

$\therefore$ Cost of production of each article $= 2x + 3$

So, the total cost of production

$= No.of\ pottery\ articles \times cost\ of\ production\ of\ each\ article$

$= x(2x + 3)$

Now, According to the question, we have

$x(2x+3) = 90$

$\Rightarrow \quad 2x^2 + 3x = 90$

$\Rightarrow \quad 2x^2 + 3x - 90 = 0$

$\Rightarrow \quad 2x^2 + (15-12)x - 90 = 0$

$\Rightarrow \quad 2x^2 + 15x - 12x - 90 = 0$

$\Rightarrow \quad x(2x+15) - 6(2x+15) = 0$

$\Rightarrow \quad (2x+15)(x-6) = 0$

Either, $2x + 15 = 0 \quad or, \quad x - 6 = 0$

$\Rightarrow \quad x = \frac{-15}{2} \quad or, \quad x = 6$

But, $x = \frac{-15}{2}$ is rejected as number of articles produced cannot be negative.

Hence, the number of articles produced is 6.

& The cost of each article is $= 2 \times 6 + 3 = 12 + 3 = Rs\ 15$. (Ans)

14. The product of two consecutive positive integers is 240. Find the integers.

Soln.:Let the two consecutive positive integers be $x \ and \ (x+1)$.

According to the question, we have

Product of two consecutive positive integers = 240

$\Rightarrow \quad x(x+1) = 240$

$\Rightarrow \quad x^2 + x = 240$

$\Rightarrow \quad x^2 + x - 240 = 0$

$\Rightarrow \quad x^2 + (16-15)x - 240 = 0$

$\Rightarrow \quad x^2 + 16x - 15x - 240 = 0$

$\Rightarrow \quad x(x+16) - 15(x+16) = 0$

$\Rightarrow \quad (x+16)(x-15) = 0$

Either, $x + 16 = 0$ or, $x - 15 = 0$

$\Rightarrow \quad x = -16$ or, $x = 15$

Since x is a natural number,

$\therefore x = -16$ is rejected

Hence, the two consecutive positive integers are $x = 15$ & $x + 1 = 15 + 1 = 16$.

15. Find the positive value of k for which $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will have real roots.

Soln.: Since, the equation $x^2 + kx + 64 = 0$ has real roots.

$\therefore$ Discriminant ≥ 0

$\Rightarrow \quad b^2 - 4ac \geq 0$

$\Rightarrow \quad k^2 - 4 \times 1 \times 64 \geq 0$

$\Rightarrow \quad k^2 - 256 \geq 0$

$\Rightarrow \quad k^2 \geq 256$

$\Rightarrow \quad k \geq \pm\sqrt{256}$

$\Rightarrow \quad k \geq \pm 16$

$\Rightarrow \quad k \geq 16 \quad or, \quad k \leq -16$ ---------(i)

Also,

Since, the equation $x^2 - 8x + k = 0$ has real roots.

$\therefore$ Discriminant ≥ 0

$\Rightarrow \quad b^2 - 4ac \geq 0$

$\Rightarrow \quad (-8)^2 - 4 \times 1 \times k \geq 0$

$\Rightarrow \quad 64 - 4k \geq 0$

$\Rightarrow \quad 64 \geq 4k$

$\Rightarrow \quad 4k \leq 64$

$\Rightarrow \quad k \leq \frac{64}{4}$

$\Rightarrow \quad k \leq 16$ ----------(ii)

From equations (i) and (ii) , we have

$k = 16$. (Ans)

16. Find two numbers whose sum is 27 and the product is 182.

Soln.: Let the first number be x and the second number be$(27 - x)$.

According to the question, we have

Product of two numbers $= 182$

$\Rightarrow \quad x(27-x) = 182$

$\Rightarrow \quad 27x - x^2 = 182$

$\Rightarrow \quad x^2 - 27x + 182 = 0$

$\Rightarrow \quad x^2 - (14+13)x + 182 = 0$

$\Rightarrow \quad x^2 - 14x - 13x + 182 = 0$

$\Rightarrow \quad x(x-14) - 13(x-14) = 0$

$\Rightarrow \quad (x-14)(x-13) = 0$

Either, $x - 14 = 0$ or, $x - 13 = 0$

$\Rightarrow \quad x = 14$ or,$x = 13$

$\therefore$ First number is equal to $13 \ or \ 14$.

And, Second number $= 27 - x = 27 - 13 = 14$.

Or, Second number $= 27 - x = 27 - 14 = 13$.

Hence, the two numbers are $13 \ and \ 14$.

17. The sum of two numbers is 16. The sum of their reciprocals is $\frac{1}{3}$. Find the numbers.

Soln.: Let one number be x

And the other number $= 16 - x$

According to the question, we have

$\frac{1}{x} + \frac{1}{16-x} = \frac{1}{3}$

$\Rightarrow \quad \frac{16-x+x}{x(16-x)} = \frac{1}{3}$

$\Rightarrow \quad \frac{16}{16x-x^2} = \frac{1}{3}$

$\Rightarrow \quad 16x - x^2 = 48$

$\Rightarrow \quad x^2 - 16x + 48 = 0$

$\Rightarrow \quad x^2 - (12+4)x + 48 = 0$

$\Rightarrow \quad x^2 - 12x - 4x + 48 = 0$

$\Rightarrow \quad x(x-12) - 4(x-12) = 0$

$\Rightarrow \quad (x-12)(x-4) = 0$

Either, $x-12=0$ or, $x-4=0$

$\Rightarrow$ $x=12$ or, $x=4$

$\therefore$ The numbers are $4\ and\ 12$.

18. The sum of a number and its reciprocal is $\frac{17}{4}$. Find the number.

Soln.: Let the number be x.

According to the question, we have

$x+\frac{1}{x}=\frac{17}{4}$

$\Rightarrow$ $\frac{x^2+1}{x}=\frac{17}{4}$

$\Rightarrow$ $4x^2+4=17x$

$\Rightarrow$ $4x^2-17x+4=0$

$\Rightarrow$ $4x^2-(16+1)x+4=0$

$\Rightarrow$ $4x^2-16x-x+4=0$

$\Rightarrow$ $4x(x-4)-1(x-4)=0$

$\Rightarrow$ $(x-4)(4x-1)=0$

Either, $x-4=0$ or, $4x-1=0$

$\Rightarrow$ $x=4$ or, $x=\frac{1}{4}$

(Rejected as it is a fraction)

$\therefore$ The required number is 4. (Ans)

19. A train travels 360 km at a uniform speed. If the speed had been 5 km/hr more, it would have taken 1 hour less for the same journey. Find the speed of the train.

Soln.: Let the uniform speed of the train be $x\ km/hr$

Distance travelled by the train $=360\ km$

$\therefore$ Time taken to cover 360 $km=\frac{Distance}{Speed}=\frac{360}{x}\ hours$

If the speed had been 5 km/hr more i.e., $(x+5)km/hr$, then

$\therefore$New Time taken to cover $360\ km=\frac{Distance}{New\ Speed}=\frac{360}{x+5}\ hours$

Now, According to the question, we have

$\frac{360}{x}-\frac{360}{x+5}=1$

$\Rightarrow$ $\frac{360(x+5)-360x}{x(x+5)}=1$

$\Rightarrow$ $\frac{360x+1800-360x}{x^2+5x}=1$

$\Rightarrow$ $1800=x^2+5x$

$\Rightarrow$ $x^2+5x-1800=0$

$\Rightarrow$ $x^2+(45-40)x-1800=0$

$\Rightarrow$ $x^2+45x-40x-1800=0$

$\Rightarrow$ $x(x+45)-40(x+45)=0$

$\Rightarrow$ $(x+45)(x-40)=0$

Either, $x+45=0$ or, $x-40=0$

$\Rightarrow$ $x=-45$ or, $x=40$

($x=-45$ is rejected because speed of train cannot be negative)

$\therefore x=40$

Hence, the required speed of the train is $40\ km/hr$. (Ans)

20. Find the roots of the quadratic equation $\sqrt{2}x^2+7x+5\sqrt{2}=0$ by factorisation.

Soln. $\sqrt{2}x^2+7x+5\sqrt{2}=0$

$\Rightarrow$ $\sqrt{2}x^2+(5+2)x+5\sqrt{2}=0$

$\Rightarrow$ $\sqrt{2}x^2+5x+2x+5\sqrt{2}=0$

$\Rightarrow$ $x(\sqrt{2}x+5)+\sqrt{2}(\sqrt{2}x+5)=0$

$\Rightarrow$ $(\sqrt{2}x+5)(x+\sqrt{2})=0$

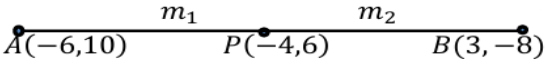
Either, $\sqrt{2}x+5=0$ or, $x+\sqrt{2}=0$

$\Rightarrow$ $x=\frac{-5}{\sqrt{2}}$ or, $x=-\sqrt{2}$

Hence, the roots are $\frac{-5}{\sqrt{2}}\ and\ -\sqrt{2}$ (Ans)

21. In which ratio does the point $(-4,6)$ divide the line segment joining the points $A(-6,10)\ and\ B(3,-8)$.

Soln.:



Let $P(-4,6)$ divide AB internally in the ratio $m_1:m_2$

Using the Section Formula, we get

$(x,y)=\left(\frac{m_1x_2+m_2x_1}{m_1+m_2},\frac{m_1y_2+m_2y_1}{m_1+m_2}\right)$

$\Rightarrow$ $(-4,6)=\left(\frac{m_1\times3+m_2(-6)}{m_1+m_2},\frac{m_1(-8)+m_2\times10}{m_1+m_2}\right)$

$\Rightarrow$ $(-4,6)=\left(\frac{3m_1-6m_2}{m_1+m_2},\frac{-8m_1+10m_2}{m_1+m_2}\right)$

So, $-4=\frac{3m_1-6m_2}{m_1+m_2}$ and $6=\frac{-8m_1+10m_2}{m_1+m_2}$

Now, $-4=\frac{3m_1-6m_2}{m_1+m_2}$

$\Rightarrow$ $-4m_1-4m_2=3m_1-6m_2$

$\Rightarrow$ $3m_1+4m_1=6m_2-4m_2$

$\Rightarrow$ $7m_1=2m_2$

$\Rightarrow$ $\frac{m_1}{m_2}=\frac{2}{7}$

$\Rightarrow$ $m_1:m_2=2:7$

Hence, the required ratio is $2:7$. (Ans)

22. If the points $A(6,1),\ B(8,2),\ C(9,4)\ and\ D(P,3)$ are the vertices of a parallelogram taken in order, find the value of P.

Soln.: Given, points $A(6,1),\ B(8,2),\ C(9,4)\ and\ D(P,3)$ are the vertices of a parallelogram $ABCD$.

Since, the diagonals $AC\ and\ BD$ of a parallelogram $ABCD$ bisect each other at a point M.

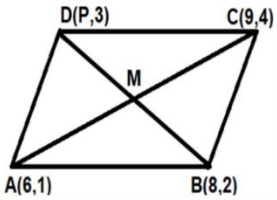
$\therefore$ Mid-point M of AC and mid-point M of BD are same point.

So, Coordinates of mid-point of AC = Coordinates of the mid-point of BD

$\Rightarrow \left(\frac{6+9}{2}, \frac{1+4}{2}\right) = \left(\frac{8+P}{2}, \frac{2+3}{2}\right)$

$\Rightarrow \left(\frac{15}{2}, \frac{5}{2}\right) = \left(\frac{8+P}{2}, \frac{5}{2}\right)$

So, $\frac{15}{2} = \frac{8+P}{2}$



$\Rightarrow 2(8+P) = 2 \times 15$

$\Rightarrow 8 + P = \frac{30}{2}$

$\Rightarrow 8 + P = 15$

$\Rightarrow P = 15 - 8$

$\Rightarrow P = 7.$ (Ans)

23. Find a relation between $x\ and\ y$ such that the point (x, y) is equidistant from the points $(7,1)\ and\ (3,5)$.

Soln.: Let $P(x, y)$ be equidistant from the points $A(7,1)\ and\ B(3,5)$.

$AP = BP$

$\Rightarrow AP^2 = BP^2$ (Squaring both sides)

$\Rightarrow (x-7)^2 + (y-1)^2 = (x-3)^2 + (y-5)^2$

$\Rightarrow x^2 - 2.x.7 + 7^2 + y^2 - 2.y.1 + 1^2 = x^2 - 2.x.3 + 3^2 + y^2 - 2.y.5 + 5^2$

$\Rightarrow x^2 - 14x + 49 + y^2 - 2y + 1 = x^2 - 6x + 9 + y^2 - 10y + 25$

$\Rightarrow x^2 - 14x + y^2 - 2y + 50 = x^2 - 6x + y^2 - 10y + 34$

$\Rightarrow x^2 - x^2 + y^2 - y^2 - 14x + 6x - 2y + 10y = 34 - 50$

$\Rightarrow -8x + 8y = -16$

$\Rightarrow -8(x-y) = -16$

$\Rightarrow x - y = \frac{-16}{-8}$

$\Rightarrow x - y = 2$

which is the required equation. (Ans)

24. Find a point on the $y-axis$ which is equidistant from the points $(2,3)\ and\ (-4,1)$

Soln.: We know that a point on the $y-axis$ is of the from $(0, y)$.

So, let the point $P(0, y)$ be equidistant from $A(2,3)\ and\ B(-4,1)$.

$\therefore PA = PB$

$\Rightarrow PA^2 = PB^2$ (Squaring both sides)

$\Rightarrow (2-0)^2 + (3-y)^2 = (-4-0)^2 + (1-y)^2$

$\Rightarrow 2^2 + 3^2 - 6y + y^2 = 16 + 1 - 2y + y^2$

$\Rightarrow 13 - 6y + y^2 - y^2 = 17 - 2y$

$\Rightarrow -6y + 2y = 17 - 13$

$\Rightarrow -4y = 4$

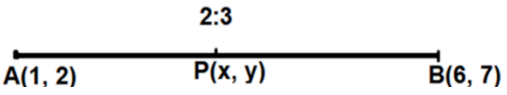
$\Rightarrow y = \frac{4}{-4}$

$\Rightarrow y = -1$

Hence, the required point on the $y-axis$ is $(0, -1)$. (Ans)

25. If $A\ and\ B$ are $(1,2)\ and\ (6,7)$, respectively, find the coordinates of P such that $AP = \frac{2}{5}AB$ and P lies on the line segment AB.

Soln.:



Given, $AP = \frac{2}{5}AB$

$\Rightarrow \frac{AB}{AP} = \frac{5}{2}$

$\Rightarrow \frac{AP+PB}{AP} = \frac{2+3}{2}$

$\Rightarrow 1 + \frac{PB}{AP} = 1 + \frac{3}{2}$

$\Rightarrow \frac{PB}{AP} = \frac{3}{2}$

$\Rightarrow \frac{AP}{PB} = \frac{2}{3}$

Let $P(x, y)$ be the point which divides the line segment joining the points $A(1,2)$ and $B(6,7)$ in the ratio $2:3$

$\therefore$ BY Section Formula, we get

$$(x, y) = \left(\frac{2 \times 6 + 3 \times 1}{2+3}, \frac{2 \times 7 + 3 \times 2}{2+3}\right)$$

$$= \left(\frac{12+3}{5}, \frac{14+6}{5}\right)$$

$$= \left(\frac{15}{5}, \frac{20}{5}\right)$$

$$= (3, 4)$$

Hence, the required coordinates of the point $P\ are\ (3,4)$. (Ans)

26. Check whether the points $(3,0)$, $(6,4)\ and\ (-1,3)$ are the vertices of an isosceles triangle.

Soln.: Let $A(3,0)$, $B(6,4)\ and\ C(-1,3)$ be the given points.

Then, Using Distance Formula, we get

$AB = \sqrt{(6-3)^2 + (4-0)^2} = \sqrt{3^2 + 4^2} = \sqrt{9+16} = \sqrt{25} = 5\ units$

$BC = \sqrt{(-1-6)^2 + (3-4)^2} = \sqrt{(-7)^2 + (-1)^2} = \sqrt{49+1} = \sqrt{50} = 5\sqrt{2}\ units$

$CA = \sqrt{(-1-3)^2 + (3-0)^2} = \sqrt{(-4)^2 + 3^2} = \sqrt{16+9} = \sqrt{25} = 5\ units$

Since, $AB = CA$

$\therefore\ \Delta ABC$ is an isosceles triangle. (Ans)

27. Find the values of a for which the distance between the points $P(a,-1)$ and $Q(5,3)$ is $5\ units$.

Soln.: According to the question, we have

$PQ = 5$

$\Rightarrow\ PQ^2 = 5^2$ (Squaring both sides)

$\Rightarrow\ (5-a)^2 + (3+1)^2 = 25$

$\Rightarrow\ 5^2 - 2.5.a + a^2 + 4^2 = 25$

$\Rightarrow\ 25 - 10a + a^2 + 16 = 25$

$\Rightarrow\ 25 - 25 - 10a + a^2 + 16 = 0$

$\Rightarrow\ a^2 - 10a + 16 = 0$

$\Rightarrow\ a^2 - (8+2)a + 16 = 0$

$\Rightarrow\ a^2 - 8a - 2a + 16 = 0$

$\Rightarrow\ a(a-8) - 2(a-8) = 0$

$\Rightarrow\ (a-8)(a-2) = 0$

Either, $a - 8 = 0$ or, $a - 2 = 0$

$\Rightarrow\ a = 8$ or, $a = 2$

$\therefore a = 2\ or\ 8$. (Ans)

28. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is $(2,-1)$ and B is $(5,7)$.

Soln.: Suppose, AB be the diameter of a circle having its centre at $C(2,-1)$ and

Coordinates of end-point B is $(5,7)$.

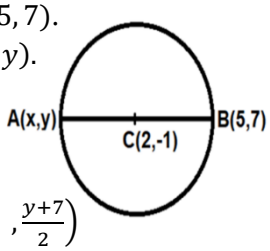
Let the coordinates of A be (x,y).

Since, AB is the diameter.

$\therefore\ C$ is the mid-point of AB.

Using Mid-Point Formula,

The coordinates of $C\ are\ \left(\frac{x+5}{2}, \frac{y+7}{2}\right)$



But, it is given that the coordinates of C are $(2,-1)$

$\therefore \frac{x+5}{2} = 2$

$\Rightarrow\ x + 5 = 4$

$\Rightarrow\ x = 4 - 5$

$\Rightarrow\ x = -1$

And,

$\frac{y+7}{2} = -1$

$\Rightarrow\ y + 7 = -2$

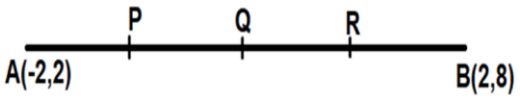
$\Rightarrow\ y = -2 - 7$

$\Rightarrow\ y = -9$

Hence, the required coordinates of $A\ are\ (-1,-9)$. (Ans)

29. Find the coordinates of the points which divide the line segment joining $A(-2,2)$ and $B(2,8)$ into four equal parts.

Soln.: Let $P, Q\ and\ R$ be the points that divide the line segment joining $A(-2,2)$ and $B(2,8)$ into four equal parts.



Since, Q divides the line segment AB into two equal parts i.e., Q is the mid-point of AB.

$\therefore$ Coordinates of $Q = \left(\frac{-2+2}{2}, \frac{2+8}{2}\right)$

$= \left(\frac{0}{2}, \frac{10}{2}\right)$

$= (0,5)$

Now, P divides the line segment AQ into two equal parts i.e., P is the mid-point of AQ.

$\therefore$ Coordinates of $P = \left(\frac{-2+0}{2}, \frac{2+5}{2}\right)$

$= \left(\frac{-2}{2}, \frac{7}{2}\right)$

$= \left(-1, \frac{7}{2}\right)$

Again, R divides the line segment QB into two equal parts i.e., R is the mid-point of QB.

$\therefore$ Coordinates of $R = \left(\frac{0+2}{2}, \frac{5+8}{2}\right)$

$= \left(\frac{2}{2}, \frac{13}{2}\right)$

$= \left(1, \frac{13}{2}\right)$

Hence, the required coordinates of the points that divide the line segment AB into four equal parts are $P(0,5)$, $Q\left(-1,\frac{7}{2}\right)\ and\ R\left(1,\frac{13}{2}\right)$. (Ans)

30. Find the coordinates of the point which divides the line segment joining the points $(4,-3)\ and\ (8,5)$ in the ratio $3:1$ internally.

Soln.: Let the coordinates of the point be $P(x,y)$.

Here, $x_1 = 4\,,\ \ y_1 = -3$

$x_2 = 8\,,\quad y_2 = 5$

$m_1 = 3\,,\quad m_2 = 1$

∴By Section Formula, we have

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2} = \frac{3\times 8 + 1\times 4}{3+1} = \frac{24+4}{4}$$

$$= \frac{28}{4} = 7$$

And,

$$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2} = \frac{3\times 5 + 1\times(-3)}{3+1}$$

$$= \frac{15-3}{4} = \frac{12}{4} = 3$$

Hence, the required coordinates of the point are $P(7,3)$. (Ans)

31. From a point Q , the length of the tangent to a circle is 24cm and the distance of from the centre is Find the diameter of the circle.

Soln.: Let the length of the tangent be $PQ = 24\ cm\ \ and\ \ OQ = 25\ cm.$

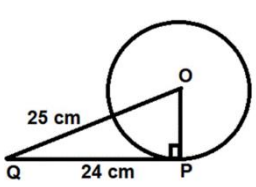
Radius OP is joined.

We know that a tangent at any point of a circle is Perpendicular to the radius through the point of Contact.

$\therefore OP \perp PQ = 90°$

Now, in rt. $\Delta\, OPQ,$

By Pythagoras theorem, we have



$OQ^2 = OP^2 + PQ^2$

⇨ $(25)^2 = OP^2 + (24)^2$

⇨ $625 = OP^2 + 576$

⇨ $OP^2 = 625 - 576$

⇨ $OP^2 = 49$

⇨ $OP = \sqrt{49}$

⇨ $OP = 7\ \ cm$

Hence, the required diameter of the circle $= 2\times radius$

$= 2\times 7$

$= 14\ \ cm\,.$ (Ans)

32. The length of a tangent from a point A at a distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.

Soln.: Let O be the centre of the circle and P Be the point of contact.

Tangent, $AP = 4\ cm\ \ and\ \ OA = 5\ cm.$

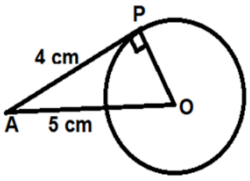
Radius, OP is joined.

Since, the tangent at any point of a circle is Perpendicular to the radius through the point of Contact.

$\therefore OP \perp AP \Rightarrow \angle OPA = 90°$

Now, in rt. $\Delta\, OPA,$

By Pythagoras theorem, we have



$OA^2 = OP^2 + AP^2$

⇨ $(5)^2 = OP^2 + (4)^2$

⇨ $25 = OP^2 + 16$

⇨ $OP^2 = 25 - 16$

⇨ $OP^2 = 9$

⇨ $OP = \sqrt{9}$

⇨ $OP = 3\ cm$

Hence, the radius of the circle is 3 cm. (Ans)

33. In the given figure, if $TP\ \ and\ \ TQ$ are the two tangents to a circle with centre O so that $\angle POQ = 130°$, then find $\angle PTQ$.

Soln.: Given: $\angle POQ = 130°$.

We know that a tangent at any point of a circle is Perpendicular to the radius through the point of Contact

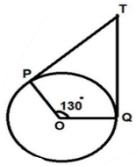
$\therefore OP \perp PT$ and $OQ \perp QT$

⇨ $\angle OPT = 90°\ \ and\ \ \angle OQT$-----(i)

Now, in a quadrilateral $OPTQ,$

Since, the sum of the four angles of a quadrilateral is 360°

$\therefore \angle POQ + \angle OPT + \angle PTQ + \angle OQT = 360°$



⇨ $130° + 90° + \angle PTQ + 90° = 360°$

⇨ $310° + \angle PTQ = 360°$

⇨ $\angle PTQ = 360° - 310°$

⇨ $\angle PTQ = 50°$ (Ans)

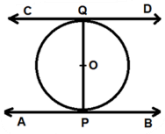
34. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

Soln.: Let PQ be the diameter of a given circle With centre O and two tangents AB and CD are drawn to the circle at points P and Respectively.

Now, since the tangent at any point of a circle is Perpendicular to the radius through the point of Contact.

$\therefore OP \perp AB$ and $OQ \perp CD$

$\therefore PQ \perp AB$ and $PQ \perp CD$



⇨ $\angle APQ =$

$90°\ \ and\ \ \angle PQD = 90°$

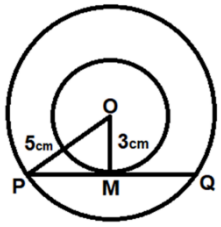
⇨ $\angle APQ = \angle PQD$

Since, these are a pair of alternate angles.

$\therefore AB\,//\,CD.$ Hence, Proved.

35. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

Soln.: Let O be the common centre of two Concentric circles and let PQ be a chord Of larger circles touching the smaller circles At M. OM is joined.



So, $OM = 3\ cm\ \ and\ \ OP = 5\ cm$

Since, OM is the radius of the smaller circle

And PQ is the tangent to this circle at M.

$\therefore\ OM \perp PQ$

We know that the perpendicular drawn from the centre of a circle ta any chord of the circle, bisects the chord.

i.e., OM bisects PQ

$\therefore PM = MQ$

$\Rightarrow\quad PQ = \frac{1}{2}PQ$

$\Rightarrow\quad 2PM = PQ$ ----------(i)

Now, in rt. $\Delta\ PMO,$

By Pythagoras Theorem, we have

$OP^2 = OM^2 + PM^2$

$\Rightarrow\quad (5)^2 = (3)^2 + PM^2$

$\Rightarrow\quad 25 = 9 + PM^2$

$\Rightarrow\quad PM^2 = 25 - 9$

$\Rightarrow\quad PM^2 = 16$

$\Rightarrow\quad PM = \sqrt{16}$

$\Rightarrow\quad PM = 4\ cm.$

$\therefore$ From eqn. (i), we have

$$PQ = 2PM = 2 \times 4 = 8\ cm$$

Hence, the length of the chord of the larger circle which touches the smaller circle is $8\ cm.$ (Ans)

36. A circle touches the sod BC of Δ ABC, at P and touches AB and AC produces at Q and R respectively. Prove that $AQ = \frac{1}{2}(Perimeter\ of\ \Delta\ ABC)$.

Soln.: Since the lengths of the tangents drawn from an external point to a circle are equal.

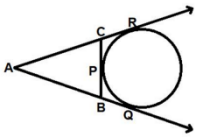
$\therefore BP = BQ(Tangents\ from\ B) - - - - - -(i)$

$CP = CR(Tangents\ from\ C) - - - -(ii)$

& $AQ = AR(Tangents\ from\ A) - - - - -\ (iii)$

Now,

Perimeter of Δ ABC $= AB + BC + AC$



$= AB + (BP + PC) + AC$

$= AB + BQ + CR + AC\ [from\ (i)\&(ii)]$

$= (AB + BQ) + (AC + CR)$

$= AQ + AR$

$= AQ + AQ\ [from\ (iii)]$

$= 2AQ$

$\therefore AQ = \frac{1}{2}(perimeter\ of \Delta\ \text{ABC})$

Hence, Proved.

37. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the centre.

Soln.: Let PA and PB be two tangents drawn from an external point P to a circle with centre O.

To Prove: $\angle AOB + \angle APB = 180°$

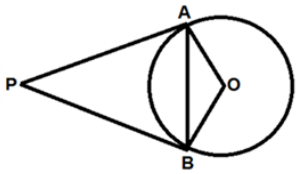
Proof: Since, tangent at any point of a circle is Perpendicular to the radius through the point of contact.

$\therefore OA \perp AP \Rightarrow \angle OAP = 90° - - - - - -(i)$

$\&OB \perp BP \Rightarrow \angle OBP = 90° - - - - - -(ii)$

Now,

Since, the sum of the four angles of a quadrilaterals is 360°



$\therefore \angle AOB + \angle OAP + \angle APB + \angle OBP = 360°$

$\Rightarrow\quad \angle AOB + 90° + \angle APB + 90° = 360°\ [from\ (i)\&\ (ii)]$

$\Rightarrow\quad \angle AOB + \angle APB + 180° = 360°$

$\Rightarrow\quad \angle AOB + \angle APB = 360° - 180°$

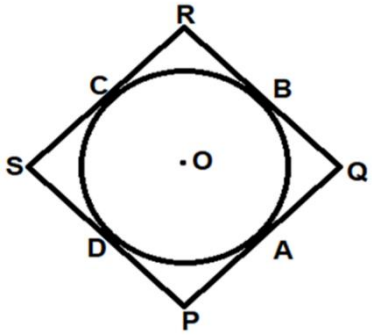
$\Rightarrow\quad \angle AOB + \angle APB = 180°$

Hence, Proved.

38. Prove that a parallelogram circumscribing a circle is a rhombus.

Soln.: Let PQRS be a parallelogram such that its sides touch a circle with centre O.

We know, that the lengths of tangents drawn from an external point to a circle are equal.



Therefore, we have

$PA = PD\ (Tangents\ from\ P)$------- (i)

$QA = QB(Tangents\ from\ Q)$------- (ii)

$RC = RB(Tangents\ from\ R)$------- (iii)

& $SC = SD(Tangents\ from\ S)$------- (iv)

Now, Adding (i), (ii), (iii) & (iv), we get

$PA + QA + RC + SC = PD + QD + RB + SD$

⇨ $(PA + QA) + (RC + SC) = (PD + SD) + (QB + RB)$

⇨ $PQ + RS = PS + QR$

⇨ $PQ + PQ = QR + QR\ [since, PQRS\ is\ a\ parallelogram, PQ = RS\ \&\ QR = PS]$

⇨ $2PQ = 2QR$

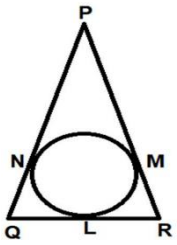
⇨ $PQ = QR$

$\therefore PQ = QR = RS = PS$

Hence, $PQRS$ is a rhombus. (Proved)

39. In the figure, if $PM = 15cm,\ RL = 12cm$ and $QN = 7cm$, then find the perimeter of the triangle PQR.

Soln.: Given: $PM = 15cm, RL = 12cm$ and $QN = 7cm$



We know, that the lengths of two tangents Drawn from an external point to a circle are equal.

$\therefore PM = PN = 15cm$

$QN = QL = 7cm$

$RL = RM = 12cm$

Now,

Perimeter of $\Delta PQR = PQ + QR + RP$

$= (PN + QN) + (QL + RL) + (RM + MP)$

$= (15 + 7) + (7 + 12) + (12 + 15)$

$= 22 + 19 + 27$

$= 68cm$ (Ans)

40. In the figure, if $AB = AC$, prove that $BE = EC$.

Soln.: Given: $AB = AC$

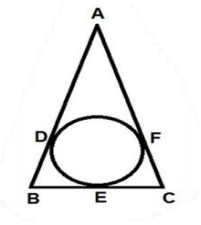
To Prove: $BE = EC$

Since, the lengths of two tangents drawn from an external point to a circle are equal.

$\therefore AD = AF\ (Tangents\ from\ A)$----------(i)

$BD = BE\ (Tangents\ from\ B)$----------(ii)

$CE = CF\ (Tangents\ from\ C)$----------(iii)



Now,

$AB = AC\ (given)$

⇨ $AD + BD = AF + CF$

⇨ $AF + BD = AF + CF\ [From\ (i)]$

⇨ $AF - AF + BD = CF$

⇨ $BD = CF$

⇨ $BE = EC\ [From\ (ii)\&(iii)]$

Hence, $BE = EC$. Proved

41. The area of a square is same as the area of a circle. What is the ratio of their perimeters?

Soln.: Let, a be the side of a square

&r be the radius of a circle

Given that, $Area\ of\ a\ square = Area\ of\ a\ cicle$

⇨ $a^2 = \pi r^2$

⇨ $a = \sqrt{\pi r^2}$

⇨ $a = r\sqrt{\pi}$

Now,

Required ratio of their perimeters= $\frac{Perimeter\ of\ a\ square}{Perimeter\ of\ a\ circle}$

$= \frac{4a}{2\pi r}$

$= \frac{4(r\sqrt{\pi})}{2\pi r}$

$= \frac{2\sqrt{\pi}}{\pi}$

$= \frac{2}{\sqrt{\pi}}$

$= 2{:}\sqrt{\pi}$ (Ans)

42. Find the area of the sector of a circle of radius 8 cm and the angle at the centre 30°

Soln.: Given: Radius, $r = 8\ cm$

& Central angle, $\theta = 30°$

Now,

Area of sector of a circle = $\frac{\theta}{360°}(\pi r^2)$

$= \frac{30°}{360°}\left\{\frac{22}{7} \times (8)^2\right\}$

$= \frac{1}{12} \times \frac{22}{7} \times 8 \times 8$

$= \frac{352}{21} cm^2$

$= 16.76\ cm^2$ (Ans)

43. A chord of a circle of radius $14\ cm$ subtends and angle $60°$ at the centre. Find the area of the major sector.

Soln.: Given: Radius, $r = 14\ cm$

& Central angle (minor sector) $= 60°$

$\therefore$ Central angle for major sector, $\theta = 360° - 60° = 300°$

Now,

Area of the major sector$= \frac{\theta}{360°}(\pi r^2)$

$= \frac{300°}{360°}\left\{\frac{22}{7} \times (14)^2\right\}$

$= \frac{5}{6} \times \frac{22}{7} \times 14 \times 14$

$= 154\ cm^2$ (Ans)

44. Find the angle subtended at the centre of a circle of radius $5\ cm$ by an arc of length $\frac{5\pi}{3}\ cm$.

Soln.: Given: Radius, $r = 5\ cm$

Let the Central angle be θ.

We Know,

Length of an arc $= \frac{\theta}{360°}(2\pi r)$

$\Rightarrow \frac{5\pi}{3} = \frac{\theta}{360°}(2 \times \pi \times 5)$

$\Rightarrow \frac{5}{3} = \frac{\theta}{360°} \times 10$

$\Rightarrow \frac{5}{3} = \frac{\theta}{36}$

$\Rightarrow \theta = \frac{5 \times 36}{3}$

$\Rightarrow \theta = 60°$ (Ans)

45. An arc of length $20\pi\ cm$ subtends an angle $144°$ at the centre. Find the radius of the circle.

Soln.: Given: Central angle, $\theta = 144°$

& Length of an arc, $l = 20\pi\ cm$

Let, r be the radius of the circle.

Now,

Length of an arc $= \frac{\theta}{360°}(2\pi r)$

$\Rightarrow 20\pi = \frac{144°}{360°}(2\pi r)$

$\Rightarrow 20 = \frac{144}{360}(2r)$

$\Rightarrow r = \frac{20 \times 360}{144 \times 2}$

$\Rightarrow r = 25\ cm$ (Ans)

46. The minute hand of a clock is $7\ cm$ long. Find the area swept by the minute hand between 9 AM to 9: 05 AM.

Soln.: Given: Radius, $r = 7\ cm$

We know, $60\ minutes = 360°$

$\Rightarrow 1\ minute = \frac{360°}{60}$

$\Rightarrow 5\ minutes = \frac{360}{60} \times 5 = 30°$

$\Rightarrow$ Central angle, $\theta = 30°$

Now,

Area swept by the minute hand= $Area\ of\ the\ minor\ sector$

$= \frac{\theta}{360°}(\pi r^2)$

$= \frac{30}{360}\left\{\frac{22}{7} \times (7)^2\right\}$

$= \frac{1}{12}\left(\frac{22}{7} \times 7 \times 7\right)$

$= \frac{77}{6} cm^2$

$= 12.83\ cm^2$ (Ans)

47. Find the area of a quadrant of a circle whose circumference is 22 cm.

Soln.: Let, r be the radius of a circle.

Given, Circumference of a circle $= 22\ cm$

$\Rightarrow 2\pi r = 22$

$\Rightarrow 2 \times \frac{22}{7} \times r = 22$

$\Rightarrow r = \frac{22 \times 7}{2 \times 22}$

$\Rightarrow r = \frac{7}{2}\ cm$

Now,

Area of a quadrant of a circle $= \frac{1}{4}\pi r^2$

$= \frac{1}{4} \times \frac{22}{7} \times \left(\frac{7}{2}\right)^2$

$= \frac{1}{4} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$

$= \frac{77}{8} cm^2$

$= 9.63\ cm^2$ (Ans)

48. An umbrella has 8 ribs which are equally spaced. Assuming umbrella to be a flat circle of radius $45\ cm$, find the area between the two consecutive ribs of the umbrella.

Soln.: Given: Radius, $r = 45\ cm$

Since, there are 8 ribs in the umbrella

$\therefore$ Central angle, $\theta = \frac{360}{8} = 45°$

Now,

Area between two consecutive ribs= $Area\ of\ the\ minor\ sector$

$= \frac{\theta}{360°}(\pi r^2)$

$= \frac{45}{360}\left\{\frac{22}{7} \times (45)^2\right\}$

$= \frac{1}{8}\left(\frac{22}{7} \times 45 \times 45\right)$

$= \frac{44550}{56}$

$= 795.5\ cm^2$

Hence, the area between the two consecutive ribs is $795.5\ cm^2$. (Ans)

49. A car has two wipers which do not overlap. Each wiper has a length $25\ cm$ sweeping through and angle of $115°$. Find the total area cleaned at each sweep of the blades.

Soln.: Given: Radius, $r = 25\ cm$

& Central angle, $\theta = 115°$

Now,

Area swept by each blade $= Area\ of\ the\ sector$

$= \frac{\theta}{360°}(\pi r^2)$

$= \frac{115}{360}\left\{\frac{22}{7} \times (25)^2\right\}$

$= \frac{115}{360}\left(\frac{22}{7} \times 25 \times 25\right)$

$= \frac{1581250}{2520}$

$= 627.48\ cm^2$

Hence, total area cleaned at each sweep by 2 blades $= 2 \times 627.48$

$= 1254.96\ cm^2$ (Ans)

50. To warn ships for underwater rocks, a lighthouse spreads a red coloured light over a sector of angle $80°$ to a distance of $16.5\ km$. Find the area of the sea over which the ships are warned.$(use\ \pi = 3.14)$

Soln.: Given: Radius, $r = 16.5\ km$

& Central angle, $\theta = 80°$

Now,

Area of the sector$= \frac{\theta}{360°}(\pi r^2)$

$= \frac{80}{360}\{3.14 \times (16.5)^2\}$

$= \frac{80}{360}(3.14 \times 16.5 \times 16.5)$

$= \frac{1709.73}{9}$

$= 189.97 km^2$

Hence, the area of the sea over which the ships are warned is $189.97 km^2$. (Ans)

51. A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table below. Find the mode of the data:

No. of cars	$0-10$	$10-20$	$20-30$	$30-40$	$40-50$	$50-60$	$60-70$	$70-80$
Frequency	7	14	13	12	20	11	15	8

Soln.: Since the maximum frequency is 20 and the class corresponding to this frequency is $40-50$.

So, the modal class is $40-50$.

Therefore, Lower limit (l) of the modal class $= 40$

Class size $(h) = 10$

Frequency (f_1) of the modal class $= 20$

Frequency (f_0) of the class preceding the modal class $= 12$

Frequency (f_2) of the class succeeding the modal class $= 11$

Now, Using the formula, we have

Mode $= l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$

$= 40 + \left(\frac{20-12}{2\times20-12-11}\right) \times 10$

$= 40 + \left(\frac{8}{40-23}\right) \times 10$

$= 40 + \frac{80}{17}$

$= 40 + 4.7$

$= 44.7\ cars$ (Ans)

52. The mileage (Km per litre) of 50 cars of the same model was tested by a manufacturer and details are tabulated as given below:

Mileage (Km per litre)	$10-12$	$12-14$	$14-16$	$16-18$
Number of cars	7	12	18	13

Find the mean mileage.

Soln.:

Mileage (Km per litre)	Class Mark (x_i)	Number of cars (f_i)	$f_i x_i$
$10-12$	11	7	77
$12-14$	13	12	156
$14-16$	15	18	270
$16-18$	17	13	221
		$\sum f_i = 50$	$\sum f_i x_i = 724$

Now, Using the formula, we have

Mean, $\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$

$= \frac{724}{50}$

$= 14.48$

Hence, mean mileage is 14.48 Km per litre. (Ans)

53. The maximum bowling speeds in Km per hour, of 33 players at a cricket coaching centre are given as follows:

Speed (Km per hour)	85 − 100	100 − 115	115 − 130	130 − 145
Number of players	11	9	8	5

Calculate the median bowling speed.

Soln.:

Speed (Km per hour)	Number of players	Cumulative Frequency
$85-100$	11	11
$100-115$	9	$11+9=20$
$115-130$	8	$20+8=28$
$130-145$	5	$28+5=33$

Here, $n = 33$

Now, $\frac{n}{2} = \frac{33}{2} = 16.5$ which lies in the class$100-115$.

So, the median class is $100-115$

Here, l =lower limit of the median class $= 100$

n =number of observation$= 33$

cf =cumulative frequency of the class preceding the median class $= 11$

f =frequency of the median class $= 9$

h =class size $= 15$

Now, Using the formula, we have

$$\text{Median} = l + \left(\frac{\frac{n}{2}-cf}{f}\right) \times h$$
$$= 100 + \left(\frac{16.5-11}{9}\right) \times 15$$
$$= 100 + \left(\frac{5.5}{9}\right) \times 15$$
$$= 100 + \frac{82.5}{9}$$
$$= 100 + 9.17$$
$$= 109.17$$

Hence, median bowling speed is 109.17 Km per hour. (Ans)

54. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality.

Monthly Consumption (in units)	Number of consumers
$65-85$	4
$85-105$	5
$105-125$	13
$125-145$	20
$145-165$	14
$165-185$	8
$185-205$	4

Based on the above information, answer the following questions:

(i) Find the median class of the data.

(ii) Find the class mark of the median class.

Soln.:

Monthly Consumption (in units)	Number of consumers	Cumulative Frequency (cf)
$65-85$	4	4
$85-105$	5	$4+5=9$
$105-125$	13	$9+13=22$
$125-145$	20	$22+20=42$
$145-165$	14	$42+14=56$
$165-185$	8	$56+8=64$
$185-205$	4	$64+4=68$
Total	$N = 68$	

Here, $n = 68$

⇨ $\frac{n}{2} = \frac{68}{2} = 34$ which is just greater than the cumulative frequency 22 and lies in the class $125-145$.

(i) So, the median class of the given data is $125-145$.

(ii) The class mark of the median class $125-145$ is

$$= \frac{lower\ class\ limit + upper\ class\ limit}{2}$$
$$= \frac{125+145}{2}$$
$$= \frac{270}{2}$$
$$= 135.$$ (Ans)

55. For the following distribution:

Class	0 − 5	5 − 10	10 − 15	15 − 20	20 − 25
Frequency	10	15	12	20	9

Find the sum of lower limit of the median class and the lower limit of the modal class.

Soln.:

Class	Frequency	Cumulative Frequency (cf)
$0-5$	10	10
$5-10$	15	$10+15=25$
$10-15$	12	$25+12=37$
$15-20$	20	$37+20=57$
$20-25$	9	$57+9=66$

Here, $n = 66$

⇨ $\frac{n}{2} = \frac{66}{2} = 33$, which lies in the class interval $10-15$.

So, Median class is $10-15$

Therefore, lower limit of the median class is 10

Also, the highest frequency is 20, which lies in the class interval $15-20$.

So, Modal Class is $15-20$

Therefore, lower limit of the modal class is 15

Hence, required sum $= 10+15 = 25$. (Ans)

56. Find the mean of the following data:

x_i	13	15	17	19	21	23
f_i	8	2	3	4	5	6

Soln.:

x_i	f_i	$f_i x_i$
13	8	104
15	2	30
17	3	51
19	4	76
21	5	105
23	6	138
	$\sum f_i = 28$	$\sum f_i x_i = 504$

Now, Using the formula, we have

Mean, $\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{504}{28} = 18$. (Ans)

57. For the following distribution:

Marks	Number of students
$Below\ 10$	3
$Below\ 20$	12
$Below\ 30$	27
$Below\ 40$	57
$Below\ 50$	75
$Below\ 60$	80

Find the modal class.

Soln.:

Marks	Number of students	Cumulative Frequency (cf)
$Below\ 10$	3	3
$10-20$	$(12-3)=9$	12
$20-30$	$(27-12)=15$	27
$30-40$	$(57-27)=30$	57
$40-50$	$(75-57)=18$	75
$50-60$	$(80-75)=5$	80

So, we see that the highest frequency is 30, which lies in the class interval $30-40$.

∴ The modal class is $30-40$. (Ans)

58. What is the difference of median and mean, if the difference of mode and median is 24?

Soln.: Given:

$Mode - Median = 24$

⇨ $Mode = 24 + Median$---------(i)

Now, Relation among mean, median and mode is –

$Mode = 3Median - 2Mean$----------(ii)

From equation (i) and (ii), we get

$3\,Median - 2\,Mean = 24 + Median$

⇨ $3\,Median - Median - 2\,Mean = 24$

⇨ $2\,Median - 2\,Mean = 24$

⇨ $2(Median - Mean) = 24$

⇨ $Median - Mean = \frac{24}{2}$

⇨ $Median - Mean = 12$. (Ans)

59. Find the mode, if

l = Lower limit of the modal class $= 1500$

h = Class size $= 500$

f_1 = Frequency of the modal class $= 40$

f_0 = Frequency of the class preceding the modal class $= 24$

f_2 = Frequency of the class succeeding the modal class $= 33$

Soln.: Using the formula, we have

$Mode = l + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$

$$= 1500 + \left(\frac{40-24}{2\times40-24-33}\right) \times 500$$
$$= 1500 + \left(\frac{16}{80-57}\right) \times 500$$
$$= 1500 + \left(\frac{16}{23}\right) \times 500$$
$$= 1500 + \frac{8000}{23}$$
$$= 1500 + 347.83$$
$$= 1847.83 \quad \text{(Ans)}$$

60. Find the median, if

l =lower limit of the median class $= 3000$

n =number of observation$= 400$

cf =cumulative frequency of the class preceding the median class $= 130$

f =frequency of the median class $= 86$

h =class size $= 500$

Soln.: Using the formula, we have

$$Median = l + \left(\frac{\frac{n}{2}-cf}{f}\right) \times h$$
$$= 3000 + \left(\frac{\frac{400}{2}-130}{86}\right) \times 500$$
$$= 3000 + \left(\frac{200-130}{86}\right) \times 500$$
$$= 3000 + \left(\frac{70}{86}\right) \times 500$$
$$= 3000 + \frac{35000}{86}$$
$$= 3000 + 406.98$$
$$= 3406.98 \quad \text{(Ans)}$$

Section- D

Long Answer Questions (5 Marks)

1. The first term of an A.P is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference. Write the first three terms of the AP.

Ans.

Let a_1 be the first term of an AP
Let a_n be the last term of an AP
Let S_n be the sum of the n^{th} term of an AP
Let n be the number of terms of an AP
Let d be the common difference of an AP

Here, $a_1=5$, $a_n=45$, $S_n=400$

Given, $S_n=400$

$\Rightarrow \frac{n}{2}(a_1 + a_n) = 400$

$\Rightarrow \frac{n}{2}(5+45) = 400$

$\Rightarrow 50n=400 \times 2$

$\Rightarrow n = \frac{400 \times 2}{50}$

$n = 16$

Hence, there are 16 numbers of terms in the given AP.

But, $a_n = 45$

$\Rightarrow a_1 + (n-1)\,d = 45$
$\Rightarrow 5 + (16-1)\,d = 45$
$\Rightarrow 15d = 45-5$
$\Rightarrow 15d = 40$
$d = \frac{40}{15} = \frac{8}{3}$

Hence, the common difference of an AP is $\frac{8}{3}$

The first three terms of the series are: (a, a + d, a + 2d OR, a_1, $a_1 + d$, $a_2 + d$)

5, 5 + 8/3= 15 + 8/3 = 23/3, 5 + 23/3 = 38/3 i. e. 5, 23/3, 38/3.

2. Find the sum of the first 51 terms of an AP whose second and third terms are 14 and 18 respectively.

Solution: Let a_1, a_2, a_3 be the first, second and the third terms of an AP.

Let 'd' be the common difference of an AP.

Here $a_2 =14$ and $a_3=18$, n=51

Now, $a_2=14$

$a_1 + d = 14$……. (i)

and, $a_3 = 18$

$a_2 + d = 18$ …….. (ii)

Subtracting equation (i) from equation (ii) we get

$d = 4$

Putting d =4 in equation (i) we get

$a_1 + 4 = 14$

$\Rightarrow a_1 = 14 - 4$
$\Rightarrow a_1 = 10$

Using the formula

$S_n = \frac{n}{2}(a_1 + a_n)$

$S_{51} = \frac{n}{2}\{a_1 + a_1 + (n-1)\,d\}$ where $a_n = a + (n-1)\,d$

$= \frac{51}{2}\{2\times10 + (51-1)\times4\}$
$= \frac{51}{2}\{20+200\}$
$= \frac{51}{2} \times 220$
$= 5610$

Hence the sum of the first 51 term of an AP is 5610

3. If the sum of first 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of first n terms.

Solution:

Let a_1 be the first term of an AP
Let d be the common difference of an AP

Given, $S_7 = 49$

$\Rightarrow \frac{7}{2}(a_1 + a_7) = 49$ $\quad[\because S_n = \frac{n}{2}(a_1 + a_n)]$

$\Rightarrow a_1 + a_1 + 6d = \frac{49\times2}{7}$

$\Rightarrow 2a_1 + 6d = 14$

$\Rightarrow a_1 + 3d = 7$ …….. (i) (by dividing each term by 2)

And, $S_{17} = 289$

$\frac{17}{2}(a_1 + a_{17}) = 289$ $[\because S_n = \frac{n}{2}(a_1 + a_n)]$

⇨ $a_1 + a_1 + 16d = \frac{289 \times 2}{17}$

⇨ $2a_1 + 16d = 34$

⇨ $a_1 + 8d = 17$…… (ii) [By dividing each term by 2]

Subtracting equation (i) from equation (ii) we get

$5d = 10$

⇨ $d = \frac{10}{5}$

⇨ $d = 2$

Putting d = 2 in equation (i) we get

$a_1 + 3 \times 2 = 7$

⇨ $a_1 = 7-6$

⇨ $a_1 = 1$

Using the formula

$S_n = \frac{n}{2}(a_1 + a_n)$

$= \frac{n}{2}\{2a_1 + (n-1)\,d\}$

$= \frac{n}{2}\{2 \times 1 + (n-1) \times d\}$

$= \frac{n}{2}\{2 + 2(n-1)\}$

$= \frac{2n}{2}(1 + n-1)$

$= n \times n$

$S_n = n^2$

Hence, sum of first n terms is n^2

4. How many three- digit numbers are divisible by 7?

Solution: The first three-digit number divisible by 7 is 105

And the last three-digit number divisible by 7 is 994

Therefore, the AP is 105, 112, ……. 994

Here, First term, $a_1 = 105$,

second term, $a_2 = 112$

Common difference, d = 7

Let n be the number terms of the given AP

Now,

$a_n = 994$

⇨ $a_1 + (n-1)\,d = 994$

⇨ $105 + (n-1) \times 7 = 994$

⇨ $(n-1) \times 7 = 994 - 105$

⇨ $(n-1) \times 7 = 889$

⇨ $n - 1 = \frac{889}{7}$

⇨ $n - 1 = 127$

⇨ $n = 127 + 1$

⇨ $n = 128$

Hence there are 128 three-digit numbers which are divisible by 7.

5. A manufacturer of TV sets produced 600 sets in the third year and 700 sets in seventh year. Assuming that the production increases uniformly by fixed number every year.

Find:

i. The production in the first year
ii. The production in the 10^{th} year
iii. The total production in the first seven years.

Solution: Since the production increases uniformly by a fixed number every year, the number of TV sets manufactured in 1^{st}, 2^{nd}, 3^{rd}, …… years will form an AP

Let us denote the number of TV sets manufactured in the n^{th} year by a_n

Then, $a_3 = 600$

Or, $a + 2d = 600$ …… (1)

And $a_7 = 700$

⇨ $a + 6d = 700$ …… 2)(Where a is the first term)

Subtracting equation 1 from equation 2 we get

$4d = 100$

⇨ $d = \frac{100}{4} = 25$

Putting d = 25 in equation 1 we get

$a + 2 \times 25 = 600$

$a = 600-50$

$a = 550$

∴ The production of TV sets in the first year is 550.

ii) Now, $a_n = a + 9d$

$a_{10} = 550 + 9\times25$

$= 550 + 225$

$= 775$

$\therefore$ production of TV sets in the 10^{th} year is 775.

iii) Also,

$\Rightarrow S_n = \frac{7}{2}\{2\times550 + (7-1)\times25\}$ $[\because S_n = \frac{n}{2}(2a_1 + (n-1)d)]$

$= \frac{7}{2}(1100 + 150)$

$= \frac{7}{2}\times1250$

$= 7 \times 625$

$= 4375.$

Therefore, the total production of TV sets in the first 7 years is 4375.

6. How many multiple of 4 lies between 10 and 250?

Solution: First multiple of 4 between 10 and 250 is 12

The last multiple of 4 between 10 and 250 is 248

Therefore the AP is 12, 16, 20, 20,….. 248

Here a_1=12, common difference, d = 4

And, a_n = 248, where n is the number of terms of the above AP

$a_n = 248$

$\Rightarrow a_1 + (n-1)\,d = 248$

$\Rightarrow 12+(n-1)4 = 248$

$\Rightarrow (n-1)\,4 = 248-12$

$\Rightarrow n-1 = \frac{236}{4}$

$\Rightarrow n - 1 = 59$

$\Rightarrow n = 59 + 1$

$\Rightarrow n = 60$

Thus, there are 60 multiples of 4 between 10 and 250.

7. Find the sum of the odd numbers, between 0 and 50.

Solution: First odd numbers between 0 and 50 is 1 and the last odd number between 0 and 50 is 49.

Therefore the AP is 1, 3, 5,……. 49

Here $a_1 = 1$, d = 3 – 1 = 2

Let n be the number of terms of the AP

$a_n = 49$

$\Rightarrow a_1 + (n-1)\,d = 49$

$\Rightarrow 1+ (n-1)\,2 = 49$

$\Rightarrow (n-1)\times2 = 49 -1$

$\Rightarrow (n-1)\times2 = 48$

$\Rightarrow n-1= \frac{48}{2}$

$\Rightarrow n-1= 24$

$\Rightarrow n = 24 +1$

$\Rightarrow n = 25$

Using the formula

$S_n = \frac{n}{2}(a_1 + a_n)$

$S_{25} = \frac{25}{2}(1 + 49)$

$= \frac{25}{2}\times50$

$= 25 \times 25$

$= 625$

Therefore, the sum of the odd numbers between 0 and 50 is 625.

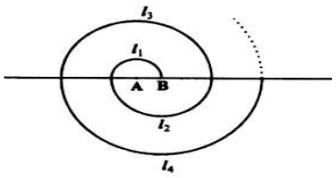
8. A spiral is made up of successive semi-circles, with centres alternately at A and B, starting with A, of radii 0.5 cm, 1.5 cm, 2.0 cm,…. as shown in the figure 5.4. What is the total length of such spiral made up of thirteen consecutive semi-circles? (Take $\pi = \frac{22}{7}$)

Solution: circumference of 1^{st} semi-circles = 0.5 π cm

circumference of 2^{nd} semi-circles = π cm

circumference of 3^{rd} semi-circles = 1.5 π cm

circumference of 4^{th} semi-circles = 2 π cm



Thus, the AP is 0.5π, π, 1.5π, 2π……

Here a_1= 0.5π, d= π-0.5 π

$=0.5\pi$

and, n = 13

Using the formula

$$S_n = \frac{n}{2}(a_1 + a_n)$$

Or, $S_n = \frac{n}{2}(a_1 + a_1 + (n-1)\,d)]$

$S_{13} = \frac{13}{2}[(2\times0.5\pi + (13-1)\times0.5\pi)]$

$S_{13} = \frac{13}{2}(\pi + 12\times0.5\pi)$

$=\frac{13}{2}(\pi + 6\pi)$

$= \frac{13}{2}\times7\pi$

$= \frac{13}{2}\times7\times\frac{22}{7}$ $\quad(\because\pi=\frac{22}{7})$

$= 13\times11$

$= 143$cm

Therefore, the total length of such spiral made up of thirteen consecutive semi-circles is 143 cm.

9. 200 Toys are stacked in the following manner. 20 toys in the bottom row, 19 in the next row, 18 in the row next to it and so on (see fig 5.5) in how many rows are the 200 toys placed and how many toys are in the top row?

Solution:

Number of toys in the first row, $a_1 = 20$

Number of toys in the second row, $a_2 = 19$

Number of toys in the third row, $a_3 = 18$

$\therefore$ The sequence becomes 20, 19, 18,….

Now, $a_3 - a_2 = 18-19 = -1$

$a_2 - a_1 = 19-20 = -1$

$\therefore$ $a_3 - a_2 = a_2 - a_1 = -1$

Since the difference between any two successive terms is the same everywhere, therefore the given sequence is an AP.

Thus the AP is 30, 19, 18,….

Here $a_1=20$, common difference, d = -1

Let n be the number of rows

$\therefore$ $S_n = 200$

$\Rightarrow \frac{n}{2}(2a_1 + (n-1)d) = 200$

$\Rightarrow n\{2\times20+(n-1)(-1)\} = 200\times2$

$\Rightarrow n(40 - n + 1) = 400$

$\Rightarrow n(41-n) = 400$

$\Rightarrow 41n - n^2 = 400$

Or, $n^2 - 41n + 400 = 0$

$\Rightarrow n^2 - 25n - 16n + 400 = 0$

$\Rightarrow n(n-25) -16(n-25) = 0$

$\Rightarrow (n-25)(n-16) = 0$

Either, $n - 25 = 0$

$n = 25$

or, $n - 16 = 0$

$n = 16$

$\therefore$ n = 16 or 25

When $n = 16$

$a_{16} = a_1 + 15d$

$= 20 + 15\times(-1)$

$= 20 - 15$

$a_{16} = 5$

And when, $n = 25$

$a_{25} = a_1 + 24d$

$= 20 + 24\times(-1)$

$= 20 - 24$

$= -4$ (is rejected as the number of an AP cannot be negative)

Therefore, there are 16 number of rows arranged for 200 toys.

And, there are 5 toys in the toy row which is in the 16th row.

10. A sum of Rs 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so, find the interest at the end of 30 years making use of this fact.

Solution: We know that the formula to calculate simple interest is given by:

Simple interest $= \frac{P\times R\times T}{100}$

So, the interest at the end of the first year =Rs. $\frac{1000\times8\times1}{100}$ = Rs. 80

The interest at the end of second year = Rs. $\frac{1000\times8\times2}{100}$ = Rs. 160

The interest at the end of third year = Rs. $\frac{1000\times8\times3}{100}$ = Rs. 240

Similarly, we can obtain the interest at the end of the 4th year, 4th year, and so on.

So, The interest in rupees at the end of the 1st, 2nd, 3rd, … years respectively are: 80, 160, 240…..

Here $a_1 = 80$, $a_2=160$, $a_3=240$

Now, $a_3 - a_2 = 240 - 160 = 80$

$a_2 - a_1 = 160 - 80 = 80$

Since, the difference between the consecutive terms in the list is 80. Therefore, the given list of numbers is an AP.

Hence, first term $a_1 = 80$ and common difference, d = 80

Therefore, $a_{30} = a1 + 29d$

⇨ $a_{30} = 80 + 29\times80$

$= 80 + 2320$

$= 2400$

So, the interest at the end of 30 years will be Rs. 2400.

11. A girl of height 90cm is walking away from the base of a lamp-post at a speed of 1.2m/sec. if the lamp is 3.6 m above the ground; find the length of her shadow after 4 seconds.

Solution:

Let AB denote the lamp-post and CD the girl after walking for 4 seconds away from the lamp-post.

Let DE = xcm be the shadow of the girl.

BD = 1.2m × 4 = 4.8m (∵ distance=speed × time)

ΔABE and ΔCDE

∠B = ∠D (90^0 each)

∠E = ∠E (common angles)

∴ Δ ABC ~ ΔCDE [AA similarity]

$\frac{DE}{BE} = \frac{CD}{AB}$ [corresponding sides] or, $\frac{x}{x+4.8} = \frac{0.9}{3.6}$ [90cm = $\frac{90}{100}m$= 0.9m]

or, $\frac{x}{x+4.8} = \frac{9}{36}$

or, $\frac{x}{x+4.8} = \frac{1}{4}$

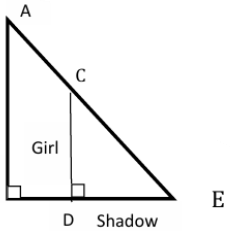
or, 4x=x + 4.8

or, 4x-x = 4.8

or, 3x = 4.8

or, x = $\frac{4.8}{3}$

∴ x=1.6m



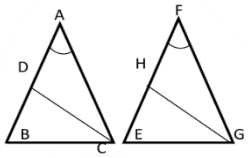
So, the shadow of the girl after walking four seconds is 1.6m

12. CD and GH are respectively the bisector of ∠ACB and ∠EGH such that D and H lie on side AB and FE of ΔABC and ΔEFG respectively. If ΔABC ~ Δ FEG, Show that (i) $\frac{CD}{GH} = \frac{AC}{FG}$ (ii) ΔDCB~ΔHGE

Given: ΔABC ~ Δ FEG, CD and GH are bisectors of ∠ACB and ∠EGF respectively.

To Prove: (i) $\frac{CD}{GH} = \frac{AC}{FG}$

(ii) ΔDCB~ΔHGE



Proof: (i) In ΔACD and Δ FGH

∠A = ∠F [∵ ΔABC ~ ΔFEG]

∠ACD = ∠FGH [CD bisects ∠ACB and GH bisects ∠EGH]

∴∠ACD ~∠FGH [AA similarity]

⇨ $\frac{CD}{GH} = \frac{AC}{FG}$ [Corresponding sides of similar Δ]

Proof: (ii) In ΔDCB and ΔHGE

∠B = ∠E [∵ ΔABC ~ ΔFGH]

∠DCB = ∠HGE [CD and GH are trisectors of ∠ACB and ∠EGF]

∴ ΔDCB ~ ΔHGE [AA similarity] Proved.

13. In fig. DE//OQ and DF//OR. Show that EF//QR.

Solution: DE//OQ and DF//OR

To show: EF//QR

Proof: In ΔPOQ, DE//OQ

By basic proportionality theorem.

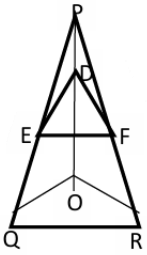
∴ $\frac{PE}{EQ} = \frac{PD}{DO}$ (1)

In ΔPOR, DF//OR

∴ $\frac{DD}{DO} = \frac{PF}{FR}$ (2)

From equation (1) and (2)

$\frac{PE}{EQ} = \frac{PF}{FR}$



Now, in ΔPQR, we have E and F are points on PQ and PR respectively such that

$\frac{PE}{EQ} = \frac{PF}{FR}$

By converse of proportionality theorem

∴ EF//QR. Showed.

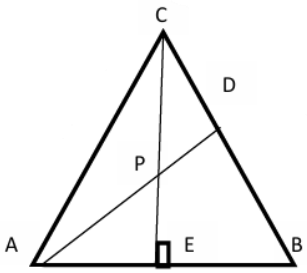
14. In fig. altitudes AD and CE of ΔABC intersects each other at the point P show that:
(i) ΔAEP ~ ΔCDP (ii) ΔABD ~ ΔCBE (iii) ΔAEP ~ ΔADB

Given: ΔABC in which, altitudes AD and CE intersects each other at the point P.

To Prove: (i) ΔAEP ~ ΔCDP

(ii) ΔABD ~ ΔCBE

(iii) ΔAEP ~ ΔADB



Proof: (i) In ΔAEP and ΔCDP

∠AEP = ∠CDP [90^0 each]

∠APE = ∠CPD [Vertically opposite angles]

∴ Δ AEP ~ Δ CDP [AA similarity]

Proof: (ii) In ΔABD and ΔCBE

∠ABD = ∠CBE [Common angles]

∠ADB = ∠ CEB [90^0 each]

∴ ΔABD ~ ΔCBE [AA similarity]

Proof: (iii) In ΔAEP and ΔADB

∠PAE = ∠DAB [Common angles]

∠AEP = ∠ADB [90^0 each]

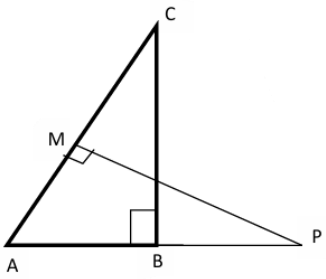
∴ ΔAEP ~ ΔADB [AA similarity]

15. In fig. ABC and AMP are two right triangles, right angle at B and M respectively. Proved that
(i) ΔABC ~ ΔAMP (ii) $\frac{CA}{PA} = \frac{BC}{MP}$

Given: ABC and AMP are two right triangles, right angled at B and M respectively i.e.,
∠ABC = ∠ AMP = 90^0

To Prove: (i) ΔABC ~ ΔAMP

(iii) $\frac{CA}{PA} = \frac{BC}{MP}$



Proof: (i) In ΔABC and ΔAMP

∠CAB = ∠MAP [Common angles]

∠ABC = ∠ AMP [90^0 each]

∴ ΔABC ~ ΔAMP [AA Similarity]

Proof: (ii) Since Δ ABC ~ Δ AMP [Proved above]

If two triangles are similar, the ratio of their corresponding sides is proportional.

$\therefore \frac{CA}{PA} = \frac{BC}{MP} = \frac{AB}{AM}$

⇨ $\frac{CA}{PA} = \frac{BC}{MP}$ Proved

16. Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of ΔPQR. Show that ΔABC ~ ΔPQR.

Given: In triangles ABC and PQR, AD and PM are median such that

$$\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$$

To prove: ΔABC ~ ΔPQR

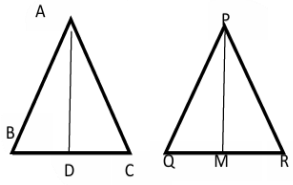
Proof: Since $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$ [Given]

∵ D and M are the mid points of BC and QR respectively.

$\therefore \frac{BC}{PQ} = \frac{2BD}{2QM} = \frac{BD}{QM}$

In ΔABD ~ ΔPQM

$\therefore \frac{AB}{PQ} = \frac{AD}{PM} = \frac{BD}{QM}$



Δ ABD ~ ΔPQM [SSS similarity]

∠B = ∠Q [Corresponding angles]

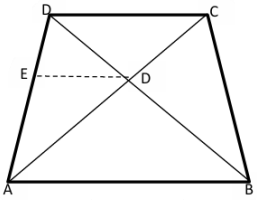
Now, in ΔABC and ΔPQR

$\frac{AB}{PQ} = \frac{BC}{QR}$

∠B = ∠Q [Proved above]

Hence, ΔABC ~ ΔPQR [Similarity] Proved.

17. The diagonals of a quadrilateral ABCD intersects each other at the point O such that $\frac{AO}{BO} = \frac{CO}{DO}$. Show That ABCD is a trapezium.
Solution: A quadrilateral ABCD whose diagonals AC and BD intersects each other at O such that $\frac{AO}{BO} = \frac{CO}{DO}$.
To prove: Quadrilateral ABCD is a trapezium.
Construction: Draw EO//BA, meeting AD at E.
Proof: In ΔABD, ED//BA
By basic proportionality theorem

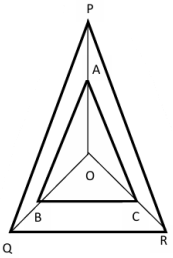


$\frac{DE}{EA} = \frac{DO}{OB}$ (i)
But, $\frac{AO}{BO} = \frac{CO}{DO}$ [Given]
⇨ $\frac{DO}{BO} = \frac{CO}{AO}$ (ii)
From equation (i) and (ii)

$$\frac{DE}{EA} = \frac{CO}{OA}$$

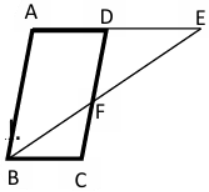
⇨ EO//DC [by converse of B.P.T]
But EO//BA [by construction]
∴ DC//AB
Hence, ABCD is a trapezium. Proved.

18. In fig. A, B and C are points on OP, OR and OR respectively such that AB//PQ and AC//PR. Show that BC//QR.
Given: A, B, C are points on OP, OQ and OR respectively such that AB//PQ and AC//PR
To prove: BC//QR
Proof: In ΔOPQ, AB//PQ
By basic proportionality theorem



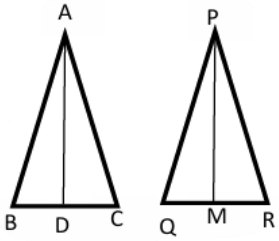
$\frac{OA}{AP} = \frac{OB}{BQ}$ (i)
Similarly, in ΔOPR, AC//PR
$\frac{AO}{AP} = \frac{OC}{CR}$ (ii)
Combining equation (i) and (ii)
$\frac{OB}{BQ} = \frac{OC}{CR}$
By converse of basic proportionality theorem.
Line BC divides the ΔOQR in the same ratio
∴ BC//QR Proved.

19. E is a point on the side AD produced of a parallelogram ABCD and BE intersects CD at F. Show that ΔABE ~ ΔCFB
Given: A parallelogram ABCD, E is the point on the side AD produced and BE intersects CD at F.
To prove: ΔABE ~ ΔCFB
Proof: In Parallelogram ABCD
Opposite angles of a parallelogram are equal.



∠A = ∠C (i)
Opposite sides of a parallelogram area parallel i.e., AD//BC
But AE is AD extended
∴ AE//BC and BE is the transversal
∴∠AEB = ∠CBF (ii) [Alternate interior angles]
In Δ ABE and Δ CFB
∠A =∠C [from eqn (i)]
∠AEB = ∠ CBF [from eqn (ii)]
∴ ΔABC ~ ΔCFB [AA similarity].
Proved.

20. If AD and PM are medicines of triangle ABC and POR, respectively where ΔABC ~ ΔPQR, prove $\frac{AB}{PQ} = \frac{AD}{PM}$
Solution:
Given: AD and PM are medians of Δ ABC and ΔPOR,,,,
Also, given Δ ABC ~ ΔPQR



To prove: $\frac{AB}{PQ} = \frac{AD}{PM}$
Proof: ∵ Δ ABC ~ Δ PQR
⇨ $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AC}{PR}$ (i)
[sides are proportional]
∵ AD is the median of ΔABC
⇨ D is the midpoint of BC
⇨ BD = CD
Similarly, QM = MR [∵ M is the midpoint of QR)
From equation (i) we have

$$\frac{AB}{PQ} = \frac{BC}{QR}$$

⇨ $\frac{AB}{PQ} = \frac{2BD}{2QM}$
⇨ $\frac{AB}{PQ} = \frac{BD}{QM}$ (ii)
Now in ΔABD and ΔPQM
∠B = ∠Q [∵ ΔABC ~ ΔPQR]

$\frac{AB}{PQ} = \frac{BD}{QM}$ [Using (ii)]

⇨ ΔABD ~ ΔPQM (SAS similarity)

⇨ $\frac{AB}{PQ} = \frac{AD}{PM}$ [Sides are proportional]

Hence, $\frac{AB}{PQ} = \frac{AD}{PM}$ proved.

21. The angle of elevation of the top of the tower from a point on the ground, which is 30m away from the foot of the tower, is 30°.Find the height of the tower. (use $\sqrt{3}$ =1.732)

Solution:

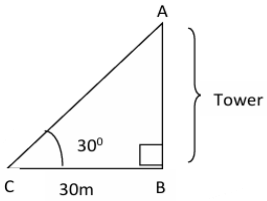
Let AB = xm be the height of the tower

BC = 30m be a distance of the point C from the foot of the tower

And the angle of elevation is 30°

To find: x

Now, in right ΔABC,



Tan 30° $= \frac{AB}{BC}$

⇨ $\frac{1}{\sqrt{3}} = \frac{x}{30}$

⇨ x= $\frac{30}{\sqrt{3}}$

⇨ x= $\frac{30\sqrt{3}}{3\sqrt{3}}$

⇨ x = $10\sqrt{3}$m

⇨ x = 10 x 1.732

⇨ x =17.32m

Hence the height of the tower is 17.32m

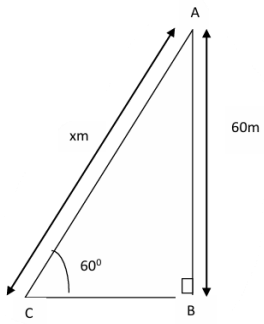
22. A kite is flying at a height of 60m above the ground. The string attached to the kite is temporarily to a point on the ground. The inclination of the string with the ground is 60°. Find the length of the string, assuming that there is no slack in the string. (use $\sqrt{3}$ =1.732)

Solution:

Let the height of the kite above the ground (AB) =60m

Let the length of the string (AC)= xm

∠ABC=60°



In right ΔABC,

$\frac{AB}{AC} = sin60°$

⇨ $\frac{60}{x} = \frac{\sqrt{3}}{2}$

⇨ $\sqrt{3}\,x = 120$

⇨ x $= \frac{120}{\sqrt{3}}$

⇨ x $= \frac{120\sqrt{3}}{\sqrt{3}\times\sqrt{3}}$

⇨ x $= \frac{120\sqrt{3}}{3}$

⇨ x $= 40 \times 1.732$

⇨ x $= 69.28m$

∴ The length of the string= 69.28m

23. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8m. Find the height of the tree. (use $\sqrt{3}$ =1.732)

Solution:

Let AC be the height of the tree before it was broken,

And A'B be the broken part of the tree after the storm which makes an angle of 30° with the ground

And A'C=8m be the distance of the top and foot of the tree.

Now,

In right $\Delta A'BC$,

⇨ Tan 30° $= \frac{BC}{A'C}$

⇨ $\frac{1}{\sqrt{3}} = \frac{BC}{8}$

⇨ BC $= \frac{8}{\sqrt{3}}$ (i)

And,cos 30° $= \frac{A'C}{A'B}$

⇨ $\frac{\sqrt{3}}{2} = \frac{8}{A'B}$

A'B $= \frac{16}{\sqrt{3}}$ (ii)

Now, AC $= A'C$ (height of the tree)

$= A'B + BC$

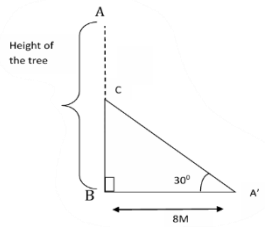
$= \frac{16}{\sqrt{3}} + \frac{8}{\sqrt{3}}$

$= \frac{16+8}{\sqrt{3}}$

$= \frac{24}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{24\sqrt{3}}{3}$

$= 8\sqrt{3}\,m$



AC $= 8 \times 1.732m$

AC $= 13.856m$

Hence, the height of the tree is $13.856m$

24. The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60°. If the tower is 50m high, find the height of the building.

Solution:

Let AB be the height of the building

And CD=50m be the height of the tower

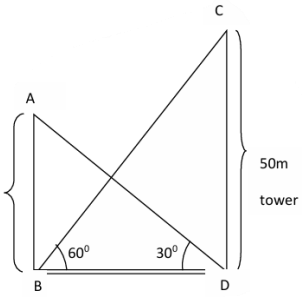
The angle of elevation of the top of the building to the foot of the tower is 30

And the angle of elevation of the top of the tower to the foot of the building is 60

Now,

In right ΔCDB,

$\text{Tan}60^0 = \frac{CD}{BD}$



⇨ $\sqrt{3} = \frac{50}{BD}$

⇨ $BD = \frac{50}{\sqrt{3}}$ (i)

Also, right ΔABD

$\text{Tan}30^0 = \frac{AB}{BD}$

⇨ $\frac{1}{\sqrt{3}} = \frac{AB}{\frac{50}{\sqrt{3}}}$

⇨ $AB = \frac{50}{\sqrt{3}} \times \frac{1}{\sqrt{3}}$

$= \frac{50}{3}$

= 16.67 m

Hence the height of the building is 16.67m.

25. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20m high building are 45^0 and 60 respectively. Find the height of the tower.

Solution: Let AB be the height of the transmission tower and BC = 20m be the height of the building.

A

The angle of elevation from a point D on the ground to the top and bottom of the tower are 60^0 and 45^0.

Now, In right ΔBCD

$\text{Tan}45^0 = \frac{BC}{CD}$

⇨ $1 = \frac{20}{CD}$

⇨ CD = 20m (i)

Also, in the right ΔACD

$\text{Tan}60^0 = \frac{AC}{CD}6$

⇨ $\sqrt{3} = \frac{AB+BC}{20}$ [From (i)]

⇨ $20\sqrt{3} = AB+20$

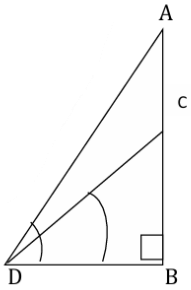
⇨ $AB = 20\sqrt{3} - 20$

⇨ $AB = 20(\sqrt{3} - 1)$

⇨ $AB = 20(1.732 - 1)$

⇨ $AB = 20 \times 0.732$

⇨ AB = 14.64m



Height of the transmission tower is 14.64m.

26. Two poles of equal heights are standing opposite to each other on either side of the road, which is 30m wide, from a point between them on the road, the angle of elevation of the top of the poles are 60^0 and 30^0 respectively. Find the height of the poles and the distance of the point from the poles. (use $\sqrt{3} = 1.732$)

Solution: Let AB and CD be the poles of equal height hm.

Let E be the point between the poles.

Let distance between the two poles: BC=80m

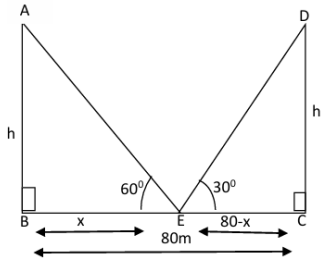
Where BE = xm and EC= $(80 - x)$m

Let $\angle AEB = 60^0$ be the angle of elevation of pole AB from the point E on the road.

Let $\angle CED = 30^0$ be the angle of elevation of pole CD from point E on the ground.

Now, In right ΔABC

$\text{Tan}60^0 = \frac{AB}{BC}$



⇨ $\sqrt{3} = \frac{h}{x}$

⇨ $h = x\sqrt{3}$ (i)

and, right ΔCED

$\text{Tan}30^0 = \frac{CD}{EC}$

⇨ $\frac{1}{\sqrt{3}} = \frac{h}{80-x}$

⇨ $h\sqrt{3} = 80 - x$

⇨ $x\sqrt{3} \times \sqrt{x} = 80 - x$

⇨ $3x = 80 - x$

⇨ $3x + x = 80$

⇨ $4x = 80$

⇨ $x = \frac{80}{4}$

⇨ x = 20m

Putting x = 20m in equation (i) we get

$h = 20\sqrt{3}$

⇨ $h = 20 \times 1.73$

⇨ h = 34.64m

And $80 - x = 80-20$

=60m

Hence the height of the equal poles is 34.64m

Distance of point E from the pole AB is 20m

And, distance of point E from the pole CD 60m

27. The shadow of a tower standing on a level ground is found to be 40m longer when the sun's altitude is 30^0 than when it is 60^0. Find the height of the tower.

Solution: Let AB be the tower and BC is the length of the shadow

When the sun's altitude is 60^0

Let DB be the length of the shadow when the sun's altitude is 30^0

Now, Let AB be hm and BC be xm

According to question

DB is 40cm longer than BC

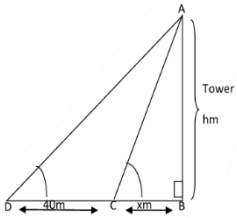
So, DB = (40 -x)

Now, in right ΔABC

$\text{Tan}60^0 = \frac{AB}{BD}$

⇨ $\sqrt{3} = \frac{h}{x}$

⇨ $h = \sqrt{3}x$ (i)



Now, in right ΔABD

$\text{Tan}30^0 = \frac{AB}{BD}$

⇨ $\frac{1}{\sqrt{3}} = \frac{h}{x+40}$

⇨ $\frac{1}{\sqrt{3}} = \frac{\sqrt{3}x}{x+40}$ {using (i)}

⇨ $x+40 = 3x$ { $\sqrt{3} \times \sqrt{3} = 3$}

⇨ $3x - x = 40$

⇨ $2x = 40$

⇨ $x = \frac{40}{2} = 20$

Putting x =20 in equation (i) we get

⇨ $h = 20\sqrt{3}$

⇨ $h = 20 \times 1.732$

⇨ $h = 34.64m$

Hence, height of the tower is 34.64m.

28. From a window 15m high above the ground, in a street the angle elevation and depression of the top and foot of another house on opposite side of the street one 30^0 and 45^0 respectively. Show that the height of the opposite house is 23.66m

(use $\sqrt{3}$= 1.732)

Solution: Let the height of opposite house AB = hm

Let the height of another house DC = 15m

Let the distance between two houses BC = xm

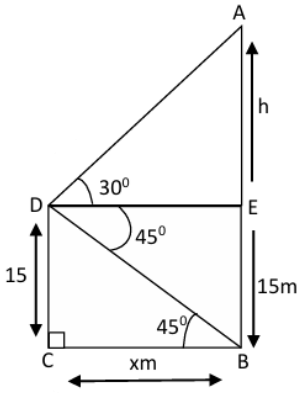
∵ BC=EB=xm

DC=EB=15m

AE=AB-EB = (h – 15)m

$\angle ADE = 30^0$

$\angle EDB = \angle DBC = 45^0$



In right ΔDCB,

$\frac{DC}{BC} = \tan 45^0$

⇨ $\frac{15}{x} = 1$

⇨ $x = 15$ (i)

Again, in right ΔAED

$\frac{AE}{ED} = \tan 30^0$

⇨ $\frac{h-15}{15} = \frac{1}{\sqrt{3}}$ {Using equation (i)}

⇨ $h - 1 = \frac{15}{\sqrt{3}}$

⇨ $h - 15 = \frac{15}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

⇨ $h - 15 = \frac{15 \times 1.732}{3}$

⇨ $h - 15 = 8.66$

⇨ $h = 8.66+15$

⇨ $h = 23.66$

∴ Height of opposite house

= AB

= 23.66m

29. A straight highway leads to the foot of a tower of height 50m. From the top of the tower, the angles of depression of two cars standing on the highway are 30^0 and 60^0 respectively. What is the distance between two cars and how far is each car from the tower?

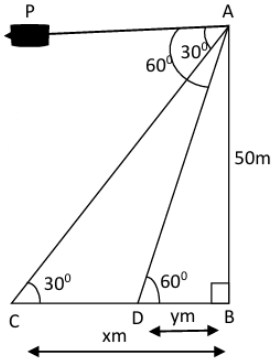
Solution: Let the height of tower, AB = 50m

Let the distance of 1st position of car from the tower, C = xm

Let the distance of 2nd position of car from the tower, D = ym

∴ Distance, between two cars:

D = BC -BD = (x -y)m



$\angle PAC = \angle ACB = 30^0$

$\angle PAD = \angle ADB = 60^0$

In right ΔABC

$\frac{AB}{BC} = \tan 30^0$

⇨ $\frac{50}{x} = \frac{1}{\sqrt{3}}$

⇨ $x = 50\sqrt{3}$

⇨ $x = 50 \times 1.732$

⇨ $x = 86.60$

Again, In right ΔABD,

$\frac{AB}{BD} = \tan 60^0$

⇨ $\frac{50}{y} = \sqrt{3}$

⇨ $\sqrt{3}y = 50$

⇨ $y = \frac{50}{\sqrt{3}}$

⇨ $y = \frac{50}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

⇨ $y = \frac{50 \times 1.732}{3}$

⇨ $y = \frac{86.60}{3} = 28.87m$

∴ Distance between the two cars:

$= x - y$

$= 86.60 - 28.87$

$= 57.73m$

Hence, Distance from the tower of 1st car, x= 86.60m

Distance from the tower of the 2nd car, y = 28.87m

30. A 1.5m Tall boy is standing at some distance from a 30m tall building. The angle of elevation from his eyes to the top of the building increases from 30^0 to 60^0 as he walks towards the building. Find the distance he walked towards the building. ($\sqrt{3}$=1.73)

Solution: Let AB = GF =EC = 1.5m be the height of the boy

Let CD = 30m be the height of the building

∴ DE = CD – EC

= 30m – 1.5m

= 28.5m

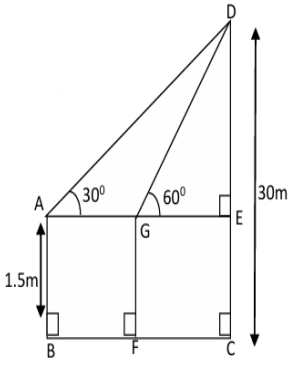
$\angle DAE = 30^0$

$\angle DGE = 60^0$

AG = AE – GE

In right ΔDEA

$\frac{DE}{AE} = \tan 30^0$ ($\tan 30^0 = \frac{1}{\sqrt{3}}$)



⇨ $\frac{DE}{AE} = \frac{1}{\sqrt{3}}$

⇨ $\frac{28.5}{AE} = \frac{1}{\sqrt{3}}$

⇨ $AE = 28.5 \times \sqrt{3}$ (i)

Again, In right ΔDEG

$\frac{DE}{GE} = \tan 60^0$

⇨ $\frac{DE}{GE} = \sqrt{3}$ ($\tan 60^0 = \sqrt{3}$)

⇨ $\frac{28.5}{GE} = \sqrt{3}$

⇨ $GE = \frac{28.5}{\sqrt{3}}$

⇨ $GE = \frac{28.5 \times \sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{28.5 \times \sqrt{3}}{3}$ (ii)

Now, $AG = 28.5 \times \sqrt{3} - \frac{28.5 \times \sqrt{3}}{3}$

$= 28.5\sqrt{3}\,(1 - \frac{1}{3})$

$= 28.5\sqrt{3}\,(\frac{3-1}{3})$

$= \frac{28.5 \times 1.732 \times 2}{3}$ m

$= \frac{98.61}{3}$ m

$= 32.87$ m

∴ The required distance he walked towards the building is 32.87

31. A Toy is in the form of a cone mounted on a hemisphere. The diameter of the base of a cone is 18cm and its height is 12cm. calculated the total surface area of a toy. (take $\pi = 3.14$)

Solution:

Radius of the hemisphere, r= $\frac{18}{2}$= 9cm

Curved surface area of the hemisphere= 2 πr^2

$= 2 \times 3.14 \times 9 \times 9$

$= 508.68\ cm^2$

Radius of the cone, r = 9cm

Height of the cone, h = 12cm

Slant height of the cone, $l = \sqrt{r^2 + h^2}$

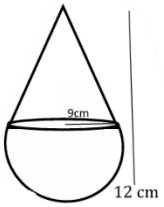
$= \sqrt{9^2 + 12^2}$

$= \sqrt{81 + 144}$

$= \sqrt{225}$

$= 15$

∴ l =15cm



Curved surface area of the cone = πrl

$= 3.14 \times 9 \times 15$

$= 423.90\ cm^2$

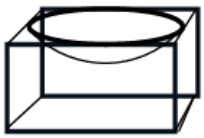
∴ The total surface area of the toy = curved surface area of the cone + curved surface area of the hemisphere

$= 508.68 + 423.90$

$= 932.58\ cm^2$

32. A hemisphere depression is cut out from one face of a cubical wooden block such that the diameter of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.

Solution:



Edge of the cube = l

∴ Radius of the hemisphere, r=$\frac{l}{2}$

Now,

Surface area of the remaining solid

=TSA of the cube–area of the top of the hemispherical part+CSA of the hemisphere

$=6l^2 - \frac{\pi l^2}{4} + \frac{2\pi l^2}{4}$

$= \frac{24l^2 - \pi l^2 + 2\pi l^2}{4}$

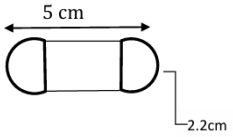
$= \frac{24l^2 + \pi l^2}{4}$

$= \frac{l^2(24+\pi)}{4}$

∵ Area of a circle = πr^2 and, CSA of hemisphere = $2\pi r^2$

Hence, Surface area of the remaining solid is $\frac{l^2}{4}(24+\pi)$

33. A Gulabjamun, contain sugar syrup up to 30% of its volume. Find approximately how much syrup would he found in 45 gulabjamun shaped like a cylinder with two hemispherical edges, with length 5cm and diameter 2.8cm.
Solution:



Radius of the gulabjamun, r = $\frac{2.8}{2}$ = 1.4cm

Height of the cylindrical portion, h = 5 – (2×1.4)
= 2.2cm

Volume of the cylindrical portion = πr^2h
= $\frac{22}{7}$×1.4×1.4×2.2 cm^3
=13.552 cm^3

Volume of two hemispherical ends = $2\times\frac{2}{3}\pi r^3$

$=\frac{4}{3}\times\frac{22}{7}\times 1.4\times1.4\times1.4$

$=\frac{34.496}{3}$
= 11.50 cm^3

Total volume of gulabjamun = (13.552+11.50) cm^3
= 25.052 cm^3

Amount of sugar syrup in one gulabjamun = 30% of 25.052
=7.52 cm^2

∴ Amount of sugar syrup in 45 gulabjamun = 45 × 7.52 cm2
= 338.20 cm^2
= 338 cm^3 (approx)

34. A pen stand made of wood is in the shaped of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15cm by 10cm by 3.5 cm. The radius of each of the depression is 0.5cm and depth is 1.4cm. find the volume of wood in the entire stand. (Textbook Q4 ex 12.2)(use π = 22/7)
Solution:

Volume of pen stand (cuboid)
= 15 × 10 × 3.5
= 525 cm^3

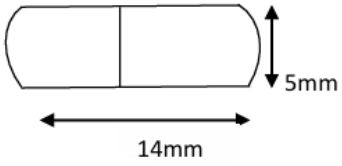
Radius of conical depression, r = 0.5 =$\frac{1}{2}$cm
Height of conical depression, h = 1.4cm

Volume of conical depression = $\frac{1}{3}\pi$ r^2h
$=\frac{1}{3}\times\frac{22}{7}\times\frac{1}{2}\times\frac{1}{2}\times1.4$
$=\frac{2.2}{6}$
$=\frac{11}{30}cm^3$

∴ Volume of 4 conical depression = $4\times\frac{11}{30}\times cm^3$
$=\frac{22}{15}$ cm^2 or 1.47

∴ Volume of cuboid in the stand=Volume of pen stand–volume of 4 conical depression
= 525 - 1.47
=523.53 cm^3

35. A mediocre capsule is in the shaped of a cylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is 14mm and the diameter of the capsule is 5mm. find its surface area.
Solution:
Total length of capsule = 14mm
Diameter of capsule = 5 mm



Then, radius of each hemispherical end, r = $\frac{5}{2}$mm

∴ Surface area of the two hemispherical ends, $A_1 = 2\times2\pi r^2$

$=4\times\frac{22}{7}\times\frac{5}{2}\times\frac{5}{2}$ mm^2

$=\frac{550}{7}$ mm^2

Again, length of the cylindrical portion of the capsule, h = Total length of capsule – 2 × hemispherical ends.

$= 14\text{mm} - 2 \times \frac{5}{2}\text{mm}$

$= 9\text{mm}$

∴ Surface area of the cylindrical portion, $A_2 = 2\pi rh$

$= 2 \times \frac{22}{7} \times \frac{5}{2} \times 9\ \text{mm}^2$

$= \frac{990}{7}\ \text{mm}^2$

Hence, the required total surface area of the mediocre capsule = A_1+A_2

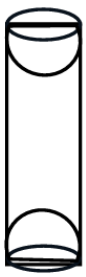
$= \frac{550}{7} + \frac{990}{7}\ \text{mm}^2$

$= \frac{1540}{7}\ \text{mm}^2$

$= 220\ \text{mm}^2$

36. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in the figure 12.11. If the height of the cylinder is 10cm and its base is of radius 3.5cm, find the total surface area of the article.

Solution:



Radius of the cylinder, r = 3.5cm

Height of the cylinder, h = 10cm

CSA of the cylinder = $2\pi rh$

$= 2 \times \frac{22}{7} \times 3.5 \times 10\ \text{cm}^2$

$= 220\ \text{cm}^2$

CSA of the scooped hemisphere = $2\pi r^2$

$= 2 \times \frac{22}{7} \times 3.5 \times 3.5\ \text{cm}^2$

$= 77\ \text{cm}^2$

∴ Required surface area of the article

=CSA of cylinder+2(CSA of one scooped hemisphere

$= 220\ \text{cm}^2 + 2 \times 77\ \text{cm}^2$

$= 220\ \text{cm}^2 + 154\ \text{cm}^2$

$= 374\ \text{cm}^2$

37. From a solid cylinder whose height is 2.4cm and diameter 1.4cm, a conical cavity of the same height and same diameter is hallowed out. Find the total surface area of the remaining solid the nearest cm^2.

Solution: Radius of the base of the cylinder, r = $\frac{1.4}{2}$ = 0.7 cm

Height of the cylinder, h = 2.4 cm

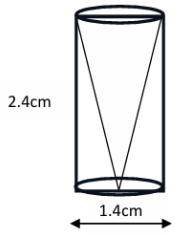
CSA of the cylinder = $2\pi rh$

$= 2 \times \frac{22}{7} \times 0.7 \times 2.4\ \text{cm}^2$

$= 10.56\ \text{cm}^2$

Slant height of the cone, l= $\sqrt{r^2 + h^2}$

$=\sqrt{0.7^2 + 2.4^2}$



`$=\sqrt{0.49 + 5.76}$

$=\sqrt{6.25}$

= 2.5 cm

CSA of the cone = πrl

$= \frac{22}{7} \times 0.7 \times 2.5$

$= 5.5\ \text{cm}^2$

Area of the base of a cone = πr^2

$= \frac{22}{7} \times 0.7 \times 0.7\ \text{cm}^2$

$= 1.54\ \text{cm}^2$

TSA of the remaining solid = (10.56+5.5+1.54)

$= 17.6\ \text{cm}^2$

$= 18\ \text{cm}^2$ (to the nearest cm^2)

38. Two cubes each of volume 64 cm^3 are joined end to end. Find the surface of the resulting cuboid.

Solution:

Volume of a cone = 64 cm^3

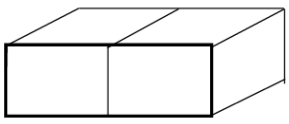
Let the edge of a cube be xcm

∴ the volume of the cube = $x^3\ \text{cm}^3$

⇨ $x^3 = 64$

⇨ $x^3 = 4^3$

⇨ x = 4



When two cubes are joined together,

Length of the new cuboid, l = 2x

= 2×4

= 8cm

Width of the new cuboid, b = xcm= 4cm

Height of the new cuboid, h = xcm= 4cm

∴ Surface area of the resulting cuboid = 2(lb+bh+lh)

= 2(8×4+4×4+8×4)
=2(32+16+32)
= 2×80
= 160 cm^2

39. Rachel an engineering, was asked to make a model shaped like a cylinder with two cones attached at its two ends by using a thin aluminium sheet. The diameter of the model is 30cm and its length is 12cm. if each one has height of 2cm, find the volume of air contained in the model that Rachel made (assume the outer and inner dimensions of the model to be nearly the same).

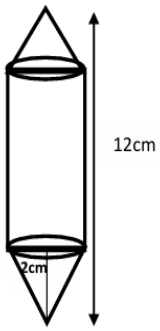
Solution:

Radius of the cone = Radius of the cylinder = r

Hence, $r = \frac{1}{2} \times$ diameter

$= \frac{1}{2} \times 3$ cm

$= \frac{3}{2}$ cm



Total height of the model = 12cm

Height of the cone, $h_2 = 2$ cm

∴ Height of the cylinder, $h_1 = 12-4$

= 8cm

Hence, volume of the model= 2 × volume of cone + Volume of cylinder

$= 2 \times \frac{1}{3}\pi r^2 h_2 + \pi r^2 h_1$

$= \frac{\pi r^2}{3}(2h_2 + 3h_1)$

$= \frac{22\times3\times3}{7\times3\times2\times2}(2\times2+3\times8)$

$= \frac{22\times33}{7\times2\times2}(4+24)$

$= \frac{11\times3}{7\times2} \times 28$

= 66 cm^3

∴ The volume of air contained in the model is 66 cm^3.

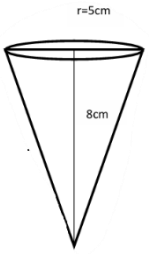
40. A vessel is in the formed of an inverted cone. Its height is 8cm and the radius of its top, which is open, is 5cm. It is filled with water up to the brim when lead shots, each of which is a sphere of radius 0.5cm are dropped into the vessel, one-fourth of the water flow out. Find the number of lead shots dropped in the vessel.

Solution:

Radius of conical vessel, R = 5cm

Height of conical vessel, h = 8cm

Radius of each lead shots, r = 0.5cm



$= \frac{1}{2}$ cm

Let the number of lead shots be 'n'.

Therefore,

Volume of n lead shots = $\frac{1}{4}$ volume of conical vessel

⇨ $n \times \frac{4}{3} \times \pi r^3 = \frac{1}{4} \times \frac{1}{3} \times \pi R^2 h$

⇨ $n = \frac{3\times\pi\times h\times R^2}{4\times4\times3\times\pi\times r^3}$

⇨ $n = \frac{5\times5\times8}{4\times4\times\frac{1}{2}\times\frac{1}{2}\times\frac{1}{2}}$

⇨n= 100

∴ The number of lead shots dropped in the vessel is 100.

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Sample Question Paper

(SSLC Examination 2024-25)

Mathematics

(New Course – NCERT Textbook)

by

Meghalaya Board of School Education (MBOSE)

A. The Scheme of Examination

	Maximum Marks	Pass Marks
Theory Examination	80	24
Internal Assessment	20	6
Total	100	30

B. Scheme of Theory Examination

Section	Type of Questions	Marks for Each Question	No. of questions to be attempted/ no. of questions given	Total Marks
Section-A	MCQs	1	30/30	1x30=30
Section-B	Very Short Answer Questions	2	6/9	2x6=12
Section-C	Short Answer Questions	3	6/9	3x6=18
Section-D	Long Answer Questions	5	4/7	5x4=20
Total Marks				**80**

C. Scheme of Internal Assessment

The Internal Assessment can be done through anyone of the following:

1. Project Work
2. Written Tests
3. Assignments (Class work or Home Work)

D. Content Weightage in Theory Examination

The chapter-wise weightage shown below is only indicative for the purpose of information of teachers while prioritising different chapters during teaching or assessment. Though the weightage in Theory Examination conducted by MBOSE would broadly follow the following pattern, there may still be some variation.

Subject	Chapter	Marks
Algebra	• Real Numbers • Polynomials • Pairs of Linear Equations in Two Variables • Quadratic Equations • Arithmetic Progression	27
Coordinate Geometry	• Coordinate Geometry	05
Trigonometry	• Introduction to Trigonometry • Some Applications of Trigonometry	09
Geometry and Mensuration	• Triangles • Circles • Arrears related to Circles • Surface Areas and Volumes	29
Statistics & Probability	• Statistics • Probability	10
Total		80

Sample Question Paper

Mathematics
Class-X

Question Paper Code: XY

Time: 3 hours **Max Marks: 80 (Pass Marks: 24)**

General Instructions:

1. Please check that this Question Paper contains 55 Questions.
2. Question Paper Code given above should be written on the Answer Book, in the space provided, by the Candidate.
3. 15 minutes time is given for the candidates to read the Question paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.
4. The Question Paper contains 4 sections, Section A, B, C and D.
5. Section-A contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers provided anywhere else will not be counted for marking.
6. Section-B contains Very Short Answer Questions. Answer the questions briefly, in minimum 3 steps.
7. Section-C contains Short Answer Questions. Answer the questions in minimum 5 steps.
8. Section-D contains Long Answer Questions. Answer the questions in minimum 8 steps.
9. Use of calculators/ mobile phone/ any electronic device is NOT ALLOWED.

Section- A

Multiple Choice Questions: Attempt **ALL** Questions. (30 X 1 = 30 marks)

1. The product of a non-zero rational number and an irrational number is :

(A) An irrational number (B) a rational number (C) one (D) zero

2. If the product of two numbers is 540 and their LCM is 30, then their HCF is:

(A) 15 (B) 16 (C) 18 (D) 24

3. Which of the following is a quadratic polynomial?

(A) x + 7 (B) x^2 -2 (C) $x^3 + 4x + 9$

(D) $x^4 + 3x^3 + 2x + 7$

4. A polynomial of degree 3 is called a:

(A) Linear polynomial

(B)quadratic polynomial

(C) cubic polynomial

(D)biquadratic polynomial

5. The pair of equations x = a and y = b graphically represents lines which are:

(A) parallel (B) coincident

(C) intersecting at (a, b)

(D) intersecting at (b, a)

6. The system of equations -3x + 4y = 5 and $\frac{9}{2}x - 6y + \frac{15}{2} = 0$ has :

(A) Unique solution (B) infinite many solutions (C) no solutions (D) none of these

7. The sum of the roots of the equation x^2 -6x + 5 = 0 is:

(A) 5 (B) - 5 (C) 6 (D) -6

8. The product of the roots of the equation x^2 -6x + 5 = 0 is:

(A) 5 (B) - 5 (C) 6 (D) -6

9. The 9^{th} term of an AP: 3, 8, 13, 18, …….. is:

(A) 43 (B) 23 (C) 93 (D) 113

10. The first three terms of an AP when the first term, a= 4 and common difference, d = 6 are:

(A) 4, - 2, - 8 (B) 4, 10, 16 (C) 10, 16, 22 (D) -10, -16, -22

11. All geometrical congruent figures are:

(A) Not similar (B) similar (C) unequal (D) none of the above

12. The ratio of any two corresponding sides in two equiangular triangles is always:

(A) Complementary (B) different (C) equal (D) none of the above

13. If two angles of one triangle are respectively equal to two angles of another triangle then the two Triangles are similar. This is referred to as the:

(A) AA Similarity Criterion for two triangles

(B) SAS Similarity Criterion for two triangles

(C) AAA Similarity Criterion for two triangles

(D) SSS Similarity Criterion for two triangles

14. The distance of a point P (3, 4) from origin is:

(A) 1 unit (B) 3 units (C) 5 units (D) 7 units

15. The midpoint of the line segment joining the points A (- 2, 8) and B (- 6, - 4) is:

(A) (4, 2) (B) (- 4, 2) (C) (4, - 2) (D) (- 4, - 2)

16. The value of $1 + \tan^2 45^0$ is:

(A) 0 (B) – 1 (C) 1 (D) 2

17. If cos θ = 1 then the value of θ is:
(A) 0^0 (B) 30^0 (C) 60^0 (D) 90^0

18. How many tangents can be drawn parallel to the secant of a circle?
(A) One (B) two (C) three (D) infinitely many

19. If a tangent PQ at a point P of a circle of radius 5cm meets a line through the Centre O such that OQ = 12 cm then the length PQ is :
(A) 12cm (B) 13 cm (c) 8.5cm (D) √119 cm

20. If a tangent PA and PB from a point P to a circle with Centre O are inclined to each other at an angle of 80^0, then <POA is equal to:
(A) 50^0 (B) 60^0 (C) 70^0 (D) 80^0

21. The angle made by the minute hand of a clock at its Centre in 15 minutes duration is:
(A) 60^0 (B) 80^0 (C) 90^0 (D) 180^0

22. If the circumference of a circle increases from 2∏ to 4∏ then its area is:
(A) four times (B) tripled (C) doubled (D) halved

23. The total surface area of a hemisphere of radius R units is:
(A) πR^2 sq. units (B) $2\pi R^2$ sq. units (C) $3\pi R^2$ sq. units (D) $4\pi R^2$ sq. units

24. During conversion of a solid from one shape to another, the volume of the new shape will:
(A) Increase (B) decreases (C) remain unaltered (D) be doubled

25. If the surface area of a sphere is 616 cm^2 its diameter is:
(A) 7 cm (B) 14 cm (C) 28 cm (D) 56 cm

26. The middle most observation of every data arranged in order is called:
(A) Median (B) mode (C) mean (D) deviation

27. A numerical data is sad to be multimodal if it has:
(A) Single mode (B) two modes (C) three modes (D) more than three modes

28. Which of the following cannot be the probability of an event?
(A) 2/3 (B) – 1.5 (C) 15 % (D) 0.7

29. A Child has a die whose six faces marked with letters A, B, C, D, E, A. When the die is thrown once then the probability of getting A is:
(A) 2 (B) 1/6 (C) 1/3 (D) 2/3

30. The probability that it will rain today is 0.87, then the probability that it will not rain today is:
(A) 0.13 (B) 1.87 (C) 87/100 (D) 1.03

Section – B

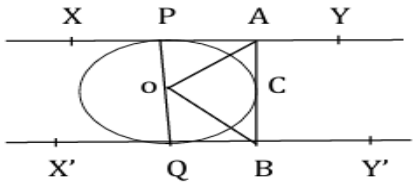
Very Short Answer Questions: Answer **any 6 (six)**. (2x6=12 marks)

31. Express 5005 as a product of its prime factors.
32. Solve the following system of linear equations: 2x + 3y =5 and 3x – 4y = - 1
33. Find the length and breadth of a rectangular mango grove whose length is twice its breadth and its area is 800 m^2?
34. Prove that $\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$
35. If cot θ = 7/8, evaluate $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$
36. D is a point on the side BC of a triangle ABC such that <ADC = <BAC. Show that CA^2 = CB. CD.
37. 12 defective pens are accidentally mixed with 132 good ones. It is not possible to just look at a pen and tell whether or not is defective. One pen is taken out at random from this lot. Determine the probability that the pen taken out is a good one.
38. Prove that 3 + 2√5 is an irrational number. It is given that √5 is an irrational number.
39. Show that the number 7 x 11 x 13 + 13 is a composite number.

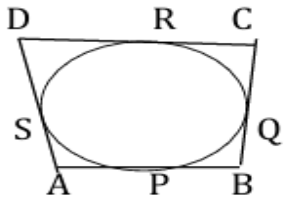
Section – C

Short Answer Questions: Answer **any 6(six)**. **(**3x6=18 marks)

40. Find the ratio in which the line segment joining the points A (1, -5) and B (- 4, 5) is divided by the x- axis.
41. Find the coordinates of a point A, where AB is the diameter of a circle whose Centre is (2, - 3) and B is (1, 4).
42. Rohan's mother is 26 years older than him. The product of their ages 3 years from now will be 360 years. Find their present ages?
43. In the given figure, XY and X'Y' are two parallel tangents to a circle with Centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that <AOB = 90^0.



44. A Quadrilateral ABCD is drawn to circumscribe a circle as shown in the adjoining figure. Prove that AB + CD = AD + BC



45. In a circle of radius 21 cm, an arc subtends an angle of 60^0 at the Centre. Find:
(i) The length of the arc; and
(ii) area of the sector formed by the arc. (use π = 22/7)

46. The following table shows the ages of the patients admitted in a hospital during the year. Based on the information, find median of the given data.

Ages (in years)	5-15	15-25	25-35	35-45	45-55	55-65
Number of patients	6	11	21	23	14	5

47. Based on the information given in Question no. 46, find mean of the given data.

48. If α and β are zeroes of the polynomial P(x) = $3x^2 - 2x - 6$, then find the value of $\left(\frac{1}{\alpha} + \frac{1}{\beta}\right)$

Section – D

Long Answer Questions: Answer **any 4(four)** (4x5=20 marks)

49. A Tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the Cylindrical part are 2. 1 m and 4 m respectively; and the slant height of the top is 2.8 m. Find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of ₹500 per meter. (Use $\pi = 22/7$)
50. If $\boldsymbol{\alpha}$ and $\boldsymbol{\beta}$ are zeroes of the polynomial $\boldsymbol{p(x) = ax^2 + bx + c}$,then evaluate$\boldsymbol{(\alpha - \beta)^2}$.
51. If the 5^{th} and 12^{th} term of an AP are 30 and 65 respectively, then find the sum of its first 20 terms?
52. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, and then prove that the other two sides are divided in the same ratio.
53. In the give figure PA, QB ad RC are each perpendicular to AC, such that PA =x, QB = z, RC = y, AB= a, and BC = b. prove that 1/x + 1/y = 1/z.
54. A TV tower stands vertically on a bank of a canal. From a point on the other bank directly opposite the tower, the angle of elevation of the top of the tower is 60^0. From another point 20 m away from this point on the line joining this point to the foot of the tower, the angle of elevation of the top of the tower is 30^0. Find the height of the tower and the width of the canal?
55. The mileage (Km per litre) of 50 cars of the same model was tested by a manufacturer and details are tabulated as given below:

Mileage (Km per litre)	10-12	12-14	14-16	16-18
Number of cars	7	12	18	13

Find the mean mileage.

*** End of the Question Paper ***

CM IMPACT Guidebook for Students
(With Important Questions and Answers)

Science & Technology

(NCERT Textbook)

Class X
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Section-A

Multiple Choice Questions (MCQs)

[Chemistry]

1. Which of the following is not a physical change?
   A. Boiling of water to give water vapour
   B. Melting of ice to give water
   C. Dissolution of salt in water
   D. Combustion of Liquefied Petroleum Gas (LPG)
   Ans – (D)

2. Which of the following statements about the given reaction is NOT correct?
   $3Fe(s) + 4H_2O(g) \rightarrow Fe_3O_4(s) + 4H_2(g)$
   A. Iron metal is getting oxidised
   B. Water is getting reduced
   C. Water is acting as reducing agent
   D. Water is acting as oxidizing agent
   Ans – (C)

3. A colorless gas that smells like burning sulphur and causes coughing is
   (A) hydrogen
   (B) sulphur dioxide
   (C) sulphur trioxide
   (D)nitrogen dioxide
   Ans- (B)

4. Barium chloride on reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Whichof the following correctly represents the type of the reaction involved?
   (A) Displacement reaction
   (B) Oxidation reaction
   (C) Combination reaction
   (D) Double displacement reaction
   Ans – (D)

5. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberatedduring electrolysis of water is
   (A) 1:1 (B) 2:1
   (C) 4:1 (D) 1:2
   Ans – (B)

6. Which of the following is (are) an endothermic process(es)?
   A. Dilution of sulphuric acid
   B. B. freezing of water
   C. Condensation of water vapours
   D. Evaporation of water
   Ans – (D)

7. Which of the following gases can be used for storage of fresh sample of an oil for a long time?
   A. Carbon dioxide or oxygen
   B. Nitrogen or oxygen
   C. Carbon dioxide or helium
   D. Helium or nitrogen
   Ans – (D)

8. Which one of the following processes involve chemical reactions?
   A. Storing of oxygen gas under pressure in a gas cylinder
   B. Liquefaction of air
   C. Keeping petrol in a china dish in the open
   D. Heating copper wire in presence of air at high temperature
   Ans – (D)

9. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
   (A) Fumes of gas will emerge
   (B) The temperature of the solution decreases
   (C) The temperature of the solution remains the same
   (D) Salt formation takes place
   Ans – (D)

10. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
    (A)Baking powder
    (B)Lime
    (C)Ammonium hydroxide solution
    (D)Hydrochloric acid
    Ans- (D)

11. Acid rain has a pH less than
    (A) 7.8 (B) 5.6
    (C) 10.5 (D) 6.4
    Ans – (B)

12. Which of the following salt does not contain water of crystalisatio?
    (A) Blue vitriol (B) Baking soda
    (C) Washing soda (D) Gypsum
    Ans – (B)

13. Sodium carbonate is a basic salt because it is a salt of
    A. strong acid and strong base
    B. weak acid and weak base
    C. strong acid and weak base
    D. weak acid and strong base
    Ans – (D)

14. Calcium phosphate is present in tooth enamel. Its nature is
    (A) basic (B) acidic
    (C) neutral (D) amphoteric

Ans – (A)

15. If a few drops of a concentrated acid accidentally spill over the hand of a student, what should be done?
    A. Wash the hand with saline solution
    B. Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate
    C. After washing with plenty of water apply solution of sodium hydroxide on the hand
    D. Neutralise the acid with a strong alkali

    Ans – (B)

16. Common salt besides being used in kitchen can also be used as the raw material for making
    (i) washing soda
    (ii) bleaching powder
    (iii) baking soda
    (iv) slaked lime
    (A) (i) and (ii)
    (B) (i), (ii) and (iv)
    (C) (i) and (iii)
    (D) (i), (iii) and (iv)
    Ans – (C)

17. One of the constituents of baking powder is sodium hydrogen carbonate, the other constituent is
    (A) hydrochloric acid (B) tartaric acid
    (C) acetic acid (D) sulphuric acid
    Ans – (B)

18. To protect tooth decay, we are advised to brush our teeth regularly. The nature of the tooth pastes commonly used is
    (A) acidic (B) neutral
    (C) basic (D) corrosive
    Ans – (C)

19. Which of the following statements is correct about an aqueous solution of an acid and of a base?
    (i) Higher the pH, stronger the acid
    (ii) Higher the pH, weaker the acid
    (iii) Lower the pH, stronger the base
    (iv) Lower the pH, weaker the base
    (A) (i) and (iii)
    (B) (ii) and (iii)
    (C) (i) and (iv)
    (D) (ii) and (iv)
    Ans – (D)

20. The pH of the gastric juices released during digestion is
    (A) less than 7 (B) more than 7
    (C) equal to 7 (D) equal to 0
    Ans – (A)

21. Which of the following phenomena occur, when a small amount of acid is added to water?
    (i) Ionisation
    (ii) Neutralisation
    (iii) Dilution
    (iv) Salt formation
    (A) (i) and (ii) (B) (i) and (iii)
    (C) (ii) and (iii) (D) (ii) and (iv)
    Ans – (B)

22. Which one of the following can be used as an acid–base indicator by a visually impaired student?
    (A) Litmus (B) Turmeric
    (C) Vanilla essence (D)Petunia leaves
    Ans: (C)

23. Which of the following property is generally not shown by metals?
    (A) Electrical conduction
    (B) Sonorous in nature
    (C) Dullness
    (D) Ductility
    Ans – (C)

24. The ability of metals to be drawn into thin wire is known as
    (A) ductility (B) malleability
    (C) sonority (D) conductivity
    Ans: (A)

25. Which one of the following metals do not react with cold as well as hot water?
    (A) Na (B) Ca
    (C) Mg (D) Fe
    Ans – (D)

26. Which of the following type at medication is need in treating indigestion?
    (A) Antibiotic (B) Analgesic
    (C) Antacid (D) Antiseptic
    Ans - (C)

27. Sodium hydrogen Carbonate is the chemical name of which of the following?
    (A) Bleaching Powder (B) Baking Soda
    (C) Gypsum (D) None of the
    Ans – (B)

28. Which of the statements about the reaction below are incorrect?
    $2PbO(s) + C(s) \rightarrow 2Pb(s) + CO_2(g)$
    (i) Lead is reduced
    (ii) Carbon dioxide is oxidised
    (iii) Lead oxide is reduced
    (iv) Carbon is oxidised

(A) (i) and (ii)
(B) (i) and (iii)
(C) (ii) and (iii)
(D) (iii) and (iv)
Ans – (D)

29. Fe_2O_3 + 2 Al → Al_2O_3 + 2 Fe
The above reaction is an example of
(A) Double displacement reaction
(B) Combination reaction
(C) Displacement reaction
(D) Decomposition reaction
Ans – (C)

30. What happens when dilute hydrochloric acid is added to Iron filing? Tick the Correct answer
(A) Hydrogen gas and Iron chloride are produced
(B) Chlorine gas and Iron hydrochloride are produced
(C) No reaction take place
(D) Iron salt and water are produced
Ans -(A)

31. Lime water is
(A) CaO (B) $Ca(OH)_2$
(C) $CaCO_3$ (D) $CaCl_2$
Ans – (B)

32. Which of the following is used to oxidise ethanol to ethanoic acid?
A. Alkaline $KMnO_4$
B. Conc. H_2SO_4
C. Acidified $K_2Cr_2O_7$
D. Conc. HCl
Ans – (B)

33. What is observed when copper is exposed to the air
A. The surface of copper is coated with Cu_2O
B. The surface of copper is coated with CuO
C. The surface of copper is coated with $CuCO_3$
D. The surface of copper is coated with $CuSO_4$
Ans – (B)

34. Ores that undergo Calcination are
(A) Sulphide ores (B) Sulphate ores
(C) Carbonate ores (D) Oxide ores
Ans: (C)

35. The correct order for the reactivity of the following metals is:
A. Fe> Ni> Pb> Sn> Cu> H> Au
B. Fe> Pb> Sn> Ni>H> Cu> Au
C. Fe> Ni>Pb>Sn>Cu>H>Au
D. Fe>Ni>Sn>Pb>H>Cu>Au
Ans – (D)

36. A metal 'A' which is used in the thermite process, when heated with oxygen gives an oxide 'B' which is amphoteric in nature. 'A' and 'B' are identified as
(A) Mg and MgO (B) Al and Al_2O_3
(C) Fe and FeO (D) Fe and Fe_2O_3
Ans – (B)

37. Graphite is formed by
(A) Hexagonal array (B) Tetragonal array
(C) Pentagonal array (D) Octagonal array
Ans – (A)

38. The main cause of rancidity of foods is the reaction of fats and oils by
(A) Hydrolysis (B) Substitution
(C) Oxidation (D) Reduction
Ans – (C)

39. Cinnabar is an ore of
(A) Mercury (B) Zinc
(C) Copper (D)Lead
Ans – (A)

40. Which of the following can be used as colour change acid base indicator?
(A) Onion juice (B) Vanilla essence
(C) Clove Oil (D) Petunia leaves
Ans – (D)

41. Which of the following substance will not give carbon dioxide on treatment with dilute acid
(A) Marble (B) Lime stone
(D) Lime (C) Baking soda
Ans: (D)

42. Which of the following is acidic in nature?
(A) Human blood (B) Lime juice
(C) Antacid (D) Lime water
Ans: (B)

43. Which of the following used for dissolution of gold?
(A) Hydrochloric acid
(B) Sulphur acid
(C) Nitric acid
(D) Aqua- regia
Ans: (D)

44. Which of the following is not a mineral acid?
(A) Hydrochloric acid
(B) Citric acid
(C) Sulphur acid
(D) Nitric acid
Ans: (B)

45. Which of the following is not a base?
(A) NaOH (B) KOH
(C) NH_4OH (D) C_2H_5OH
Ans: (D)

46. Which of the following statement is not

correct?

(A) All metal carbonates react with acid to give a salt, water and carbon dioxide.

(B) All metal oxides react with water to give salt and acid.

(C) Some metal react with acids to give salts and hydrogen

(D) Some non-metals oxides react with water to form an acid.

Ans: (B)

47. Which of the following is true for acids

(A) Bitter and change red litmus to Blue.
(B) Sour and change red litmus to blue.
(C) Sour and change blue litmus to red.
(D) Bitter and change blue litmus to red.
Ans: (C)

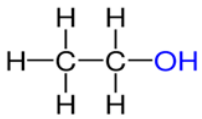
48. Which of the following are present in a dilute aqueous solution of hydrochloric acid?

(A) $H_3O^+ + CI^-$ (B) $H_3O + OH^-$
(C) $CI + OH^-$ (D)Unionised HCl
Ans: (A)

49. Water is removed when substance 'X' is heated, as well as its colours changes from green, then substance X=

(A) Ca SO_4 (B) $CuSO_4$
(C) $FeSO_4$ (D) $BaSO_4$
Ans: (C)

50. Name the below compound from its structure:



(A) Ethane (B) Ethanol
(C) Ethene (D) Propanol
Ans: (B)

51. Which of the following pairs will give displacement reactions?

(A) NaCl solution and copper metal.
(B) $MgCl_2$ solution and aluminium metal.
(C) $FeSO_4$ solution and silver metal.
(D) $AgNO_3$ solution and copper metal.
Ans: (D)

52. Which of the following methods is suitable for preventing an iron frying pan from rusting?

(A) Applying grease.
(B) Applying paint.
(C) Applying a coating of zinc
(D) Applying a coat of Lead
Ans: (C)

53. Which of the following oxides of iron would be obtained on prolonged reaction of iron with steam?

(A) FeO (B) Fe_2O_3
(C) Fe_3O_4 (D) Fe_2O_3 and Fe_3O_4
Ans: (C)

54. Generally, metals react with acids to give salt and hydrogen gas. Which of the following acids does not give hydrogen gas on reacting

(A) H_2SO_4 (B) HCl
(C) HNO_3 (D)All of these
Ans: (C)

55. Which of the following metals are obtained by electrolysis of their chlorides in molten state

(A) Mg (B) Ag
(C) Zn (D) Cu
Ans : (A)

56. Generally, non- metals are not lustrous. Which of the following non metal is lustrous?

(A) Sulphur (B) Oxygen
(C) Nitrogen (D) lodine
Ans. (D)

57. An alloy is

(A) an element
(B) a compound
(C) a homogenous mixture
(D) a heterogeneous mixture
Ans: (C)

58. Silver articles become black on prolonged exposure to air. This is due to the formation of

(A) AgS (B) Ag_2O
(C) Ag_2S (D) Ag_2 and Ag_3
Ans: (C)

59. Galvanisation is a method of protecting iron from rusting by coating with a thin layer of

(A) Gallium (B)Aluminium
(C) Zinc (D)Silver
Ans: (C)

60. Stainless steel is very useful material for our life. In stainless steel Iron is mixed with

(A) Ni and Cr (B)Cu and Cr
(C) Ni and Cu (D)Cu and Au
Ans: (A)

61. If copper is kept open in air, it slowly loses its shining brown surface and gains green coating. It is due to the formation of

(A) $CuSO_4$ (B)$CuCO_3$
(C) $Cu(NO_3)_2$ (D)CuO
Ans: (B)

62. Generally, metals are solid in nature. Which one of the following metals is found in liquid state at room temperature?

(A) Na (B) Fe
(C) Cr (D) Hg
Ans: (D)

63. During electrolytic refining of zinc, it gets
(A) deposited on cathode
(B) deposited on anode
(C) deposited on cathode as well as anode
(D) remains in the solution
Ans: (A)

64. Alloys are homogenous mixtures of a metal with a metal or non- metal. Which among the following alloys contain a non-metal as one of its constituents?
(A) brass (B) bronze
(C) amalgam (D) steel
Ans: (D)

65. Which among the following alloys contain mercury as one of its constituents?
(A) stainless steel (B) alnico
(C) solder (D) amalgam
Ans: (D)

66. Generally, non- metals are not conductors of electricity. Which of the following is a good conductor of electricity?
(A) diamond (B) graphite
(C) Sulphur (D) fullerene
Ans: (B)

67. Electrical wires have a coating of an insulting material. The material, generally used is
(A) Sulphur (B) Graphite
(C) PVC (D) Copper
Ans: (C)

68. Which the following non-metal is a liquid at room temperature?
(A) carbon (B) bromine
(C) phosphorous (D) Sulphur
Ans. (B)

69. Buckminsterfullerene has _____ atoms in its molecule.
(A) 30 (B) 960
(C) 300 (D) 60
Ans: (D)

70. Many salts absorb water from atmosphere. This property is called
(A) crystallization (B) hydration
(C) deliquescence (D) efflorescence
Ans. (C)

71. Which of the following elements occur in free state
(A) phosphorus (B) sulphur
(C) silicon (D) copper
Ans .(B)

72. Na_2SO_4 + $BaCl_2$→ $BaSO_4$ + 2NaCl
The above reaction is an example of a
(A) combination reaction
(B) double displacement reaction
(C) decomposition reaction
(D) displacement reaction
Ans .(B)

73. Which of the following metals can replace copper from a solution of copper sulphate?
(A) Silver (B) Zinc
(C) Gold (D) Platinum
Ans. (B)

[Biology]

74. In a flower, the parts that produce male and female gametes (germ cells) are
(A) stamen and anther
(B) filament and stigma
(C) anther and ovary
(D) stamen and style
Ans – (C)

75. Which of the following is the correct sequence of events of sexual reproduction in a flower?
(A) pollination, fertilisation, seedling, embryo
(B) seedling, embryo, fertilisation, pollination
(C) pollination, fertilisation, embryo, seedling
(D) embryo, seedling, pollination, fertilization
Ans – (C)

76. Characters transmitted from parents to offspring are present in
(A) cytoplasm (B) ribosome
(C) golgi bodies (D) genes
Ans – (D)

77. Characters that are transmitted from parents to offspring during reproduction show
(A) only similarities with parents
(B) only variations with parents
(C) both similarities and variations with parents
(D) neither similarities nor variations
Ans – (C)

78. A feature of reproduction that is common to Amoeba, Spirogyra and Yeast is that
(A) they reproduce asexually
(B) they are all unicellular
(C) they reproduce only sexually
(D) they are all multicellular
Ans – (A)

79. In Spirogyra, asexual reproduction takes place by
(A) breaking up of filaments into smaller bits
(B) division of a cell into two cells

(C) division of a cell into many cells
(D) formation of young cells from older cells.
Ans – (A)

80. The ability of a cell to divide into several cells during reproduction in *Plasmodium* is called
(A) budding
(B) reduction division
(C) binary fission
(D) multiple fission
Ans – (D)

81. The correct sequence of reproductive stages seen in flowering plants is
(A) gametes, zygote, embryo, seedling
(B) zygote, gametes, embryo, seedling
(C) seedling, embryo, zygote, gametes
(D) gametes, embryo, zygote, seedling
Ans – (A)

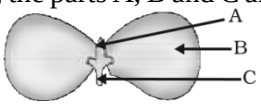
82. The number of chromosomes in parents and offsprings of a particular species remains constant due to
(A) doubling of chromosomes after zygote formation
(B) halving of chromosomes during gamete formation
(C) doubling of chromosomes after gamete formation
(D) halving of chromosomes after gamete formation
Ans – (B)

83. In Rhizopus, tubular thread-like structures bearing sporangia at their tips are called
(A) filaments (B) hyphae
(C) rhizoids (D) roots
Ans – (B)

84. Vegetative propagation refers to formation of new plants from
(A) stem, roots and flowers
(B) stem, roots and leaves
(C) stem, flowers and fruits
(D) stem, leaves and flowers
Ans – (B)

85. Length of pollen tube depends on the distance between
(A) pollen grain and upper surface of stigma
(B) pollen grain on upper surface of stigma and ovule
(C) pollen grain in anther and upper surface of stigma
(D) upper surface of stigma and lower part of style
Ans – (B)

86. In Figure, the parts A, B and C are sequentially



(A) cotyledon, plumule and radicle
(B) plumule, radicle and cotyledon
(C) plumule, cotyledon and radicle
(D) radicle, cotyledon and plumule
Ans - (C)

87. Offspring formed as a result of sexual reproduction exhibit more variations because
(A) sexual reproduction is a lengthy process
(B) genetic material comes from two parents of the same species
(C) genetic material comes from two parents of different species
(D) genetic material comes from many parents
Ans – (B)

88. Reproduction is essential for living organisms in order to
(A) keep the individual organism alive
(B) fulfill their energy requirement
(C) maintain growth
(D) continue the species generation after generation
Ans – (D)

89. During adolescence, several changes occur in the human body. Mark one change associated with sexual maturation in boys
(A) loss of milk teeth
(B) increases in height
(C) cracking of voice
(D) weight gain
Ans – (C)

90. In human females, an event that reflects onset of reproductive phase is
(A) growth of body
(B) changes in hair pattern
(C) change in voice
(D) menstruation
Ans – (D)

91. In human males, the testes lie in the scrotum, because it helps in the
(A) process of mating
(B) formation of sperm
(C) easy transfer of gametes
(D) all the above
Ans – (B)

92. The correct sequence of organs in the male

reproductive system for transport of sperms is
(A) testis, vas deferens, urethra
(B) testis, ureter, urethra
(C) testis, urethra, ureter
(D) testis, vas deferens, ureter
Ans – (A)

93. Which among the following diseases is not sexually transmitted?
(A) Syphillis (B) Hepatitis
(C) HIV – AIDS (D) Gonorrhoea
Ans – (B)

94. Exchange of genetic material takes place in
(A) vegetative reproduction
(B) asexual reproduction
(C) sexual reproduction
(D) budding
Ans – (C)

95. Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of thecross will be
(A) double fertilization
(B) self-pollination
(C) cross fertilization
(D) no fertilization
Ans – (B)

96. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because
(A) tallness is the dominant trait
(B) shortness is the dominant trait
(C) tallness is the recessive trait
(D) height of pea plant is not governed by gene 'T' or 't'
Ans – (A)

97. Which of the following statement is incorrect?
(A) For every hormone there is a gene.
(B) For every protein there is a gene.
(C) For production of every enzyme there is a gene.
(D) For every molecule of fat there is a gene
Ans – (D)

98. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds produced in F1 generation are
(A) round and yellow
(B) round and green
(C) wrinkled and green
(D) wrinkled and yellow
Ans – (A)

99. In human males all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are
(i) large chromosome
(ii) (ii) small chromosome
(iii) Y-chromosome
(iv) (iv) X-chromosome
(A) (i) and (ii) (B) (iii) only
(C) (iii) and (iv) (D) (ii) and (iv)
Ans – (C)

100. The maleness of a child is determined by
(A) the X chromosome in the zygote
(B) the Y chromosome in zygote
(C) the cytoplasm of germ cell which determines the sex
(D) sex is determined by chance
Ans – (B)

101. A zygote which has an X-chromosome inherited from the father will develop into a
(A) boy
(B) girl
(C) X- chromosome does not determine the sex of a child
(D) either boy or girl
Ans – (B)

102. Select the incorrect statement
(A) Frequency of certain genes in a population change over several generations resulting in evolution
(B) Reduction in weight of the organism due to starvation is genetically controlled
(C) Low weight parents can have heavy weight progeny
(D) Traits which are not inherited over generations do not cause evolution
Ans - (B)

103. A basket of vegetables contains carrot, potato, radish and tomato. Which of them represent the correct homologous structures?
(A) Carrot and potato
(B) Carrot and tomato
(C) Radish and carrot
(D) Radish and potato
Ans – (C)

104. Bile juice is stored in
(A) liver (B) pancreas
(C) gall bladder (D) kidney
Ans – (C)

105. Which of the following is a plant hormone?
(A) Insulin (B) Thyroxin
(C) Oestrogen (D) Cytokinin
Ans – (D)

106. Which of the following statements is not true with respect to variation?
A. All variations in a species have equal chance of survival
B. Change in genetic composition results in variation
C. Selection of variants by environmental factors forms the basis of evolutionary processes.
D. Variation is minimum in asexual reproduction
Ans – (A)

107. A trait in an organism is influenced by
A. paternal DNA only
B. maternal DNA only
C. both maternal and paternal DNA
D. neither by paternal nor by maternal DNA
Ans – (C)

108. Select the group which shares maximum number of common characters
A. two individuals of a species
B. two species of a genus
C. two genera of a family
D. two genera of two families
Ans – (A)

109. The gap between two neurons is called a
(A) Axon (B) Synapse
(C) dendrite (D) Cell body
Ans – (B)

110. From the list given below, select the character which can be acquired but not inherited
(A) colour of eye (B) colour of skin
(C) size of body (D) nature of hair
Ans – (C)

111. The number of pair (s) of sex chromosomes in the zygote of humans is
(A) one (B) two
(C) three (D) four
Ans – (A)

112. Embryo sac is found in
(A) endosperm (B) embryo
(C) ovule (D) seed
Ans – (C)

113. The normal Systolic Pressure is about
(A) 120 mm of Hg (B) 100 mm of Hg
(C) 115 mm of Hg (D) 125 mm of Hg
Ans: (A)

114. The main organ for control and coordination in animals
(A) Nerve (B) Muscle tissue
(C) Brain (D) Blood
Ans: (C)

115. Which change occurs in the respiratory rate due to the construction of the diaphragm and rib muscles?
(A) Increases (B) Decreases
(C) Remain the same (D) None of the above
Ans: (A)

116. How many copies of DNA are made in reproduction?
(A) one (B) Two
(C) Three (A) Four
Ans: (B)

117. The kidneys in human beings are a part of the system for
(A) Nutrition (B) Respiration
(C) Excretion (D) Transportation
Ans: (C)

118. The Xylem in plants are responsible for
(A) Transport of water
(B) Transport of food
(C) Transport of amino acid
(D) Transport of oxygen
Ans: (A)

119. The autotrophic mode of nutrition requires
(A) Carbon dioxide and water
(B) Chlorophyll
(C) Sunlight
(D) All of the above
Ans: (D)

120. The breakdown of pyruvate to give carbon-dioxide, water and energy take place in
(A) Cytoplasm (B) Mitochondria
(C) Nucleus (D) chloroplast
Ans: (B)

121. Which of the following constitute food chain?
(A) Grass, Wheat and Mango
(B)Grass, Goat and human
(C) Grass, Cow and Elephant
(D) Gras, Fish and Goat
Ans: (B)

122. Which of the following, are Environment Friendly Practices?
(A) Carrying cloth bags to put purchases in while shopping
(B) Switching off unnecessary lights and fans
(C) Walking to school instead of getting your mother to drop you on her scooter.
(D) All of the above
Ans: (D)

123. Which of the following statements is correct about receptors?
(A) Gustatory receptor detect taste while olfactory receptors detect smell.
(B) Both Gustatory and olfactory receptors detect smell
(C) Auditory receptor detect smell and olfactory receptors detect taste.
(D) Olfactory receptor detect taste and Gustatory receptors detect smell.
Ans: (A)

124. Electrical impulse travels in a neuron from
(A) Dendrite→ axon→ axonal end→ cell body
(B) Cell body→ Dendrite → axon→ axonal end
(C) Dendrite →Cell body→ axon→ axonal end
(D) Axonal end→ axon → Cell body→Dendrite
Ans: (C)

125. In a synapse, chemical signal is transmitted from
(A) Dendrite end at one neuron to axonal end at another neuron.
(B) Axon to cell body at same neuron.
(C) Cell body to axonal end at the same neuron.
(D) Axonal end at neuron to dendrite end at another neuron.
Ans: (D)

126. In a neuron, conversion of electrical signal to a chemical signal occurs at/ in
(A) Cell body. (B) Axonal end.
(C) Dendrite end. (D) Axon
Ans: (B)

127. Biotic components of an ecosystem consists of:
(A) Producers (B) consumers
(C) decomposers (D) All of the above
Ans: (D)

128. The brain is responsible for:
(A) Thinking. (B) Regulating the heart beat.
(C) Balancing the body. (D) All of the above
Ans: (D)

129. Posture and balance of the body is control by
(A) Cerebrum (B) Cerebellum
(C) Medulla oblongata (D) Pons
Ans: (B)

130. Spinal cord originate from
(A) Cerebrum (B) Medulla oblongata
(C) Pons (D) Cerebellum
Ans: (B)

131. The main function of absisic acid in plants is to
(A) Increase the length of cells
(B) Promote cell division
(C) Inhibit growth
(D) Promote of stem growth
Ans: (C)

132. Choose the incorrect statement about Insulin
(A) It is produced from pancreas
(B) Its regulates growth and development of the body
(C) It regulates blood sugar level
(D) Insufficient secretion of insulin will cause level of glucose to rise
Ans: (B)

133. Select the mis-match pair
(A) Adrenaline : Pituitary
(B) Testosterone :Testes
(C) Estrogen : Ovary
(D) Thyroxine :Thyroid gland
Ans: (A)

134. The growth of tendril in pea plants is due to
(A) effect of light
(B) effect of gravity
(C) rapid cell division in tendriller cells that are away from the support
(D) rapid cell division in tendriller cells in contact with the support.
Ans: (C)

135. The growth of pollen tubes towards ovule is due to
(A) Hydrotropism
(B) Chemotropism
(C) Geotropism
(D) Phototropism
Ans: (B)

136. The movement of sunflower in accordance with the path of sun is due to
(A) Phototropism (B) Geotropism
(C) Chemotropism (D) Geotropism
Ans: (A)

137. Involuntary actions in the body are controlled by
(A) Medulla in fore brain
(B) Medulla in mid brain
(C) Medulla in hind brain
(D) Medulla in spinal cord.
Ans: (C)

138. Which of the following is not involuntary action?
(A) Vomiting (B) Salivation

(C) Heart beat (D) Chewing
Ans: (D)

139. In which of the following groups of organisms, food material is broken down outside the body and absorbed?
(A) Mushroom, green plants, Amoeba
(B) Yeast, mushroom, bread mould.
(C) Paramecium, Amoeba, Cuscuta
(D) Cuscuta, lice, tapeworm
Ans: (B)

140. Which one of the following is an artificial ecosystem?
(A) Pond
(B) crop field
(C) lake
(D) forest
Ans: (B)

141. An eco-system includes
(A) all living organisms
(B)non-living organisms.
(C) both living and non-living organisms.
(D) sometimes living organisms and sometimes non-living organisms.
Ans: (C)

142. Depletion of ozone is mainly due to
(A) chlorofluorocarbon compound
(B) carbon monoxide
(C) methane
(D) pesticides
Ans: (A)

143. Alveoli are found in
(A) lungs
(B) heart
(C) kidney
(D) stomach
Ans: (A)

144. Saliva contains an enzyme called
(A) amylase
(B) lipase
(C) pepsin
(D) trypsin
Ans: (A)

145. Rings of cartilage are present in
(A) oesophagus
(B) bile duct
(C) trachea
(D) small intestine
Ans: (C)

[Physics]

146. The part of the eye which controls and regulates the amount of light entering the eye is
(A) crystalline lens. (B) cornea.
(C) Iris. (D) pupil.
Ans: (C)

147. A full length image of a distant tall building can definitely be seen by using
(A) a concave mirror
(B) a convex mirror
(C) a plane mirror
(D) both concave as well as plane mirror
Ans – (B)

148. In torches, search lights and headlights of vehicles the bulb is placed
(A) between the pole and the focus of the reflector
(B) very near to the focus of the reflector
(C) between the focus and centre of curvature of the reflector
(D) at the centre of curvature of the reflector
Ans – (B)

149. The laws of reflection hold good for
(A) plane mirror only
(B) concave mirror only
(C) convex mirror only
(D) all mirrors irrespective of their shape
Ans – (D)

150. Which of the following phenomena of light are involved in the formation of a rainbow?
(A) Reflection, refraction and dispersion
(B) Refraction, dispersion and total internal reflection
(C) Refraction, dispersion and internal reflection
(D) Dispersion, scattering and total internal reflection
Ans – (C)

151. Twinkling of stars is due to atmospheric
(A) dispersion of light by water droplets
(B) refraction of light by different layers of varying refractive indices
(C) scattering of light by dust particles
(D) internal reflection of light by clouds
Ans – (B)

152. The clear sky appears blue because
(A) blue light gets absorbed in the atmosphere
(B) ultraviolet radiations are absorbed in the atmosphere

(C) violet and blue lights get scattered more than lights of all other colours by the atmosphere
(D) light of all other colours is scattered more than the violet and blue colour lights by the atmosphere
Ans – (C)

153. Which of the following statements is correct regarding the propagation of light of different colours of white light in air?
(A) Red light moves fastest
(B) Blue light moves faster than green light
(C) All the colours of the white light move with the same speed
(D) Yellow light moves with the mean speed as that of the red and the violet light
Ans – (C)

154. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light
(A) is scattered the most by smoke or fog
(B) is scattered the least by smoke or fog
(C) is absorbed the most by smoke or fog
(D) moves fastest in air
Ans – (B)

155. The resistivity does not change if
(A) the material is changed
(B) the temperature is changed
(C) the shape of the resistor is changed
(D) both material and temperature are changed
Ans – (C)

156. In an electrical circuit two resistors of 2Ω and 4Ω respectively are connected in series to a 6 V battery. The heat dissipated by the 4 resistor in 5 s will be
(A) 5 J (B) 10 J
(C) 20 J (D) 30 J
Ans – (C)

157. An electric kettle consumes 1 kW of electric power when operated at 220 V. A fuse wire of what rating must be used for it?
(A) 1 A (B) 2 A
(C) 4 A (D) 5 A
Ans – (D)

158. Two resistors of resistance 2 Ω and 4 Ω when connected to a battery will have
(A) same current flowing through them when connected in parallel
(B) same current flowing through them when connected in series
(C) same potential difference across them when connected in series
(D) different potential difference across them when connected in parallel
Ans – (B)

159. A constant current flows in a horizontal wire in the plane of the paper from east to west. The direction of magnetic field at a point will be North to South
(A) directly above the wire
(B) directly below the wire
(C) at a point located in the plane of the paper, on the north side of the wire
(D) at a point located in the plane of the paper, on the south side of the wire
Ans – (B)

160. The strength of magnetic field inside a long current carrying straight solenoid is
(A) more at the ends than at the centre
(B) minimum in the middle
(C) same at all points
(D) found to increase from one end to the other
Ans – (C)

161. To convert an AC generator into DC generator
(A) split-ring type commutator must be used
(B) slip rings and brushes must be used
(C) a stronger magnetic field has to be used
(D) a rectangular wire loop has to be used
Ans – (A)

162. Electric fuse is connected with:
(A) live wire in series
(B) neutral wire
(C) earthing
(D) live wire in parallel
Ans – (A)

163. Which one of the following materials cannot be used to make a lens?
(A) water (B) glass
(C) plastic (D) clay
Ans: (D) Clay

164. Which of the lenses would you prefer to while reading sm
(A) a convex lens of focal length 50 cm.
(B) a concave lens of focal length 50 cm.
(C) a convex lens of focal length 5cm.
(D) a concave lens of focal length 5cm.
Ans – (C)

165. Myopia occurs due to
(A) increase in the focal length of the eye lens
(B) decrease in the focal length of the eye lens
(C) contraction of the eye ball

(D) decrease in distance between the retina and the eye lens.
Ans – (B)

166. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?
(A) Kerosene (B)water
(C) glycerine (D) mustard oil
Ans – (C)

167. A material medium having the lowest optical density is:
(A) water (B) air
(C) glass (D) diamond
Ans – (B)

168.When the image is virtual, erect and of the same size as the object, then, magnification is:
(A) +1 (B) – 1
(C)) 0 (D) +2.
Ans – (A) +1

169.The Image of an object placed in front of a concave mirror of focal length 15cm is of the same size as the object. The distance between the object and its image is
(A) 15cm (B) 30cm
(C) 60cm (D) Zero
Ans- (D) Zero

170.Which of the following mirror is used by a dentist to examine a small cavity in a patient's teeth
(A) Convex mirror (B) Plane mirror
(C) Concave mirror (D) Any spherical mirror
Ans- (C) Concave mirror

171.Which of the following can make a parallel beam of light when light from a point source is incident on it?
(A) Concave mirror as well as convex lens
(B) Convex mirror as well as concave lens
(C) Two plane mirrors placed at 90 º to each other
(D) Concave mirror as well as concave lens
Ans- (A) Concave mirror as well as convex lens

172.An object is placed in front of a concave lens. For all positions of the object, the image formed is always
a) Real, diminished and inverted
b) Virtual, diminished and erect
c) Real, enlarged and erect
d) Virtual, erect and enlarged
Ans- (B) Virtual, diminished and erect

173. In the human eye the part which allows light to enter into the eye is
a) retina (B) pupil (C) eye lens (D) Cornea
Ans- (B) pupil

174. Which of the following part of the eye is responsible for changing the shape of the lens to focus light onto the retina?
(A) Pupil (B) Iris
(C) ciliary muscles (D) cornea

Ans- (C) ciliary muscles

175. The far point of eye of a person is 2m. The type of the lens needed in spectacles to increase the far point infinity is
(a) Concave lens (B) Convex lens
(C) Cylindrical lens (D) Bifocal lens
Ans- (A) Concave lens

176. A person cannot see distinctly object kept beyond 2m. This defect cannot be corrected using a lens of power
(A) +0.5 D (B) -0.5 D
(C) +0.2 D (D) +0.4 D
Ans- (B) -0.5 D

177. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?
a) Dispersion of light.
b) Scattering of light
c) Reflection of light from the earth
d) total internal reflection
e) *Ans*- (B) Scattering of light

178. The band of the coloured components of a light beam is called its
(A) spectrum (B) dispersion
(C) reflection (D) refraction
Ans: (A)

179. The focal length of the eye lens increases when eye muscles
a) Are relaxed and lens becomes thinner
b) Contract and lens become thicker
c) Are relaxed and lens becomes thicker
d) Contract and lens become thinner
Ans- (A) Are relaxed and lens becomes thinner

180. When light rays enters the eye, most of the refraction occurs at the
(A) Crystalline lens (B) Outer surface of the cornea
(C) Iris (D) Pupil
Ans- (B) Outer surface of the cornea

181. If the size of scattering particles is large enough, then
(A) The light will not get scattered
(B) The scattered light may appear blue
(C) The scattered light may appear white

(D) None of the above

Ans- (C) The scattered light may appear white

182. The current of 4.8 A is flowing in a conductor. The number of electrons passing per second through the conductor will be

(A) $3x10^{20}$ (B) $76.8x\ 10^{20}$

(C) $7.68x\ 10^{-19}$ (D) $3x10^{19}$

Ans - (D) $3x10^{19}$

183. A current of 1 A is drawn by a filament of an electric bulb. Number of electrons passing through a cross-section of the filament in 16s would be roughly

(A) 10^{20} (B) 10^{16}

(C) 10^{18} (D) 10^{23}

Ans – (A) 10^{20}

184. A complete circuit is left on for several minutes, causing the connecting copper wire to become hot. As the temperature of the wire increases the electrical resistance of the wire

(A) Decreases (B) Remains the same

(C) Increases (D) Increases for some time and the decreases

Ans- (C) Increases

185. Tow LED bulbs of 10 W and 5W are connected in series. If the current flowing through 5W bulb is 0.005 A the current flowing through 10W bulb is

(A) 0.02A (B) 0.01A

(C) 0.005A (D) 0.0025

Ans –(C) 0.005A

186. The maximum resistance which can be made using four resistors, each of resistance 1/2Ω is

(A) 2Ω (B) 1Ω

(C) 2.5Ω (D) 8Ω

Ans- (A) 2Ω

187. The resistance of a resistor is reduced to half of its initial value if other parameters of the electrical circuit remain unaltered, the amount of heat produced in the resistor will become

(A)Four times (B) Two times

(C) Half (D) $1/4^{th}$

Ans- (B) Two times

188. In an electrical circuit two resistors of 2Ω and 4Ω are connected in series to a 6V battery. Find the heat dissipated by the 4Ω resistor in 5s.

(A) 5J (B)10J

(C) 20J (D) 30J

Ans – (C) 20J

189. In domestic electric circuits, the wiring with 15A current rating is for the electric devices which have

a) Higher power ratings such as geyser
b) Lower power ratings such as fan
c) Metallic bodies and low power ratings
d) Non-metallic bodies and low power ratings

Ans- (A) Higher power ratings such as geyser

190. If the current through a resistor is increased by 100% (assume that temperature remains unchanged) the increase in power dissipated will be

(A) 100% (B) 200%

(C) 300% (D) 400%

Ans- (C) 300%

191. Electrical resistivity of a given metallic wire depends upon

(A) Its length (B) Its thickness

(C) Its shape (D) Nature of the material

Ans- (D) Nature of the material

192. A cylindrical conductor of length L and uniform area of cross-section A has resistance R. Another conductor of length 2 L and resistance R of the same material has area of cross-section

(A) A/2 (B) 3A/2

(C) 2A (D) 3A

Ans – (C) 2A

193. The resistivity does not change if

a) The material is changed
b) The temperature is changed
c) The shape of the resistor is changed
d) Both material and temperature are changed

Ans- (C) The shape of the resistor is changed

194. An electric kettle consumes 1kW of electric power when operated at 220V. A Fuse wire of what rating must be used for it?

(A) 1A (B) 2A (C) 4A (D) 5A

Ans- (D) 5A

195. Two resistors of resistance 2 ohm and 4 ohm when connected to a battery will have

a) Same current flowing through them when connected in parallel
b) Same current flowing through when connected in series
c) Same potential difference across them when connected in series
d) Different potential difference across them when connected in parallel

Ans- (B) Same current flowing through when connected in series

196. Unit of electric power may also be expressed as

(A) Volt Ampere (B) Kilowatt Hour

(C) Watt second (D) Joule second

Ans- (A) Volt Ampere

197. An electric refrigerator rated 400W operates 8h per day. The cost of the energy to operate it for 30 days at Rs 3 per kWh is

(A) Rs 288 (B) Rs 320
(C) Rs 430 (D) 190

Ans- (A) Rs 288

198. An electric heater is rated 100W and 220V. If it is operated in 110V, the power consumption will be

(A) 10W (B) 25W
(C) 15W (D) 100W

Ans-(B) 25W

199. The strength of magnetic field inside a long current carrying straight solenoid is

a) More at the ends than at the center
b) Minimum in the middle
c) Same at all points
d) Found to increase from one end to the other

Ans – (C) Same at all points

200. Which of these devices works due to the magnetic effect of electric current

(A) LED bulb (B) Electric bell
(C) Electric heater (D) Mobile charger

Ans- (B) Electric bell

201. Force on a current carrying conductor in a magnetic field depends on

(A) Direction of current
(B) Direction of magnetic field
(C) Both a and b
(D) Length of the wire

Ans-(C) Both a and b

202. The most important safety method used for protecting home appliances from short circuiting or over loading is

(A) Earthing (B) Use of fuse
(C) Use of stabilizers (D) Use of electric meter

Ans-(B) use of fuse

203. To avoid risk of electrical shock which phenomena is used?

(A) Over loading (B) Short circuiting
(C) Earthing (D) None of the above

Ans- (C) Earthing

204.On which part of human eye, the image at on object is formed?

(A) Retina (B) Cornea
(C) Eyeball (D) Iris

Ans: (A)

205. S.I unit af electric charge is :

(A) Watt (B) Kilowatt
(C) Coulomb (D) Ampere

Ans: (C)

206. The human eyes can focus on objects at different distances by adjusting the focal length of the eye lens. This is due to

(A) accommodation (B) Presbyopia
(C) near sightedness (D) Far sightedness

Ans - (A)

207. The least distance of distinct vision for a young adult with normal vision is about

(A) 25m (B) 2.5 cm
(C) 2.5 cm (D) 25 cm

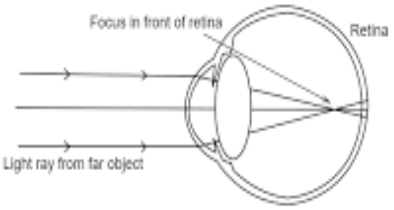
Ans: (D)

208. The device used to measure the intensity and direction of current in a circuit is

(A) Ammeter (B) Voltmeter
(C) Galvanometer (D) Battery

Ans (C)

209. Observe the given figure. Identify the eye defect indicated in this figure.



(A) Presbyopia (B)Hypermetropia
(C) Myopia (D) Cataract

Ans (C)

210. A piece of wire of resistance R is cut into five equal parts are then connected in parallel. If the equivalent resistance of this combination is R, then the ratio R/R' is

(A) 1/25 (B) 1/5
(C) 5 (D) 25

Ans (D)

211. Which of the following term does not represent electrical power in a circuit?

(A) I^2R (B) IR^2 (C) VI
(D)V^2/R

Ans (B)

212. An electric bulb is rated 220V and 100W. When it operated on 110V, the power consumed will be

(A) 100W (B) 75W
(C) 50W (D)25W

Ans (D)

213. The image formed by a convex mirror is always

(A) real and magnified
(B) real and diminished
(C) virtual and diminished
(D) virtual and magnified

Ans (C)

214. Kilowatt hour is the unit of

(A) Resistivity (B) Conductivity
(C) Electrical energy (D) Electrical power
Ans :(C)

215. A 10 mm length pin is placed vertically in front of a concave mirror . A 5mm long image of the pin is formed at 30 cm in front of the mirror. The focal length of the mirror is
(A) -30 cm. (B) -20 cm.
(C) - 40 cm. (D) - 60 cm.
Ans: (B)

216. A light ray enters from medium "A" to medium "B". The refractive index of medium "B" relative to "A" will be
(A) greater than unity
(B) less than unity
(C) equal to unity
(D) zero
Ans: (A)

217. The speed of light in air is
(A) 3×10^{8} m/s (B) 3×10^{-8} m/s
(C) 3×10^{18} m/s (D) 3 x 10 m/s
Ans. (A)

218. The radius of curvature of a spherical mirror is 3 cm. What is its focal length?
(A) 1.5 cm (B) 3 cm
(C) 4.5 cm (D) 6 cm
Ans: (A)

219. At the time of short circuit, the current in the circuit
(A) reduce substantially
(B) does not change
(C) increases heavily
(D) vary continuously
Ans: (C)

220. One milliampere (1 mA) is equal to
(A) 10^{-3}A (B) 10^{-6}A
(C) 10^{3}A (D) 10^{6}A
Ans: (A)

* * *

Section-B

Short Answer Questions (2 Marks)

[Physics]

1. State the laws of reflection of light.
Ans:

- The angle of incidence is equal to the angle of reflection, ∠i = ∠r
- At the point of incidence, the incident ray, the reflected ray and the normal lie in the same plane.

2. Why do we prefer a convex mirror as a rear-view mirror in vehicles? Give two reasons.
Ans:

- Convex mirror always gives an erect, virtual, full size diminished image of distant objects.
- It can cover a wider field of view. Thus, it enable the driver to view much larger area than would be possible with a plane mirror.

3. The radius of curvature of a spherical mirror is 20 cm. What is its focal length?
Ans:

Given, radius of curvature R = 20cm, f is the focal length

we know, R = 2f,

$$f = \frac{r}{2}$$

or, $$f = \frac{20}{2}$$

∴ f = 10 cm.

4. Define power of a lens. Write its mathematical expression. State the SI unit of power of a lens.
Ans. Power of a lens is defined as the reciprocal of focal lens in meters.

Mathematically, $p = \frac{1}{f}$; f in meters

The SI unit of a lens is called dioptre.

5. A doctor has prescribed a corrective lens of power +1.5 D. Find the focal length of the lens. Is the prescribed lens diverging or converging?
Ans. Since Power = +1.5 D

Using the relation,

$P = 1/f; f$ is in meters

Or, +1.5 = 1 /f

Or, f = 1/ +1.5

Or, f = +0.67 m

Therefore, f = + 0.67m or 67 cm.

Finally, since focal length is positive.

So, the lens is converging.

6. State the laws of refraction of light.

(i) The incident ray, the refracted ray and the normal to the surface of the separation of the two media at the point of incidence, all lie in the same plane.

(ii) The ratio of the sine of angle of incidence to the sine of angle of refraction is a constant, for the light of given colour, for the given pair of media.

7. Define the following terms: (*only two will be asked in exam*)
(a) Refractive index (b) Magnification (c) Reflection (d) Refraction

Ans.

a) The ratio between the sine of angle of incidence in one medium to the sine of angle of refraction in another medium is called refractive index of the second medium with respect to the first medium.

b) The ratio between the height of the image produced by the mirror to the height of the object is called linear magnification.

c) When a ray of light travelling through a certain medium strike an opaque but a smooth surface, it bounces off the surface into the original medium, this phenomenon is called reflection of light.

d) The phenomenon due to which a ray of light deviates from its path, at the surface of separation of two media, when the ray of light is travelling from one optical medium to another optical medium, is called refraction.

8. The speed of light in the glass is $2x10^8$ m/s and the speed of light in vacuum is $3x\ 10^8$ m/s. Find the refractive index of glass.

Ans. Given,

Speed of light in glass (v) = 2×10^8 m/s.

Speed of light in vacuum (c) = 3×10^8 m/s.

Using the relation,

refractive index (μ) = c/v

$\mu = c/v$

$\mu = 3x10^8 / 2x\ 10^8$

$\mu = 1.5$

9. State any two uses of a concave mirror.
Ans.

(i) It is used as shaving mirror. The reason being that when the face of a person is between pole and the principal focus of a concave mirror, an erect, enlarged and virtual image is formed behind the mirror.

(ii) It is used as a reflector in the headlights of automobiles. The bulb is placed close to the principal focus of the concave mirror

when a powerful parallel beam of light is formed.

10. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position of the image formed by the mirror.

Ans. Since the mirror is convex, therefore,
Object distance 'u' = – 10 cm.
Focal length 'f' = + 15 cm.
According to mirror formula,

$$\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$$
$$\frac{1}{(-10)}+\frac{1}{v}=\frac{1}{15}$$
$$-\frac{1}{10}+\frac{1}{v}=\frac{1}{15}$$
$$\frac{1}{v}=\frac{1}{15}+\frac{1}{10}$$

1/v = 25/150
v = 150/25
v = 6 cm
Since 'v' is + ve the image is formed behind the mirror.

11. What is meant by power of accommodation of the eye? What is the far point and near point of the human eye with normal vision?

Ans:

- The process by which the ciliary muscles alter the focal length, so as to focus nearer or far-off objects clearly on the retina is called the power of accommodation of the eye
- Far point of a normal eye is infinity and the near point of the eye is 25 cm.

12. Why do stars twinkle?

Ans. The twinkling of a star is due to atmospheric refraction of starlight. The starlight, on entering the earth's atmosphere undergoes refraction continuously before it reaches the earth.

13. Why does the sky appear dark instead of blue to an astronaut?

Ans. This is because at such huge heights of the astronaut, there is no atmosphere to scatter the sunlight. Therefore, the sky appears dark.

14. What is presbyopia? How is the defect corrected?

Ans. The power of accommodation of the eye usually decreases with ageing. For most people, the near point gradually recedes away. They find it difficult to see nearby objects comfortably and distinctly without corrective eye- glasses. This defect is called Presbyopia. This defect is corrected by using convex lens of proper focal length.

15. Why does the sun appear yellowish?

Ans. When the violet, indigo and blue colours scatter in the upper atmosphere, the resultant sunlight is yellowish in colour. When this light enters our eyes, then to us sun appears yellowish instead of white hot.

16. Why is the colour of the clear sky blue?

Ans. The clear sky appears blue because violet and blue lights get scattered more than lights of all other colours by the atmosphere. This is primarily because the wavelengths of these colours are smaller than those of other colours.

17. Name the factors which determine the resistance of a conductor.

Ans: The factors which determine the resistance of a conductor are

- length of the conductor;
- area of cross-section of the conductor;
- nature of the material of the conductor; and
- temperature of the conductor.

18. State Ohm's law. Write the mathematical expression.

Ans: *Ohm's law:* 'The potential difference, V, across the ends of a given metallic wire in an electric circuit is directly proportional to the current flowing through it, provided its temperature remains the same.'

The mathematical expression is V = IR,

Where V is the potential difference, I is the current and R is the resistance of the conductor.

19. What is heating effect of current? Name two electrical appliances which work on this effect.

Ans: When an electric current passes through a conductor for some time, heat is produced in it. This is called heating effect of electric current.

Two electrical appliances which work on this effect are electric iron and water heater.

20. Define resistivity of a material. Write the mathematical formula of resistivity.

Ans: Resistivity is defined as the resistance offered to current flow by a conductor of unit length having unit area of cross-section.

The mathematical formula of resistivity is $\rho = RA/l$, where ρ is the resistivity, R is the resistance of the conductor, A is the area of

cross-section of the conductor and *l* is the length of the conductor.

21. Why is Tungsten used almost exclusively for filament of electric lamps?
Ans: Tungsten is used for making filament of electric bulbs due to the following reasons-

- It has a high melting point.
- It has high resistivity.
- It does not oxidize easily even at high temperature.

22. Why is the series arrangement not used for domestic circuits?
Ans: The series arrangement is not used for domestic electric circuits due to the following reasons:

- If any one of the component stops working, the circuit is broken and none of the devices work.
- All the appliances have only one switch due to which they cannot be turned on or off separately.
- The appliances do not get the same voltage (220V) as that of the power supply line.

23. A current of 0.5 A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit.
Ans. Solution:
Given, Current(I) = 0.5 A
Time(t) = 10 minutes =10x60 = 600 seconds
Charge(Q) = ?

Using, Q = It
= 0.5 x 600
= 300 Coulomb

24. An electric iron of resistance 20 Ω takes a current of 5A. Calculate the heat developed in 30 seconds.
Ans. Solution:
Given, Current (I) = 5 A

Resistance (R) = 20 Ω
Time (t) = 30 seconds
Heat (H) = ?
Using, $H = I^2Rt$
$= 5^2 \times 20 \times 30$
$= 25 \times 20 \times 30$
$= 15000$ J

25. How much work is done in moving a charge of 2C across two points having a potential difference 12 V?
Ans. Solution:
Given, Charge (Q) = 2C
Potential difference (V) = 12 V
Work = ?
Using, W = VQ
= 12 x 2
= 24 J

26. When a 12V battery is connected across an unknown resistor, there is a current of 2.5 mA in the circuit. Find the value of the resistance of the resistor.

Ans. Solution:
Given, Potential difference (V) = 12 V
Current (I) = 2.5 mA = 2.5×10^{-3} A
Resistance (R) = ?

Using, V =IR
R = V/I
$= 12/2.5 \times 10^{-3}$
$= 12 \times 10^3 / 2.5$
= 4800 Ω

27. List two properties of magnetic field lines.
Ans:

- Magnetic field lines are closed curves.
- Two magnetic field lines never intersect each other.

28. Why does a compass needle get deflected when brought near a bar magnet?
Ans: The magnetic field of the magnet exerts force on both the poles of the compass needle. The forces experienced by the two poles are equal and opposite. These two forces form a couple and deflect the compass needle.

29. Write two precautions that should be taken to avoid the overloading of domestic electric circuits?
Ans: To avoid overloading of domestic electric circuits, the following precautions should be taken:

- The wires used in the circuit must be coated with good insulating materials.
- High power appliances like air-conditioner, refrigerator, water heater, etc. should not be used simultaneously.

30. What is the function of an earth wire? Why is it necessary to earth metallic appliances?
Ans: The main function of earth wire is to protect appliances from sudden damage due to leakage of current.
The earthing of metallic appliances is necessary to prevent severe electric shock to the users. The metallic body of electric appliances is connected to earth wire so that any leakage of electric current is transferred to the ground.

31. State right hand thumb rule.
Ans: It states that, if you hold the current carrying straight wire in the grip of your right hand in such a way that the thumb points in the

direction of current, then the direction of the curl of the fingers will give the direction of the magnetic field.

32. What is an electric fuse? What is its role in electric circuits?

Ans: Electric fuse is a safety device consisting of a thin wire made of an alloy of lead and tin having low melting point. It is used to prevent damage caused by overloading and short-circuiting.

[Chemistry]

33. Calcium oxide reacts with water. Justify your answer by giving balanced chemical equation for the chemical reaction?

Ans: Calcium oxide reacts vigorously with water to produce slaked lime (Calcium hydroxide) releasing a large amount of heat.

$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + Heat$

(Quick lime) (Slaked lime)

34. What do you mean by decomposition reaction? Give one example.

Ans: In which chemical reaction a single reactant breaks down to give simpler products are known as decomposition reaction.

e.g.: $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$

35. What would you observe when zinc is added to a solution of Ferrous Sulphate? Write the chemical reaction that takes place.

Ans: The chemical reaction will take place when zinc is added to the ferrous sulphate solution as we know zinc is more reactive than iron so it will replace iron from the salt solution and will lead to the formation of zinc salt and iron will be produced. This type of reaction is called a displacement reaction.

$Zn(s) + FeSO_4(aq) \rightarrow ZnSO_4(aq) + Fe(s)$

36. State two ways to prevent the rusting of Iron.

Ans: The rusting of Iron can be prevented by painting, oiling, greasing, galvanizing, chrome plating, anodizing or making alloys.

37. What is rust? Give the equation for the formation of rust.

Ans: When Iron exposed to moist air for a long time acquires a coating of a brown flaky substance is called rust.

The chemical reaction can be represented as:

$4\ Fe(s) + 3O_2(g) + 2H_2O(aq) \xrightarrow{heat} 2Fe_2O_3.xH_2O$

38. (a) Define balanced chemical equation.

(b) Balance the following chemical equation:

$Fe + H_2O \rightarrow Fe_3O_4 + H_2$

Ans: (a) The equation in which number of atoms of each type involved in a chemical reaction are the same on the reactant and product sides of the equation, is known as balanced chemical equation.

(b) $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$

39. Why do we store silver chloride in dark coloured bottles? Write chemical reaction involved.

Ans: We store silver chloride in dark coloured bottles because silver chloride turns grey in sunlight due to the decomposition of silver chloride into silver and chlorine by light.

$2\ AgCl \rightarrow 2\ Ag + Cl_2$

40. What is a neutralization reaction? Give one example.

Ans: The reaction between an acid and a base to give a salt and water is known as a neutralization reaction.

Example: (i) $NaOH(aq) + HCl(aq) \rightarrow NaCl(aq) + H_2O(l)$

(ii) $KOH + HCl \rightarrow KCl + H_2O$

41. Give the two important uses of Baking Soda.

Ans: The uses of Baking Soda are:

- Sodium hydrogen carbonate is also an ingredient in antacids. Being alkaline, it neutralizes excess acid in the stomach and provides relief.
- It is also used in soda-acid fire extinguishers.

42. What is the common name of the compound $CaOCl_2$? Give its two uses.

Ans: The common name of the compound $CaOCl_2$ is Bleaching Powder. The uses of Bleaching Powder are as follows:

(i) To make drinking water free from germs.

(ii) As an oxidizing agent in many chemical industries.

43. Why does dry *HCl* gas not change the colour of the dry litmus paper?

Ans: The colour of litmus paper changes only in the presence of ions like hydrogen (H^+) or hydronium (H_3O^+) ions. *HCl* can produce these ions only in the form of aqueous solution. Hence dry *HCl* gas does not change the colour of dry litmus paper.

44. Why does the aqueous solution of an acid

conduct electricity?

Ans: The presence of hydrogen ions in an aqueous acid solution causes it to conduct electricity. Only in the presence of ions can electricity be conducted. Their heated nature is the cause behind this.

45. Write an equation to show the reaction between plaster of Paris and Water? Give one use for medical purpose.

Ans: $CaSO_4.½\ H_2O + 1½\ H_2O \rightarrow CaSO_4.2H_2O$

(Plaster of Paris) (Gypsum)

Plaster of Paris use as for supporting fractured bones in the right position.

46. Give two important uses of Washing Soda.

Ans: The uses of Washing Soda are

- Washing soda is used in glass, soap and paper industries.
- It is used in the manufacture of sodium compounds such as borax.
- Sodium carbonate can be used as a cleaning agent for domestic purposes.
- It is used for removing permanent hardness of water.

(*Write any two in the exam*)

47. How bleaching powder can be prepared? Give chemical equation.

Ans: Bleaching powder is produced by the action of chlorine (Cl_2) on dry slaked lime [$Ca(OH)_2$]. Bleaching powder is represented as $CaOCl_2$.

$Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$

48. Explain the meanings of malleable and ductile.

Ans: Some metals can be beaten into thin sheets. This property is called malleability. The ability of metals to be drawn into thin wires is called ductility.

49. Give an example of a metal which

a) Is a liquid at room temperature.
b) Can be easily cut with a knife.
c) Is the best conductor of heat.
d) Is a poor conductor of heat.

Ans: (a) Mercury (Hg)
(b) Sodium (Na)
(c) Silver (Ag)
(d) Lead (Pb)

50. What happens when metals react with acids? Give one example.

Ans: When metals react with acids to produce salt and hydrogen gas.

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

(Zinc) (Hydrochloric acid) (Zinc chloride) (Hydrogen)

51. Why is Sodium kept immersed in Kerosene oil?

Ans: Sodium is high reactive element. If it is kept in open, it can explosively react with oxygen to catch fire. Hence to prevent accidental damage sodium is immersed in kerosene oil.

52. Why do ionic compounds have high melting points?

Ans: The ionic compounds are made up of positive and negative ions which have the strong force of attraction between opposite charged ions. So, a lot of heat energy is required to break this force of attraction or ionic bond. That is why ionic compounds have high melting points.

53. What are the constituents of solder alloy? Which property of solder makes it suitable for welding electrical wires?

Ans:

- Solder is an alloy of Lead (Pb) and Tin (Sn). Its composition is 50% Lead (Pb) and 50% Tin (Sn).
- The melting point of Solder is very low and is even lower than its constituting metals (Pb and Sn). Thus, the low melting point of solder makes it suitable for welding electrical wires.

54. Write the chemical reaction of zinc metal and dilute H_2SO_4. In this reaction H_2 gas is produced, but the reaction between zinc metal and dil. HNO_3 do not produce H_2 gas. Why?

Ans: When we pour dilute sulphuric acid on zinc, zinc sulphate is formed and the hydrogen gas is evolved. On reaction of zinc with sulphuric acid the salt formed is a white colour substance which is zinc sulphate is also known as white vitriol.

The balanced chemical equation is given below:

$Zn(s) + H_2SO_4(aq) \rightarrow ZnSO_4(aq) + H_2(g)$

Nitric acid is a very strong oxidising agent and hence it leads to the addition of

oxygen to another substance. Thus, when hydrogen is formed due to addition of nitric acid on zinc metal it oxidises hydrogen to water.

The balanced chemical equation is given below:

$$Zn + 4HNO_3 \rightarrow (NO_3)_2 + 2NO_2 + 2H_2O$$

55. Write two Physical properties of Metals?

Ans: The Physical properties of Metals are as follows:

(i) Metals are malleable and ductile.

(ii) Metals are good conductors of heat and electricity.

(iii) Metals are lustrous (shiny) and can be polished.

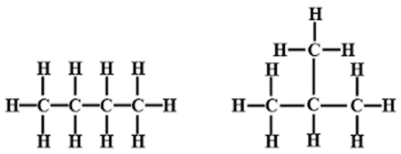
(iv) Metals are solids at room temperature (except mercury, which is liquid).

(v) Metals are tough and strong.

(In exam write only two)

56. What are isomers? Write the formula of any two isomers of butane?

Ans: An isomer is a molecule with the same molecular formula as another molecule, but with a different chemical structure. That is, isomers contain the same number of atoms of each element but have different arrangements of their atoms.

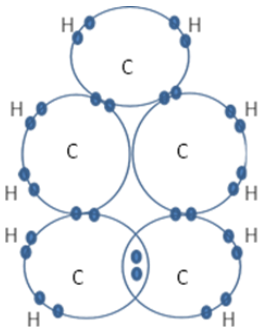


n-butane, $CH_3CH_2CH_2CH_3$ isobutane,$(CH_3)_3CH$

57. What will be the formula and electron dot structure of cyclo-pentane?

Ans: The formula of Cyclo-pentane is C_5H_{10}

Electron dot structure is:



58. Why micelle formation take place when soap is added to water?

Ans: A soap molecule has two ends which have different properties, one end is polar, i.e., hydrophilic and is water soluble while the other end is non-polar, i.e. hydrophobic, and hence water insoluble. When soap is added to water, the polar ends dissolve in water while the non-polar end dissolve in each other. As a result, spherical ionic micelles are formed.

59. What is hydrogenation? What is its industrial application?

Ans: The addition of hydrogen to an unsaturated compound in the presence of nickel or palladium catalyst to obtain a saturated compound is called hydrogenation.

Hydrogenation is used in industry to prepare vegetable ghee from vegetable oils.

60. Why are covalent compounds generally poor conductors of electricity?

Ans: Covalent compounds generally poor conductors of electricity because a covalent bond is formed between non-metal atoms which combine together by sharing electrons. Covalent compounds have no free electrons and no ions so they don't conduct electricity.

61. Write the general formula of alkanes? Give the names of two alkanes having 3 carbon atoms and the other having 4 carbon atoms.

Ans: The general formula for alkanes is C_nH_{2n+2}

Where n stands for number of carbon atoms and 2n+2 for number of hydrogen atoms. The alkane having 3 carbon atoms is Propane (C_3H_8) and the alkane having 4 carbon atoms is Butane (C_4H_{10})

62. Why detergents are better cleansing agents than Soap? Explain.

Ans: Detergent is preferred over soaps due to the following reasons:

a. Detergent can be used in hard water for washing whereas soaps cannot be used in hard water as soaps form scums that stick to the fabric and make the cleaning difficult.

b. Detergent can be used in acidic solution nut soaps decompose in acidic solution and forms free fatty acids.

63. A gas is evolved when ethanol reacts with sodium. Name the gas evolved and also write the balanced chemical equation of the reaction involved.

Ans: When ethanol reacts with sodium, then hydrogen gas is evolved. This reaction can be given by following equation:

$$2Na + 2CH_3CH_2OH \rightarrow 2CH_3CH_2Ona + H_2$$

64. Why do acids not show acidic behavior in the absence of water?

Ans: Water helps in the dissociation of an acid to give hydronium ions (H_3O^+). In the absence of water, these ions are not produced. Hence, acids show acidic behavior only in the presence of water.

[Biology]

65. How does the embryo get nourishment and generate waste substance?

Ans. The embryo get nourishment from the mother's blood through placenta. Placenta attaches the foetus to the uterine wall. It also provides nutrients to the foetus and also allows the foetus to transfer waste products to the mother's blood.

66.Name two bacterial infections and two viral infections of sexually transmitted diseases.

Ans. The bacterial infections are gonorrhea and syphilis and two viral infections are Warts and HIV-AIDS

67.What is the function of digestive enzymes?

Ans. Enzymes are proteins which catalyse the biological reactions. Digestive enzymes, secreted by digestive glands located in different parts of alimentary canal, help in the digestion of carbohydrates, proteins and fats.

68. Write the difference between dominant genes and recessive genes. (any two points)

Dominant genes	Recessive genes
1 The gene which decides the appearance of an organism even in the presence of an alternative gene is known as dominant gene	1 The gene which decides the appearance of an organism only in the presence of another identical gene is called recessive gene.
2. Dominant gene is denoted by a capital letter	2. Recessive gene is denoted by a small letter.

69. Define the term variation. Write the expanded form of DNA.

Ans. The differences among the individuals of a plant or animal of a species are called variations. Expanded form of DNA is "Deoxy ribo- Nucleic Acid".

70. Define heredity. Who is known as the Father of Genetics.

Ans: Heredity is the transmission of traits from one generation to the following generation.

Gregor Johann Mendel is known as the father of heredity (Genetics)

71. How will you differentiate between inherited traits and acquired traits by giving one example of each type?

Ans:

Inherited Traits	Acquired Traits
These are the characteristics that an individual inherits from his parents and can be passed into the next generation. These characteristics include eye color, skin complexion, hair color etc.	These are the characteristics that an individual develops during his life time and cannot be passed into the next generation. These characteristics include skills, knowledge, development of muscles etc.

72. Give the scientific name of the plant used by Mendel for his experiment. What type of progeny was obtained by Mendel in F_1 and F_2 generation when he crossed the tall and short plant?

Ans: The scientific name of the plant which Mendel used for his experiment on inheritance is Pisum Sativum (pea plant).

When Mendel performed a cross between tall plant and short plant, he found that all the plants in F_1 generation (first generation) were tall, whereas in F_2 generation (second generation) only one (25%) –forth (75%) of the plants were short. The ration obtained in both the generations was 3:1 (Tall:Short)

73. What is zygote? How is the sex of the child determined in human beings?

Ans: Fertilized egg that results from the union of a female gamete (egg) with a male gamete (sperm) is called zygote.

A child which inherits X chromosomes from the father will be a girl and one who inherits Y chromosomes from him will be a boy.

74. How does the creation of variations in a species promote survival? Write the full form of DNA.

Ans: Variations help to adapt in the changing environment which promote the survival of a species.

The full form of DNA is Deoxyribo Nucleic Acid

75. A man with blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits – blood group A or O is dominant? Why or Why not?

Ans: No, this information is not sufficient to determine which of the traits – blood group A or O – is dominant. This is because we do not know about the blood group of all the progency as blood group A can be genotypically AA or AO, which is incomplete to draw any such conclusion.

76. Which type of reproduction is best survival? Why?

Ans: Sexual reproduction.

Sexual reproduction produces a new combination of genes in the offspring that may enable them to survive in the changing environment and help in the survival of the species.

77. What is the role of decomposers in the ecosystem?

Ans: the role of the decomposers in the ecosystem are

a) They act as environment cleaners by decaying dead plants and animals.
b) They help in recycling of nutrients in the soil.

78. What are trophic levels? Give an example of a food chain and state the different trophic levels in it.

Ans: The various links or steps in a food chain at which the transfer of food and energy takes place care called trophic levels.

An example of a food chain:
Producers → First trophic level
Primary consumers → Second trophic level
Secondary consumers → third trophic level
Tertiary consumers → fourth trophic level

79. Give any two ways in which non-biodegradable substances would affect the environment.

Ans: Non-biodegradable substances would affect the environment in the following ways:

a) They cause soil, air and water pollution.
b) They can block the ecological balance of an ecosystem.

80. What changes can you make in your habits to become more environment friendly?

Ans: Habits to become more environment friendly are:

a) Using the 3 R's (Reduce, Reuse and Recycle)
b) Reducing the use of plastics.
c) Planting more trees in the surrounding.
d) Using the resources wisely.

81. If all the waste we generate in biodegradable, will this have no impact on the environment?

Ans: Biodegradable wastes can also affect the environment. During the process of decomposition, these wastes can be led to negative impacts like smell and possibility of sparking an epidemic, if they are dumped near a residential area.

82. What is systolic pressure? What is the normal systolic pressure in human beings?

Answer: The pressure of blood inside the artery during ventricular systole is called systolic pressure. The normal systolic pressure is about 120 mm of Hg.

83. What is diastolic pressure? What is the normal diastolic pressure in human beings?

Answer: The pressure of blood inside the artery during ventricular diastole is called diastolic pressure. The normal systolic pressure is about 80 mm of Hg.

84. Where is urine produced and stored?

Answer: Urine is produced in the kidneys. It is stored in the urinary bladder.

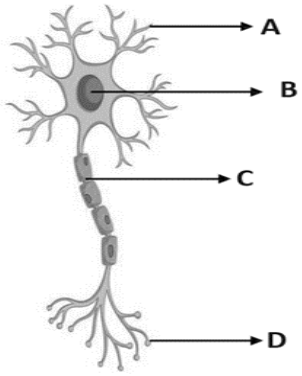
85. How are fats digested in our bodies?

Answer: Fats reach the small intestine in the form of large globules. Bile juice/salts breaks down large globules into smaller globules.The pancreatic enzyme, lipase acts and breaks down the globules into molecules. Intestinal juices finally convert these molecules into fatty acids and glycerol.

86. Name the three major parts or regions of the brain. Which part of the brain is the main thinking part?

Answer: The following are the three major parts or regions of the brain: Forebrain, Midbrain and Hindbrain. The cerebrum is the main thinking part of the brain.

87. Name the parts labeled as: A, B, C and D.



Ans: A – Dendrites, B – Nucleus, C – Axon, D – Nerve ending.

88. Define chemotropism. Give one example of chemotropism.

Answer: Movement of plants in response to chemical stimulus is known as chemotropism. One example of chemotropism is growth of pollen tubes towards ovules.

89. Name any four plant hormones.

Answer: The following are four plant hormones:

a)Auxins; b) Gibbberalins; c) Cytokinins; and d) Abscicic acid

90. How does our body respond when adrenaline is secreted into the blood?

Answer: When adrenaline is secreted directly into the blood and carried to different parts of the body:

- Our heart beats faster, resulting into more supply of oxygen to our muscles.
- The blood to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs.
- The breathing rate increases due to the contraction of the diaphragm and the rib muscles.
- The body is ready to deal with any situation.

91. Give ANY TWO examples of organisms that reproduce by binary fission.

Answer: Amoeba and leishmania.

92. Write ANY TWO advantages of vegetative propagation.

Answer: The two advantages of vegetative propagation are:

- Plants raised by this method bear flowers and fruits earlier than those produced from seeds.
- All plants produced by this method are genetically similar enough to the parent plant and have all its characteristics.

93. What is pollination? Name the two types of pollination.

Answer: The transfer of pollen grain from the anther to the stigma of a flower is known as pollination.

The two types of pollination are: a) self pollination and b) Cross pollination.

94. What is the role of acid in our stomach?

Ans. The hydrochloric acid present in our stomach dissolves bits of food and creates an acidic medium which converts enzyme pepsinogen into pepsin, which is a protein digesting enzyme. It also kills the bacteria which enters our stomach through food.

95. Why is the use of iodised salt advisable?

Ans. Iodine is essential for the synthesis of thyroxine hormone in the thyroid gland. The thyroxine, in turn regulates carbohydrates, proteins and fat metabolism in the body for growth. Deficiency of iodine results in goiter. Thus, use of iodised salt is advisable to prevent iodine deficiency in the body.

96. What is the function of medulla oblongata?

Ans. Medulla oblongata controls rate of heart beat, breathing movements,expansion and contraction of blood vessels to regulate blood pressure, swallowing, coughing, sneezing, vomiting etc.

97. How is the process of pollination different from fertilization?

Ans. Pollination is the transfer of pollen grains from the opened anther of the stamen to the receptive stigma of the carpel whereas fertilization is the fusion of male and female gametes resulting in the formation of zygote.

98. Why are traits acquired during the life- time of an individual not inherited?

Ans. This happens because an acquired trait involves in non- reproductive tissues (somatic cells) which cannot be passed on to germ cells or the progeny. Therefore, these traits cannot be inherited.

99. Why is DNA copying an essential part of the process of reproduction?

Ans. The process of reproduction results in the

production of offsprings which are exactly similar to parents. The exact blue prints of body design is inherited in the offsprings due to DNA replication
in parent cell. Thus, DNA copying is an essential part of the process of reproduction.

100. What is ozone? Give its function.

Ans. Ozone is a form of oxygen, its molecule contains three oxygen atoms. It shields the earth's surface from ultra - violet radiation from the sun.

Section-C
Short Answer Questions (3 Marks)

[Chemistry]

1. What is the chemical name of Baking Soda? Write down its chemical formula. How is it produced? (Give relevant chemical equation)

Ans : The Chemical name of baking Soda is Sodium hydrogen carbonate. Its chemical formula is $NaHCO_3$.

It is produced by passing carbon dioxide through ammoniacal brine.

$$NaCl + H_2O + NH_3 + CO_2 \longrightarrow NH_4Cl + NaHCO_3$$

2. What are amphoteric oxides? Give a balanced equation for the reaction of an amphoteric oxide with a base and an acid.

Ans: An amphoteric oxide is an oxide that acts either as a base or an acid in a reaction to produce salt and water. An example of amphoteric oxide is aluminium oxide.

$$Al_2O_3 + 6HCl \longrightarrow 2AlCl_3 + 3H_2O$$

$$Al_2O_3 + 2NaOH \longrightarrow NaAlO_2 + H_2O$$

3.Plaster of Paris has to be stored in a moisture proof container . Why?

Ans: Plaster of Paris is Calcium sulphate hemihydrate, $CaSO_4 . ½ H_2O$ and when the water of crystallization is added to it , gympsum ($CaSO_4 . 2H_20$) is formed which is a hard material.

By storing Plaster of Paris in a moisture – proof container, it helps to prevent hardening and ensures its effectiveness and shelf life.

4.During the extraction of metals, electrolytic refining is used to obtain pure metals.

i. Which material will be used as anode and cathode for refining of copper in this process?
ii. Suggest a suitable electrolyte.
iii. What is anode mud?

Ans:

i. Anode is impure copper (containing impurities like sulphur or other metals) and the Cathode is Pure copper .
ii. Electrolyte is acidified copper sulphate.
iii. Anode mud is formed when the impurities present in the anode, such as sulphur and other metals are released during the electrolysis process. These impurities settle to the bottom of the electrolytic cell as a sludge- like material, hence the name "anode mud".

5. What is aqua regia? Write its characteristics.

Ans: Agua regia is a freshly prepared mixture of concentrated hydrochloric acid and concentrated nitric acid in the ratio of 3:1.

Aqua regia has the following characteristics:

- Aqua regia can dissolve gold and platinum even though neither of these acids can do so alone.
- Aqua regia is a highly corrosive fuming liquid.

6. What is corrosion ? Mention two ways of preventing corrosion.

Ans: Corrosion is a natural process that occurs when metals undergo a chemical reaction with substances around them such as moisture, air or acids. This results in deterioration and damage.

Two ways of preventing corrosion:

i) Galvanisation: A method of protecting steel and iron from rusting by coating them with a thin layer of zinc.
ii) Alloying: An Alloy is a homogenous mixture of a metal with one or more elements (metal or non- metal) to create a new material with enhanced properties, including corrosion resistance.

7. i) Name the acid present in the atmosphere of Venus.
ii)Why does dry HCl gas not change the colour of a dry litmus paper?

Ans: i) The acid is Sulphuric Acid.
ii)Litmus paper is a weak acid-base indicator that responds to aqueous solution and not respond to dry gases. Dry HCl is not in aqueous solution, so it does not trigger a colour change in the

dry litmus paper.

8. Write down the chemical reaction that takes place between sodium sulphate and barium chloride. What is the colour of the precipitate formed in this reaction? Name the precipitate.

Ans:

- Na_2SO_4 (aq) + $BaCl_2$(aq) $\longrightarrow$ $BaSO_4$ (s) + 2NaCl(aq)
- The colour of the precipitate is white. The precipitate formed is Barium sulphate.

9. Write the molecular formula of bleaching powder. How is bleaching powder prepared?

Ans: The molecular formula of bleaching powder is $CaOCl_2$.

Bleaching powder is synthesized by the action of Chlorine gas (produced from the chlor-alkali process) on dry slaked lime, $Ca(OH)_2$. The chemical equation is as follows:

$Ca(OH)_2 + Cl_2 \longrightarrow CaOCl_2 + H_2O$

10. Why are carbon and its compounds used as fuels for most applications?

Ans: Carbon and its compounds are used as fuels for most applications due to the following reasons:

- Carbon and its compounds give out a lot of heat energy and light energy when they are burnt in air.
- Carbon and its compounds are easy to handle.
- Carbon and its compounds burn with a clean flame and no smoke is produced.

11.i)The pH of a sample of tomato juice is 4.6. How is this juice likely to be in taste? Give reason to justify your answer.

(ii) How do we differentiate between strong and weak acids and bases in terms of ion formation in aqueous solution?

(iii) Why do HCl , HNO_3 etc show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character.

Ans: i) The tomato juice with a pH of 4.6 is considered to be an acid and therefore will taste sour .

ii) The strength of acids and bases depends on the number of H^+ ions and OH^- ions produced respectively.

iii) HCl, HNO_3, etc show acidic nature because they get dissolved in the aqueous solution and produce the hydrogen ions. The hydrogen ions are responsible for the acidic nature of the compounds.

12. Metal Compound 'A' reacts with dilute HCl to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction.

Ans: Since the gas evolved is with effervescence and extinguishes burning candle, it is expected to be CO_2 gas. As Calcium Chloride ($CaCl_2$) is formed as one of the products, this means that the substance 'A' can be Calcium carbonate ($CaCO_3$). It reacts with dilute hydrochloric acid as:

$CaCO_3(s) + 2HCl\ (aq) \longrightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$

13. Name the gas used by chips manufacturers to flush into bags of chips. Why is this done?

Ans: The gas used is Nitrogen(N_2) gas.

When food materials prepared in oils and fats are kept for a long time, they undergo a process called Rancidity which gives them a stale smell. This happens due to oxidation of oils and fats by the oxygen present in the air. To prevent rancidity, nitrogen gas is flushed into bags of chips as it prevents oxidation of fats and oils.

14. What is a precipitate? Give an example of a reaction in which a precipitate is formed.

Ans: Insoluble salts can be produced by precipitation reaction when aqueous solutions of two ionic compounds react by exchanging their radicals/ ions. Such an insoluble salt formed is called a precipitate.

Example: Na_2SO_4 (aq) + $BaCl_2$ (aq) $\longrightarrow$ 2NaCl (aq) + $BaSO_4$ ($\downarrow$)

15. What would you observe when zinc is added to a solution of Iron (II) sulphate? What type of reaction is this? Write the chemical reaction involved.

Ans: Zinc is more reactive than iron. Therefore, when zinc is added to the solution of Iron sulphate Zinc displaces iron from the Iron sulphate solution forming iron and a colourless solution of zinc sulphate.

This reaction is an example of a single displacement reaction.

The reaction is: $FeSO_4 + Zn \longrightarrow Fe + ZnSO_4$

16. Differentiate between Roasting and calcination.

Ans: The major differences between Calcination and Roasting are as follows:

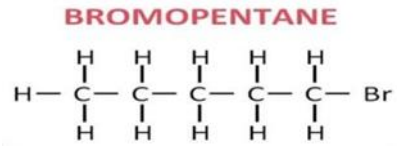
Calcination	Roasting
1. Calcination is a process in which ore is heated in the absence of air or limited supply of air	1. Roasting involves the heating of the ore in the presence of air or oxygen
2. Calcination involves t decompositio n of carbonate ores.	2. Roasting is carried out for sulphide ores
3. During calcination, carbon dioxide is given out.	3.During Roasting, large amounts of toxic , metallic and acidic compounds are released.

17. Draw the structure of the following compounds:

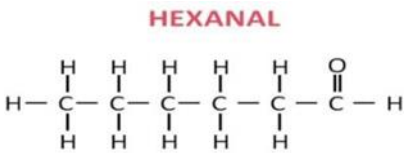
(i) Bromopentane
(ii) Hexanal
(iii) Butanone

Ans:

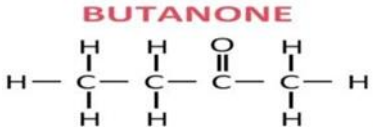
(i)



(ii)



(iii)



18. How are coal and petroleum formed?

Ans:

- **Coal** was formed from dead plants that got buried under soil during natural disasters such as flooding. As more soil deposited over them, they were compressed. The temperature also rose as they sank deeper. Under high temperature and pressure, dead plants got slowly converted to coal.
- **Petroleum** was formed from living organisms living in the sea. As these organisms died, their bodies settled at the bottom of the sea and got covered with layers of sand and clay. Over millions of years, absence of air , high temperature and pressure transformed the dead organisms into petroleum and natural gas.

19. Explain in brief the mechanism of cleansing action of soap.

Ans: Soaps are molecules in which the two ends have different properties , one is hydrophilic , that is it interacts with water and the other end is hydrophobic, that is it interacts with hydrocarbons. When soap is dissolved in water, its hydrophobic ends attach themselves to the dirt .Then the molecules of soap arrange themselves in micelle formation and trap the dirt at the centre of the cluster. Soap in the form of micelle is therefore able to clean because of this unique orientation. The micellesstay in solution and the dirt particles are the easily rinsed away by water.

20. How does ethanoic acid react with carbonates and hydrogen carbonates? Write a chemical equation for each reaction.

Ans: Ethanoic acid reacts with carbonates and hydrogen carbonates to form salt, carbon dioxide and water. The salt produced is commonly called sodium acetate.

The chemical reactions are shown below:

Reaction of ethanoic acid with sodium carbonate:

$$2CH_3COOH + Na_2CO_3 \longrightarrow 2CH_3COONa + H_2O + CO_2$$

Reaction of ethanoic acid with sodium hydrogen carbonate:

$$CH_3COOH + NaHCO_3 \longrightarrow CH_3COONa + H_2O + CO_2$$

[Biology]

21.Give three events that occur during the process of photosynthesis.

Ans:- The three events that occur during the process of photosynthesis are:

- Absorption of light energy by chlorophyll
- Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.
- Reduction of carbon dioxide to carbohydrates.

22. Name the glands present in the walls of the

stomach. What enzyme does it produce? Give two functions of HCl produced in the stomach.

Ans:-

- The glands present in the walls of the stomach are the gastric glands.
- It produces the enzyme Pepsin.
- Two functions of HCl are :-

i. It creates an acidic medium which facilitates the action of the enzyme Pepsin

ii. It kills the germs that might have entered the stomach along with the food.

23. What are the differences between Autotrophs and Heterotrophs? Give one example for each.

Ans:- Autotrophs are organism which use carbon dioxide and water to form carbohydrates in the presence of sunlight and chlorophyll. Example plants.

Heterotrophs are organism that depends on other organism for their food. Example animals.

24. Name the organ that produces Bile. Give two functions of Bile.

Ans:- Liver produces Bile.

The two functions of Bile are

i. Food that comes from stomach are acidic and has to be made alkaline for pancreatic enzyme to act. This is made alkaline by Bile.

ii. Bile helps in the emulsification of fat globules i.e. breaking fats into smaller globules.

25. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Ans:- It is necessary to separate oxygenated and deoxygenated blood in mammals and birds because of the following reasons:

- Mammals and birds are warm blooded animals that constantly need to maintain their body temperature.
- These organisms need a large amount of oxygen foe cellular respiration to bring out more energy to maintain their body temperature

In animals, like amphibians that do not use energy for these purposes can tolerate mixing of oxygenated and deoxygenated blood.

26. Give three differences between Arteries and Veins.

Ans:- The three differences between Arteries and Veins are :

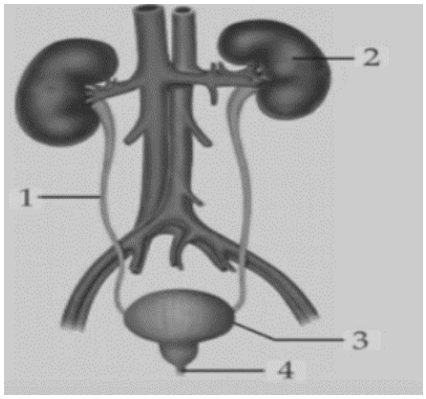
Arteries	**Veins**
1.They carry oxygenated blood	1.They carry deoxygenated blood
2.They carry blood from the heart to various organs	2.They collect blood from different organs and bring it to the heart
3.They have thick elastic walls	3.They have thin walls

27. What is insulin? What is its function? What happens if insulin is not secreted in proper amount?

Ans:-

- Insulin is a hormone which is produced by pancreas.
- It helps in regulating blood sugar levels.
- If it is not produced in proper amount, the sugar level in the blood rises causing many harmful effects.

28. What is excretion? In the given diagram, identify the parts 1,2,3,4



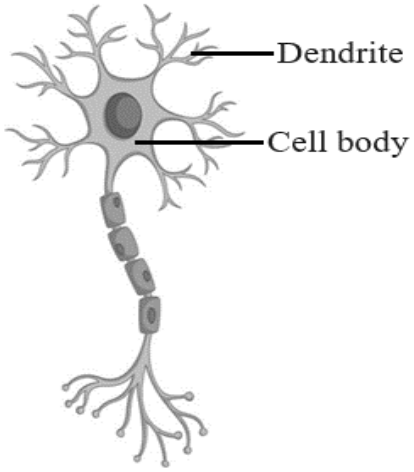
Ans: The biological process involved in the removal of harmful metabolic waste from the body is called excretion.

Parts in the given diagram:

1- Right ureter 2 – Left Kidney 3 – Urinary bladder 4 – Urethra

29. What is neuron? Draw the structure of a neuron and name the parts: (i) Cell body and (ii) Dendrites

Ans:- Neuron is the structural and functional unit of the nervous system.



30. Differentiate between self pollination and cross pollination. Name two agents of pollination.

Ans:-

- If the transfer of pollen grains occur in the flowers of the same plant, it is called self-pollination.
- If the transfer of pollen grains occurs in the flowers of a different plant, it is called cross pollination.
- The two agents of pollination are wind and insects.

31. Give three advantages of vegetative propagation.

Ans:- The three advantages of vegetative propagation are:

i. Plants raised by vegetative propagation can bear flowers and fruits earlier than those produced from seeds.

ii. It makes possible the propagation of plants such as banana, orange, rose, and jasmine that have lost the capacity to produce seeds.

iii. All plants produced are genetically similar enough to the parent plant to have all its characteristics.

32. What are the different methods of contraception?

Ans:- The different methods of contraception are:

i. By creating a mechanical barrier so that sperms do not reach the eggs. Condoms and other similar coverings can prevent sperms reaching the egg.

ii. By changing the hormonal balance of the body so that the eggs are not released and fertilization cannot occur. These are drugs that can be taken orally as pills.

iii. Surgical methods can be used to block vas deference in males and fallopian tubes in female which in both cases fertilization will not take place.

33. State three differences between Aerobic and Anaerobic respiration.

Aerobic respiration	**Anaerobic respiration**
It occurs in the presence of oxygen	It occurs in the absence of oxygen
Glucose is broken down into carbon dioxide and water	Glucose is incompletely oxidised to ethanol or lactic acid
A large amount of energy is released	Very little amount of energy

34. After fertilization, what happens to the Zygote? What happens to the ovule and ovary?
What happens to the petals, sepals, stamens, style and stigma?

Ans:

- After fertilization, the zygote divides several times to form an embryo within the ovule.
- The ovule develops a tough coat and forms seeds. The ovary ripens to form a fruit.
- The petals, sepals, stamens and style may shrivel and fall off.

35. What is a reflex action? Trace the sequence of events which occur when a bright light is focuses on your eyes.

Ans:

- Reflex action is a rapid automatic response to a stimulus.
- When light is focuses in our eyes, the receptor relay impulses via sensory nerves to the central nervous system (CNS) and the CNS transmits message (in the form of impulses) to the effectors (muscles in the eye). These muscles reduce the size of the pupil and activates muscles to close the eyes.

36. What is fission? Differentiate between binary and multiple fission.

Ans: Fission is a mode of asexual reproduction in which unicellular organisms divide to create new individuals.

(B) Binary fission is a type of fission where the organism simply split into two equal

halves during cell division eg. Amoeba.

Multiple fission is a type of fission where the organism divides into many daughter cells simultaneously. Eg. Plasmodium.

37. Different between Food chain and food web (any 3 points)

Food Chain	**Food Web**
1. It is a linear sequence of energy transfer	1. It is a complex network of inter connected food chains.
2. Food chain is a simple straight chain	2. It is a complex interconnected food chain
3. May consist of 4-6 trophic levels	3. Consists of numerous trophic levels.

38. How is the sex of the child determined in human beings?

Ans: Human beings have 23 pairs of chromosomes. 22 pairs are perfect pairs, but the sex chromosomes in men have one x (normal) and one Y (short one). Women have perfect pair of sex chromosomes both called X. All children will inherit X chromosomes from mother regardless of whether they are boys or girls. Thus, sex of children will be determined by what they inherit from their father. If they inherit and X chromosomes from their father, they will be girls. It they inherit a Y chromosome they will be boys.

39. How is ozone produced in the environment? What causes its depletion?

Ans: The UV radiation from the sun splits apart some molecular Oxygen (O_2) into oxygen atoms (O). The atoms then combine with molecular oxygen to form ozone.

$$O_2 \xrightarrow{UV} O + O$$
$$O + O_2 \longrightarrow O_3 \text{ (Ozone)}$$

Its deplete-on is caused by synthetic chemicals like chlorofluorocarbon (CFC) which are used in refrigerants and in fire extinguisher.

40. Differentiate between pollination and fertilization.

Ans.

Pollination	**Fertilization**
1 It is the transfer of pollen grain from anther to the stigma of a flower	1 It is the fusion of male and female gametes
2 It is a physical process	2 It is a biological process
3 It occurs only in seed plants	3 It occurs in plants and animals of various types

[Physics]

41. What is refraction of light? State the laws of refraction of light.

Ans. The bending of light when it passes from one medium to another medium is called refraction of light.

The following are the laws of refraction of light:

(i) The incident ray, the refracted ray and the normal to the interface of two transparent media at the point of incidence, all lie in the same plane.

(ii) The ratio of sine of angle of incidence to the sine of angle of refraction is a constant, for the light of a given colour and for the given pair of media.

42. Give two uses of a concave mirror. Why do we prefer a convex mirror as a rear view mirror in automobiles?

Ans. Two uses of a concave mirror are:

- Concave mirrors are commonly used in torches, search-lights and vehicles headlights.
- Dentists use concave mirrors to see large images of the teeth of patients.

Convex mirrors enable the driver to view much larger area than would be possible with a plane mirror.

43. What is optical density? Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass?

Ans. The ability of a medium to refract light is known as optical density.

Refractive index of a glass, n =1.50

Using the expression,

$$n = \frac{\text{speed of light in vacuum (c)}}{\text{speed of light in glass (v)}}$$

$$v = \frac{c}{n} = \frac{3x10^8}{1.5}$$

v = 2 x 10^8 m/s

44. (i) Define 1 dioptre of power of a lens.
(ii) A doctor has prescribed a corrective lens of power +1.5 D, find the focal length of the lens. Is the lens converging or diverging lens?

Ans. 1 dioptre is the power of a lens whose focal length is 1 metre

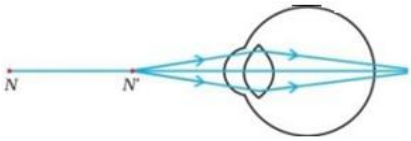
Power,

$$P = \frac{1}{f}$$

$$f = \frac{1}{P} = \frac{1}{1.5} = 0.66 \text{ m},$$

The lens is converging as it is positive.

45. Study the diagram below and answer the questions that follow.

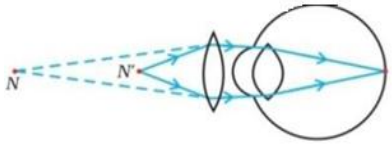


a) Name the defect of vision shown in the diagram.
b) List one cause of this defect
c) With the help of a diagram, show how this vision can be corrected.

Ans. (a) Hypermetropia

(b) The focal length of the eye lens is too length.

(c)



46. (a)What is the far point and near point of human eye with normal vision?

(b) A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from? How can it be corrected?

Ans. (a) The near point of the eye is the minimum distance of the object from the eye, which can be seen distinctly without strain. For a normal human eye, this distance is 25 cm. The far point of the eye is the maximum distance to which the eye can see objects clearly. The far point of the normal eye is infinity.

(b)He is suffering from myopia. This defect can be corrected by using a concave lens.

47.Explain why planets do not twinkle.

Ans. Planets do not twinkle because they appear larger in size than the stars as they are relatively closer to earth. Planets can be considered as a collection of a large number of point-size sources of light. The different parts of these planets produce either brighter or dimmer effect in such a way that the average of brighter and dimmer effect is zero. Hence, the twinkling effects of the planets are nullified and they do not twinkle.

48.Why do stars twinkle?

Ans. Stars emit their own light and they twinkle due to the atmospheric refraction of light. Stars are very far away from the earth. Hence, they are considered as point sources of light. When the light coming from the stars enters the earth's atmosphere, it gets refracted at different levels because of the variation in the air density at different levels of the atmosphere. When the star light refracted by the atmosphere comes more towards us, it appears brighter than when it comes less towards us, therefore, it appears as if the stars are twinkling at night.

49.Define dispersion of light. Explain in brief the formation of a rainbow.

Ans. The splitting of white light into its component colours is called dispersion.

A rainbow is a natural spectrum appearing in the sky after a rain shower. It is caused by dispersion of sunlight by tiny water droplets, present in the atmosphere.

50. State Ohm's law. How much current will an electric bulb draw from a 220 V source, if the resistance of the bulb filament is 1100 **Ω**.

Ans. The potential difference, V, across the ends of a given metallic wire in an electric circuit is directly proportional to the current flowing through it; provided its temperature remains the same.

This is called Ohm's law.

Using,V=IR

$$220V = I \times 1100\Omega$$

$$I = \frac{220}{1100} = 0.2 \text{ A}$$

51. What are the advantages of connecting electrical devices in parallel with the battery instead of connecting them in series?

Ans. There is no division of voltage among the appliances when connected in parallel. The potential difference across each appliance is equal to the supplied voltage.

The total effective resistance of the circuit can be reduced by connecting electrical appliances in parallel.

52. Why does the cord of electric heater not glow while the heating element does?

Ans. The heating element of an electric heater is a resistor. The amount of heat produced by it is proportional to its resistance. The resistance of the heating element is very high. As the current flows through the heating element, it becomes too hot and glows red. On the other hand, the resistance of the cord is low. It does not become red when the current flows through it.

53. Which uses more energy, a 250 W TV set in 1 hour or a 1200 W toaster in 10 minutes?

Ans. Energy consumed by an electrical appliance is given by the expression,

E=Pt, where,

Power of the appliance=P; Time=t

Energy consumed by a TV set of power 250 W in 1 hour =250 W x1 hour

Energy consumed by a toaster of power 1200W in 10 minutes = 1200 W x 10min

Therefore, the energy consumed by a 250 W TV set in 1h is more than the energy consumed by a toaster of power 1200 W in 10 minutes.

54. What is electrical resistivity? In a series electrical circuit comprising a resistor made up of a metallic wire, the ammeter reads 5A. The reading of the ammeter decreases to half when the

Length of the wire is doubled. Why?

Ans. The inherent property of a conductor because of which it resists the flow electric current is called resistivity.

The resistance is directly proportional to its length of the conductor and current varies inversely proportional to the resistance. So, when the length of the wire is doubled its resistance becomes doubled. When the resistance becomes doubled, current becomes half.

55. What is the commercial unit of electrical energy? Represent it in terms of joules

Ans. The commercial unit of electrical energy is kilowatt-hour (KWh)

1 KWh = 1x1000W x 60x60 s= 3.6 x 10^6 J

56. (i) On what factors does the resistance of a conductor depend? (ii) Find the equivalent resistance of 1Ω and 10^6 Ω when they are connected in parallel.

Ans (i)The resistance of the conductor depend upon the following factors:

- Length of the conductor
- cross-sectional area of the conductor
- material of the conductor
- temperature of the conductor

(ii) When R_1 and R_2 connected in parallel, the equivalence resistance R is given by

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$R = \frac{10^6}{10^6+1} \approx 1\,\Omega$$

57. (i)List two properties of magnetic field lines. (ii) Why two magnetic field lines cannot intersect each other?

Ans. (i) Two properties of magnetic field lines are

- Magnetic lines are closed curves.
- They merge at the south poles

(ii) The two filed lines cannot intersect each other because if they did so, it means that at the point of intersection, the compass needle would point towards two directions which are not possible.

58. (i)What is an electromagnet? (ii) Name two devices that use current – carrying conductors and magnetic fields.

Ans.

i. An electromagnet is a material which consists of a core of soft iron wrapped around with a coil of insulated copper wire whose current flows through the wire.
ii. Electric motors and Electric generators.

59. What is overloading? When can it occur?

Ans: A flow of large amount of current in a circuit beyond the permissible value of current is called overloading

Overloading can occur:

a. when the live wire and the neutral wire come into direct contact due to damaged wire insulation or there is fault in the appliance
b. due to accidental hike in the supply voltage

60. What is earthing?Why is earthing of electrical appliances necessary?

Ans: When the body of an electrical device is connected to the earth that is at zero potential by a wire it is called earthing.

The metallic body of appliances is connected to the earth wire,which provides a low resistance conducting path for the current.Thus it ensures that any leakage of current to the metallic body keeps its potential to that of the earth and the user may not get a severe electric shock.

* * *

Section-D
Long Answer Questions (4 Marks)

1.(i) What are amphoteric oxides? Give two examples.

(ii). Why platinum, gold and silver are used to make jewellery? Give reasons.

Ans: (i). The oxides which behave as both acidic and basic oxides are called amphoteric oxides.

Examples: Aluminium oxide (Al_2O_3), Zinc oxide (ZnO).

(ii). Gold, silver and platinum are least reactive metals. They do not react with air, water, acids, alkalis and other gases in the environment. Due to this reason their shine lasts for years. Due to bright lustre and resistance towards corrosion, gold, silver and platinum are used to make jewellery.

2. On adding a drop of barium chloride solution to an aqueous solution of sodium sulphate, white precipitate is obtained. Write a balanced chemical equation of the reaction involved. What other name can be given to this precipitation reaction? On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?

Ans: $Na_2SO_3(aq)$ + $BaCl_2(aq)$ → $BaSO_3(s)$ + 2 NaCl(aq)

(Sodium sulphate) (Barium chloride) (Barium sulphate) (Sodium chloride)

This reaction is also known as double displacement reaction. Barium sulphate when treated with dilute HCl forms barium chloride and liberates sulphur dioxide which has a characteristics odour of burning sulphur. This reaction occurs as follows:

$BaSO_3(s)$ + 2HCl → $BaCl_2(aq)$ + $H_2O(l)$ + $SO_2(g)$

Since $BaCl_2$ is soluble in water, the white precipitate disappears.

3. A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product by chloroalkali process. Identify B. What type of reaction occurs when B is treated with an acidic oxide? Write a balanced chemical equation for one such solution.

Ans:

- Sodium hydroxide is a by product of chloroalkali process. When it is kept in open, it absorbs moisture and turn sticky.
- When sodium hydroxide is treated with carbon dioxide, it gives sodium carbonate. It is important to remember that carbon dioxide is an acidic oxide.
- $2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$ ▪ Since this reaction is between a basic compound and an acidic compound, hence it is a neutralization reaction.
- B is sodium hydroxide.

4. Compound X and aluminium are used to join railway tracks: a) Identify the compound X; b)Name the reaction; and c) Write down its reaction.

Ans: a) Compound X is iron oxide.(Fe2O3).

b) This reaction is called thermite reaction.

c) This reaction is given by the following equation:

2Al + Fe_2O_3 → 2Fe + Al_2O_3 + Heat.

5. (i) Define homologous series of carbon compounds.

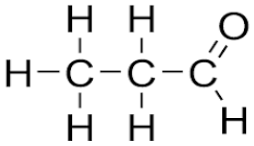
(ii) Why do we not see gradation in chemical properties of a homologous series compounds?

(iii) Write the name and structures of (a) Aldehydes and (b) ketones with molecular formula

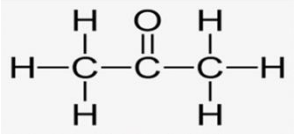
Ans: (i) A series of chemical compounds in which members differ from each other by CH_2 group is called a homologous series.

(ii) In homologues series we do not see the gradation in chemical properties, i.e, chemical properties remain the same because of the presence of the same functional group.

(iii) (a) ALDEHYDE --- PROPANAL



(b) KETONE ---- PROPANONE

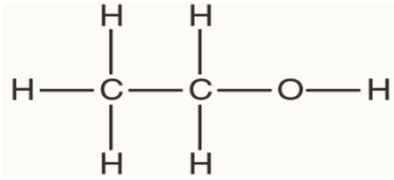


6. (i) write the name and structure of an organic compound ‘ X’ having two carbon atoms in its molecule and its name is suffixed with ‘*—ol’*.

(ii) what happens when ‘X’ is heated with excess concentrated sulphuric acid at 443k? write the chemical equation for the reaction , stating the

condition for the reaction also state the role played by concentrated sulphuric acid in the reaction.

Ans: i) Ethanol (C_2H_5OH)



ii) when X ,i.e, ethanol is heated with excess sulphuric acid at 443k, ethane is formed by the dehydration of ethanol

$$C_2H_5OH \rightarrow CH_2{=}CH_2 + H_2O$$

In the above reaction sulphuric acid acts as a dehydrating agent. it removes water from ethanol.

7. Esters are sweet smelling substances and are used in the making of perfumes. Suggest some activity and the reaction involved for the preparation of an ester with neat labelled diagram?

Answer: The following activity can be used for the preparation of Ester ---

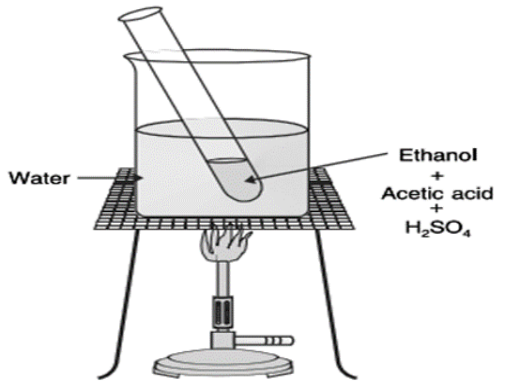
- Let us take 1ml ethanol and 1ml glacial acetic acid along with few drops of sulphuric acid in a test tube.
- The mixture is to be warmed in a water bath for five minutes.
- The mixture poured into a beaker containing 20-50ml of water and smell the resulting mixture.

The reaction is :

$$CH_2COOH + CH_3CH_2OH \rightarrow CH_3COOCH_2CH_5 + H_2O$$

(ethanoic acid) (ethanol) (ester)

$$CH_3COOH + C_2H_5OH \xrightarrow{\text{Conc. } H_2SO_4} CH_3COOC_2H_5 + H_2O$$



8. What are the major parts of the brain? Mention the function of Cerebellum.

Answer: The brain has three major parts or regions namely the fore brain, midbrain and hind brain. Cerebellum is a part of the hind brain, which is responsible for activities such as:-

i. Walking in a straight line.
ii. Riding a bicycle.
iii. Picking up a pencil.

It is responsible for precision of voluntary actions and maintaining the posture and balance of the body. It plays a major role in motor movement regulation and balance control.

9. What are reflex actions? Give two examples. Explain reflex arc.

Answer: Reflex action is an involuntary and sudden response to stimuli. They are sudden involuntary responses which does not involve thinking.

Example 1) When we touch a hot object we withdraw our hand immediately.

Example 2) Watering of mouth on seeing tasty food.

Reflex arcs are formed in the Spinal Cord. A reflex arc is the pathway that a reflex takes place in the body. Reflex arcs functions in order to maintain a balance and stable position. Reflex arcs starts when a sensory receptor picks up an external stimulation. This information is transmitted by a sensory neutron to the spinal cord.

10. Differentiate between inherited and acquired characteristics. Give an example of each type.

Answer:

- Acquired traits are the ones that a person develops during his life time. These are not passed from one generation to another.
- Examples of acquired skills are swimming, knowledge, cycling, etc. These traits cannot be passed on to their offspring.
- Inherited traits are traits that can be controlled by genes and inherited to the next generation from parents.
- The offspring born to the parents may have red curly hair, brown eyes, in humans. Fur patterns in animals are all inherited traits.

11. In the following crosses write the characteristics of progeny:-

Cross — Progeny

a) RRYY x RRYY _____

b) RrYy x RrYy _____

c) rryy x rryy

d) RRYY x rryy

Answer:

In the following crosses the characteristics of the progeny is

	Cross		Progeny
a)	RR YY	x	RR YY Round ,yellow Round yellow
b)	Rr Yy	x	Rr Yy Round, yellow Round yellow Round yellow Round ,
c)	rr yy	x	rr yy green Wrinkled yellow Wrinkled green Wrinkled, green Wrinkled green wrinkled green
d)	RR YY	x	rr yy Round , yellow Round yellow Wrinkled green

12. Indicate the flow of energy in an ecosystem . Why is it unidirectional? Justify.

Ans: The flow of energy in an ecosystem happens in the following sequence:

Sun → Producers→ Herbivores → Carnivores.

The energy is passed from first trophic level down to carnivores and this is said to be unidirectional as herbivores is dependent on producers and carnivore is dependent on herbivores. Further, at each energy transfer, the biological useful energy goes on decreasing making it impossible for energy to flow in the reverse direction.

13. What are decomposers? What will be the consequence of their absence in an ecosystem?

Ans: Decomposers are micro-organisms such as bacteria and fungi that obtain nutrients by breaking down the remains of dead plants and animals.

In the absence of decomposers recycling of materials will not take place which would lead to the accumulation of dead plants and animals in the environment. Additionally the environment would be finally sapped of all its resources which are needed to maintain and sustain life.

14. Suggest any four activities in daily life which are eco-friendly.

Ans: Activities in daily life that are eco-friendly are listed below:

i. Walking or cycling for short distances.
ii. Turning off fans and light when not in use.
iii. Usage of cloth bags instead of plastic bags.
iv. Making a kitchen garden.

15.(i) Define electric power. Express it in terms of potential difference (V) and resistance (R)

(ii) An electric oven is designed to work on the mains voltage of 220 V . This oven consumes 11 unit of electrical energy in 5 hours. Calculate

a) Power rating of the oven.
b) Current drawn.
c) Resistance of the oven when it is red hot.

Answers:

(i) Electric power is defined as the rate at which work is done as energy is dissipated or consumed in an electric circuit.

The power is given by P= V x I = I^2 x R = V^2/ R

(ii) Given:

Main voltage, V = 220 V

Electrical energy consumed = 11 units

Time = 5 hours

(a) We know, Energy E = P x t
Or, P = E/t
Or, P = 11/5
Or, P = 2.2 watt

(b) P = V x I (power= potential difference X current)
Or, 2.2 = 220 x I
Or, I = 2.2/220
Or, I = 2.2/220 (cancellation shown)
Or, I = 1/100
Or, I = 0.01 Amp

(c) P = I^2 x R (power = square of current x resistance)
Or, R = P/ I^2
Or, R = 2.2/ 1.01 x 0.01
Or, R = 22000 Ω

16.(i) Write then relation between resistance (**R**) and electrical resistivity (**ρ**) of the conductor in the shape of a cylinder of length ***l*** and area of cross section **A** . Hence derive the S.I unit of

electrical resistivity.

(ii) The resistance of a metal wire of length 3m is 60 Ω. If the area is cross section of the wire is $4x10^{-7}$ m^2, calculate the electrical resistivity of the wire.

(iii) State how the electrical resistivity be affected if the wire is stretched so that the length is doubled. Justify your answer.

Answer:

i) R = ρ x l/A

Where, R is the resistance

L is the length A is the area of cross section

P is the resistivity

R = ρ x l/A

Ω = ρ x m/m^2

Ωm= ρ

∴ The S.I. unit of resistivity is ohm metre or Ωm

ii) Length, l = 3m

Resistance, R = 60Ω

Area of cross section, A = 4 x 10^{-7} m^2

Electrical resistivity, ρ = ?

$$R = \rho \times \frac{1}{A}$$

Or, $60 = \rho \times \frac{3}{4 \times 10^{-7}}$

or, $\frac{60 \times 4x10^{-7}}{3} = \rho$

Or, 80 x 10^{-7} = ρ

Or, ρ = 8 x 10^{-6} Ωm

iii) We know:-

R = ρ X l/ A

The resistivity of the material will not change i.e will remain same as it is independent of the length or of the area of cross-section.

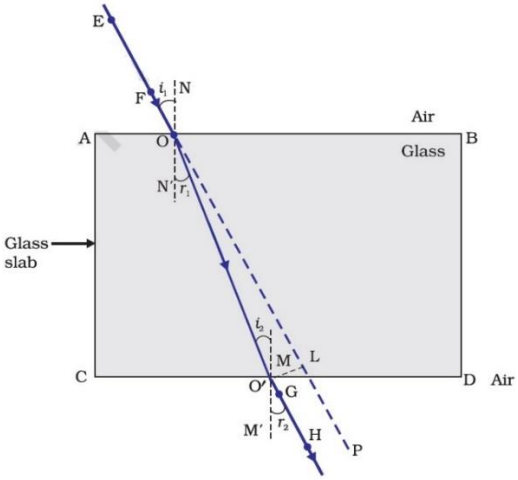
17. Write the laws of refraction of light. Explain the same with the help of ray diagram, when a ray of light passes through rectangular glass slab.

Answer:

The following are the laws of refraction of light :-

- The incident ray, the refracted ray and normal at the point of incidence, all lie in the same plane.
- The ratio of Sine of angle of incidence to the Sine of angle of refraction is a constant, for the light of given colour and for given pair of media.

$$\frac{\sin i}{\sin r} = Constant$$



In above figure, a ray EO is obliquely incident on surface AB, called incident ray. OO' is the refracted ray and O'H is the emergent ray. You may observe that the emergent ray is parallel to the direction of the incident ray.

Reason: The extent of bending of the ray of light at the opposite parallel faces AB (air-glass interface) and CD (glass-air interface) of the rectangular glass slab is equal and opposite. This is why the ray emerges parallel to the incident ray. However, the light ray is shifted sideward slightly.

18.Define power of a lens. What is its unit? One student uses a lens of focal length 50 cm and another of -50 cm. What is the nature of the lens and its power used by each of them?

Ans: Power of a lens is mathematically defined as the reciprocal of the focal length of the lens. SI unit of power of a lens is dioptre (D).

The focal length of the lens used by the first student is positive, so it is a convex lens. The lens used by the second student is negative so it is a concave lens.

P = 1/f

= 1/0.5

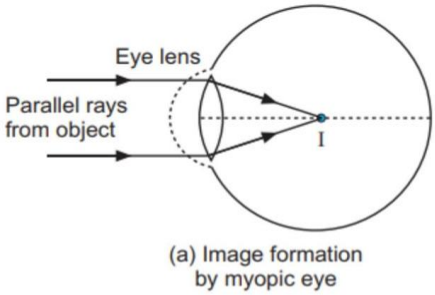
= 2

The power of lens used by first student = +2

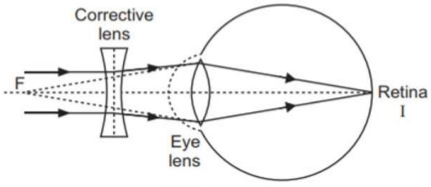
The power of lens used by second student = – 2

19. When do we consider a person to be myopic or hypermetropic? Explain using diagrams how the defects associated with myopic and hypermetropic eye can be corrected?

Ans: A person is considered to be myopic if he can see nearby or close objects but is unable to see the objects placed far away (short-sighted). A person is considered to be hypermetropic if he is not able to see nearby or close objects but is able to see distant objects clearly (Long-sighted). The short sightedness is corrected by using a concave lens, which diverges and shifts the image to the retina.



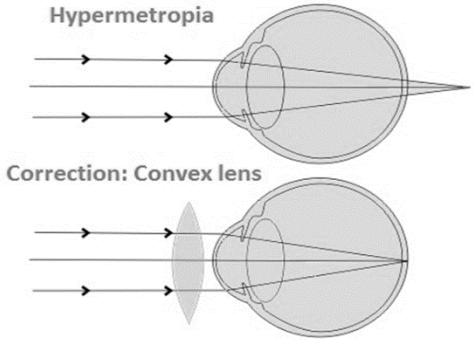
(a) Image formation by myopic eye



(b) Corrected myopia

(Short-sighted eye with correction using corrective concave lens)

Long-sightedness is corrected by using a convex lens, which converges and shifts the image to the retina.



(Long-sighted eye with correction using corrective convex lens.)

20. How can we explain the reddish appearance of sun at sunrise or sunset? Why does it not appear red at noon?

Ans: Since blue colour has shorter wavelength and red colour has a longer wavelength, the red colour is able to reach our eyes after the atmospheric scattering of light.

During noon hours, the distance to be travelled by the sun rays in atmosphere is less than when compared to morning and evening hours. Therefore all colours reached our eye without scattering. Hence light appear white in noon hours.

21. How does refraction take place in the atmosphere? Why do stars twinkle but not the planets? 4

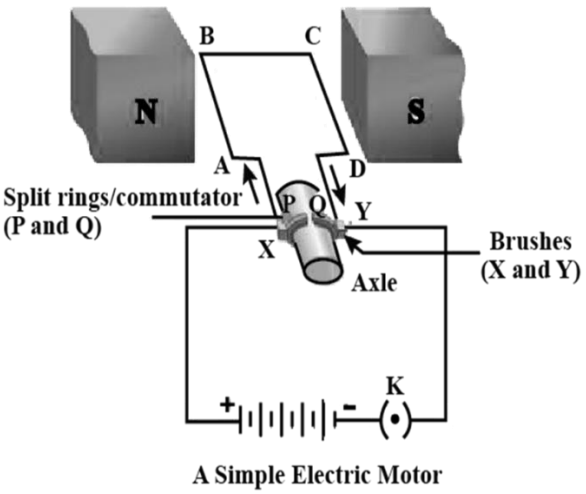
Ans: When sunlight enters the earth's atmosphere, it continuously goes from rarer to the denser medium and hence refraction of light takes place. The refraction of light taking place in the atmosphere is known as atmospheric refraction.

The twinkling of a star is due to atmospheric refraction. Distant stars act like a point source of light. As a beam of starlight keeps deviating from its path, the apparent position of stars keeps on changing because physical conditions of earth's atmosphere are not constant.Hence, the amount of light which enter our eyes fluctuates from bright to faint. This is the " Twinkling effect of star". But planets are much closer to us than stars, so they are not point-sized objects to our eyes. Hence the fluctuations have a negligible effect and they don't seem to twinkle.

22. What is a rainbow? How is it caused?

Ans: A rainbow is a natural spectrum appearing in the sky after a rain shower. It is caused by dispersion of sunlight by tiny droplets, present in the atmosphere. A rainbow is always formed in a direction opposite to that of the sun. The water droplets act like small prisms. They refract and disperse the incident sunlight, then reflect it internally, and finally refract it again when it comes out of the raindrop. Due to the dispersion of light and internal reflection, different colours reach the observer's eye.

23. Draw a labelled circuit diagram of a simple electric motor and explain its working.



A Simple Electric Motor

Working of the Electric motor:

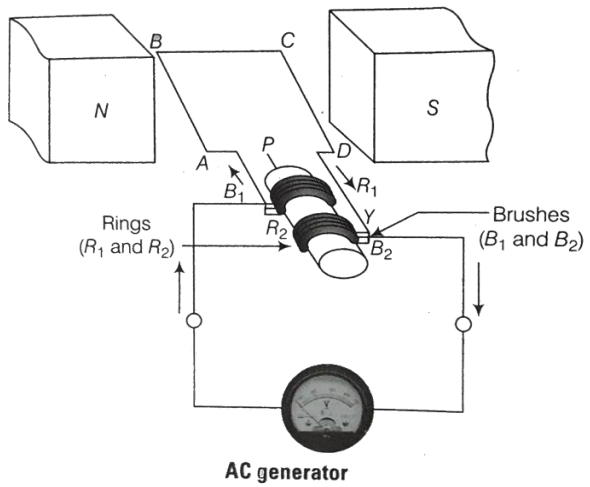
The coil when powered, a magnetic field is generated around the armature. The left side of the armature is pushed away from the left magnet and

drawn towards the right, causing rotation. The coil turns through 90 degrees, the brushes lose contact with the commutator and the current stops flowing through the coil. However, the coil keeps turning because of its own momentum. Now when the coil turns through 180 degrees, the sides get interchanged. As a result, the commutator ring P is now in contact with brush Y and commutator ring Q is in contact with brush X. Therefore, the current continues to flow in the same direction.

24. Draw the circuit diagram of an AC generator. State the principle of an electric generator.

What changes must be made in the arrangement to convert it to a DC Generator?

Ans:



Principle of an AC generator:

According to the Faraday's law of electromagnetic induction, a conductor whenever moves in a magnetic field EMF (electromagnetic force) gets induced across the conductor. If a close path is provided to the conductor, induced EMF causes current to flow in the circuit.

Conversion of AC generator to DC generator:

The split ring commutator can be used instead of the slip rings so that the direction of current is not reversed every half of the cycle and thus we can get DC current that flows only in the same direction.

25. Explain the mechanism of photosynthesis.

Ans. Photosynthesis takes place in the green leaves of plant. It is the process by which green plants make their own food from carbon dioxide and water in the presence of chlorophyll and sunlight.

The chemical equation is:

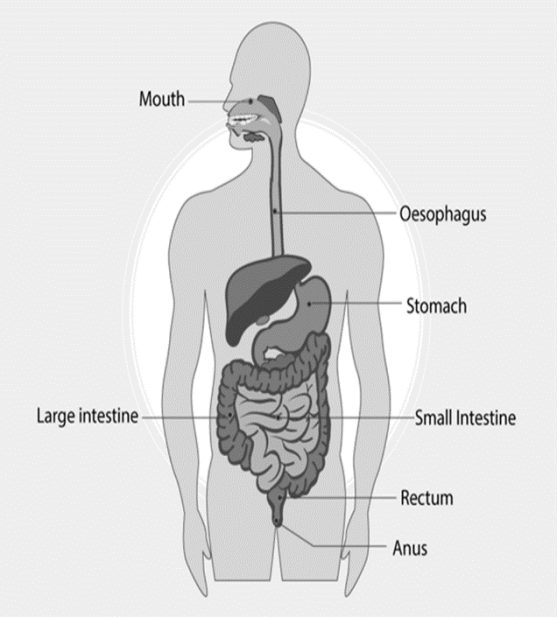
$$6CO_2 + 12H_2O \rightarrow (CH_2O)_6 + 6H_2O + 6O_2$$

Mechanism of photosynthesis:

Carbon dioxide, water, sunlight is utilised in the presence of chlorophyll to form glucose, oxygen is evolved as a by product. Carbon dioxide required is taken from the atmosphere into the leaves through tiny pores called stomata. Water is absorbed from the soil by the roots and then transported to the leaves. The green pigment present in the leaves absorbs the sunlight. The absorbed light energy is used in splitting water into hydrogen and oxygen and then gets converted into chemical energy. The carbon dioxide is reduced by hydrogen to form carbohydrates like glucose by utilising chemical energy which is obtained by the transformation of light energy

26. Draw the diagram of alimentary canal of man and label the following parts: mouth , oesophagus,stomach, and intestine.

Ans.



27. Why are budding, fragmentation, regeneration all considered as a sexual type of reproduction? With neat diagram explain the process of regeneration in planaria.

Ans: Reproduction by which off spring arise from a single celled organism, and inherit the genes of that parent only, and does not involve fusion of gametes is known as a sexual reproduction. Budding, fragmentation and regeneration are considered as asexual types of reproduction because all of them involve only single parent unlike sexual reproduction and no formation of gametes.

Regeneration in Planaria-(Fig 7.3 text book page number117)

Here the body of planaria cut into pieces and each piece has the ability to grow into new organism. In the figure above planaria body is cut into 3 pieces which regenerates into 3 individual cells. The cells proliferate (multiplying or increasing in number) and make large number of cells. The mass of cells formed, different cells undergo changes to become various cell types and tissues. These changes take place in an organised sequence referred to as development

28. Write two points of difference between asexual and sexual types of reproduction. Describe why variation are observed in the offspring formed by sexual reproduction.
2+2=4

Ans.

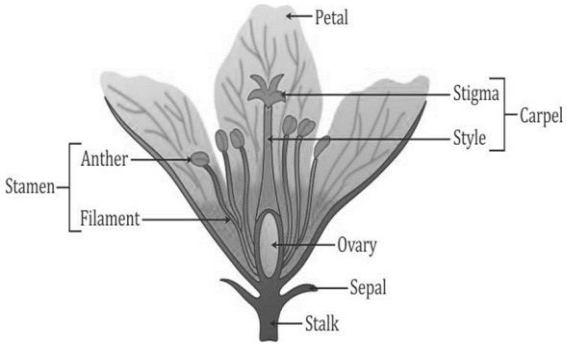
Asexual reproduction	**Sexual Reproduction**
Involves only one parent	Often involves two parents
Gametes are not produced	Gametes are produced
No fertilisation and zygote formation	Fertilisation and zygote formation is observed
Meiosis does not occur at anytime during reproduction	Meiosis occurs at the time of gamete formation

(A) In asexual reproduction ,single parents produce offspring
Offspring's are exact copy of their parents.
The fusion of gametes does not take place
Sexual reproduction, there is involvement of two parents.
This process causes mixing of characters and hence offspring are not like their parents.
In this method fusion of male and female gametes take place.

(B) Variations are seen in the offspring formed by sexual reproduction because, Though fusion of male and female gametes takes place, it causes mixing of parent characters that is
Crossing over that occurs during meiosis result in additional variation where two parents contribute to the gene pool.

Variation is also influenced by DNA replication.

29. Draw the diagram of a flower and label it. Name the four whorls. Write the names of gamete producing organs in the flower.
Ans.



The four whorls of a flower are Calyx, Corolla, Androecium and Gynoecium.
Gamete producing organs of a flower
The anther (the male gamete producing organ) and ovary (female gamete producing organ) are the gamete producing organs in the flower.

30.(i) Give two differences between aerobic and anaerobic respiration; (ii) How are water and minerals transported in plants? (iii) What is excretion?
Ans. (i)

Aerobic Respiration	**Anaerobic Respiration**
1 It occurs in the presence of oxygen, where oxygen is utilised	1 It occurs in the absence of Oxygen
2 Energy released in larger amount.	2 Energy released in lesser amount.

(ii) Xylem transports water and Phloem transports food materials.
(iii) Excretion is the removal of harmful metabolic waste from the body of an organism.

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Sample Question Paper

(SSLC Examination 2024-25)

Science & Technology

(New course - NCERT Textbook)

by

Meghalaya Board of School Education (MBOSE)

A. The Scheme of Examination

	Maximum Marks	**Pass Marks**
Theory Examination	80	24
Internal Assessment	20	6
Total	100	30

B. Scheme of Theory Examination

Section	**Type of Questions**	**Marks for Each Question**	**No. of questions to be attempted/ No. of questions given**	**Total Marks**
Section-A	Multiple choice Questions (MCQs)	1	30/30	1x30=30
Section-B	Very Short Answer Questions	2	10/14	2x10=20
Section-C	Short Answer Questions	3	6/9	3x6=18
Section-D	Long Answer Questions	4	3/5	4x3=12
Total Marks				**80**

C. Scheme of Internal Assessment

Marks for internal assessment can be internally assessed through anyone of the following:

1. Project Work
2. Written Tests
3. Assignments (Class or Home Work)

While Assessing, the weightage to different chapters may be given as provided in "D. Content Weightage in Theory Examination".

Different types of Projects Works

- Class/Interclass discussion and debates.
- Preparations of a reports, charts, posters and Diagrams based on lessons.
- Conducting Activities mentioned in the Textbook.

D. Content Weightage in Theory Examination

The chapter-wise weightage shown below is only indicative for the purpose of information of teachers while prioritising different chapters during teaching or assessment. Though the weightage in Theory Examination conducted by MBOSE would broadly follow the following pattern, there may still be some variation.

Syllabus	Marks (80)
Chapter 1: Chemical Reacions & Equations Chapter 2: Acids, Bases and Salts Chapter 3: Metals and Non-metals Chapter 4: Carbon and its Compunds	26
Chapter 5: Life Processes Chapter 6: Control and Coordination Chapter 7: How do Organisms Reproduce? Chapter 8: Heredity Chapter 13: Our Environment	28
Chapter 9: Light – Reflection and Refraction Chapter 10: The Human Eye and the Colourful World Chapter 11: Electricity Chapter 12: Magnetic Effects of Electric Current	26

Sample Question Paper

Science & Technology
(New Course – NCERT Textbook)
Class-X
Question Paper Code: XY

Time: 3 hours **Max Marks: 80 (Pass Marks: 24)**

General Instructions:

1. Please check that this Question Paper contains 56 Questions.
2. Question Paper Code given above should be written on the Answer Book, in the space provided, by the Candidate.
3. 15 minutes time is given for the candidates to read the Question paper. The Question Paper will be distributed 15 minutes before the scheduled time of the examination. In these 15 minutes, the candidates should only read the instructions and questions carefully and should not write answers on the Answer Sheet.
4. The Question Paper contains 4 sections, Section A, B, C and D.
5. Section-A contains Multiple Choice Questions (MCQ). Choose the most appropriate answer from the given options. The answers to this Section must be provided in the boxes provided in the Answer Sheet. Answers provided anywhere else will not be counted for marking.
6. Section-B contains Very Short Answer Questions. Answer the questions briefly, in not more than 30 (thirty) words.
7. Section-C contains Short Answer Questions. Answer the questions in not more than 50 (fifty) words each.
8. Section-D contains Long Answer Questions. Answer the questions in not more than 70 (seventy) words each.

Section- A

Multiple Choice Questions: Attempt **ALL** Questions. (30 X 1 = 30 marks)

7. Which of the following is not a physical change?
   A. Boiling of water to give water vapour
   B. Melting of ice to give water
   C. Dissolution of salt in water
   D. Combustion of Liquefied Petroleum Gas (LPG)

8. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberatedduring electrolysis of water is
   (A) 1:1 (B) 2:1
   (C) 4:1 (D) 1:2

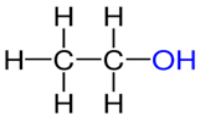
9. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
   (A) The temperature of the solution increases
   (B) The temperature of the solution decreases
   (C) The temperature of the solution remains the same
   (D) Salt formation takes place
   A. (i) only (B) (i) and (iii)
   (C) (ii) and (iii) (D) (i) and (iv)

10. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
   (A) Baking powder
   (B) Lime
   (C) Ammonium hydroxide solution
   (D) Hydrochloric acid

11. Which of the following salts does not contain water of crystallisation?
   (A) Blue vitriol (B) Baking soda
   (C) Washing soda (D) Gypsum

12. Which of the following property is generally not shown by metals?
   (A) Electrical conduction
   (B) Sonorous in nature
   (C) Dullness
   (D) Ductility

13. The ability of metals to be drawn into thin wire is known as
   (A) ductility (B) malleability
   (C) sonority (D) conductivity



14. Which one of the following metals do not react with cold as well as hot water?
   (A) Na (B) Ca
   (C) Mg (D) Fe

15. Name the below compound from its structure:

   (A) Ethane (B) Ethanol
   (C) Ethene (D) Propanol

16. Buckminsterfullerene has _____ atoms in its molecule.
   (A) 30 (B) 960
   (C) 300 (D) 60

17. Which change occurs in the respiratory rate due to the construction of the diaphragm and rib muscles?

   (A) Increases (B) Decreases
   (C) Remain the same (D) None of the above

18. The kidneys in human beings are a part of the system for
   (A) Nutrition (B) Respiration
   (C) Excretion (D) Transportation

19. The breakdown of pyruvate to give carbon-dioxide, water and energy take place in

   (A) Cytoplasm (B) Mitochondria
   (D) Nucleus C) chloroplast

14. Electrical impulse travels in a neuron from
   (A) Dendrite→ axon→ axonal end→ cell body
   (B) Cell body→ Dendrite → axon→ axonal end
   (C) Dendrite →Cell body→ axon→ axonal end
   (D) Axonal end→ axon → Cell body→ Dendrite

15. Posture and balance of the body is control by
   (A) Cerebrum (B) Cerebellum
   (C) Medulla oblongata (D) Pons

16. Which of the following is the correct sequence of events of sexual reproduction in a flower?

(A) pollination, fertilisation, seedling, embryo
(B) seedling, embryo, fertilisation, pollination
(C) pollination, fertilisation, embryo, seedling
(D) embryo, seedling, pollination, fertilization

17. In Spirogyra, asexual reproduction takes place by
(A) breaking up of filaments into smaller bits
(B) division of a cell into two cells
(C) division of a cell into many cells
(D) formation of young cells from older cells.

18. If a round, green seeded pea plant (RR yy) is crossed with wrinkled, yellow seeded pea plant, (rr YY) the seeds produced in F1 generation are
(A) round and yellow (B) round and green
(C) wrinkled and green (D) wrinkled and yellow

19. In which trophic level autotrophs are placed?
(A) First (B) Second
(C) Third (D) Last

20. Which of the following group contain only biodegradable items?
(A) grass, flowers and plastic
(B) grass, wood and plastic
(C) fruits peels, cake and lime juice
(D) coke, wood and grass

21. Which of the following statements is true?
(A) A convex lens has 4 dioptre power having a focal length 0.25 m
(B) A convex lens has –4 dioptre power having a focal length 0.25 m
(C) A concave lens has 4 dioptre power having a focal length 0.25 m
(D) A concave lens has –4 dioptre power having a focal length 0.25 m

22. Magnification produced by a rear view mirror fitted in vehicles
(A) is less than one
(B) is more than one
(C) is equal to one
(D) can be more than or less than one depending upon the position of the object in front of it

23. In torches, search lights and headlights of vehicles the bulb is placed
(A) between the pole and the focus of the reflector
(B) very near to the focus of the reflector
(C) between the focus and centre of curvature of the reflector
(D) at the centre of curvature of the reflector

24. Twinkling of stars is due to atmospheric
(A) dispersion of light by water droplets
(B) refraction of light by different layers of varying refractive indices
(C) scattering of light by dust particles
(D) internal reflection of light by clouds

25. Which of the following statements is correct regarding the propagation of light of different colours of white light in air?
(A) Red light moves fastest
(B) Blue light moves faster than green light
(C) All the colours of the white light move with the same speed
(D) Yellow light moves with the mean speed as that of the red and the violet light

26. Which of the lenses would you prefer to while reading sm
(A) a convex lens of focal length 50 cm.
(B) a concave lens of focal length 50 cm.
(C) a convex lens of focal length 5cm.
(D) a concave lens of focal length 5cm.

27. If the current I through a resistor is increased by 100% (assume that temperature remains unchanged), the increase in power dissipated will be
(A) 100 % (B) 200 %
(C) 300 % (D) 400 %

28. The resistivity does not change if
(A) the material is changed
(B) the temperature is changed
(C) the shape of the resistor is changed
(D) both material and temperature are changed

29. Choose the incorrect statement
(A) Fleming's right-hand rule is a simple rule to know the direction of induced current
(B) The right-hand thumb rule is used to find the direction of magnetic fields due to current carrying conductors
(C) The difference between the direct and alternating currents is that the direct current always flows in one direction, whereas the alternating current reverses its direction periodically
(D) In India, the AC changes direction after every second

30. The strength of magnetic field inside a long current carrying straight solenoid is
(A) more at the ends than at the centre

(B) minimum in the middle
(C) same at all points
(D) found to increase from one end to the other

Section-B

Very Short Answer Questions: Answer **any 10 (ten)**. (2x10=20 marks)

31. What do you mean by decomposition reaction? Give one example.
32. How bleaching powder can be prepared? Give chemical equation.
33. Why does the aqueous solution of an acid conduct electricity?
34. How are fats digested in our bodies? Where does this process take place?
35. Write any two advantages of vegetative propagation.
36. What is zygote? How is the sex of the child determined in human beings?
37. What is ozone? Give its function.
38. What are trophic levels? Give an example of a food chain and state the different trophic levels in it.
39. What is the role of decomposers in the ecosystem?
40. Why do we prefer a convex mirror as a rear-view mirror in vehicles? Give two reasons.
41. Why do stars twinkle?
42. Name the factors which determine the resistance of a conductor.
43. An electric iron of resistance 20 Ω takes a current of 5A. Calculate the heat developed in 30 seconds.

Section- C

Short Answer Questions: Answer **any 6 (six)**. **(**3x6=18 marks)

44. What would you observe when zinc is added to a solution of Iron (II) sulphate? What type of reaction is this? Write the chemical reaction involved.
45. Explain in brief the mechanism of cleansing action of soap.
46. Name the glands present in the walls of the stomach. Give two functions of HCl produced in the stomach.
47. Give three differences between Arteries and Veins.
48. What is a reflex action? Trace the sequence of events which occur when a bright light is focuses on your eyes.
49. What is optical density? Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass?
50. List two properties of magnetic field lines. Why two magnetic field lines cannot intersect each other?
51. What is earthing? Why is earthing of electrical appliances necessary?

Section-D

Long Answer Questions: Answer **any 3 (three)** **(**3x4=12 marks)

52. Esters are sweet smelling substances and are used in the making of perfumes. Suggest some activity and the reaction involved for the preparation of an ester with neat labelled diagram?
53. Draw the diagram of alimentary canal of man and label the following parts mouth, esophagus, stomach, intestine.
54. Draw the structure of a neuron and label its parts.
55. Write the laws of refraction of light. Explain the same with the help of ray diagram, when a ray of light passes through rectangular glass slab.
56. Draw a labelled circuit diagram of a simple electric motor and explain its working.

*** End of the Question Paper ***