CM IMPACT Guidebook for Class 10 Students

(With Important Questions and Answers)

(Old Course)

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

NOT FOR SALE

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

CONTENTS

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

Health & Physical Education
Class X
(Old 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)

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)
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)

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

***

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

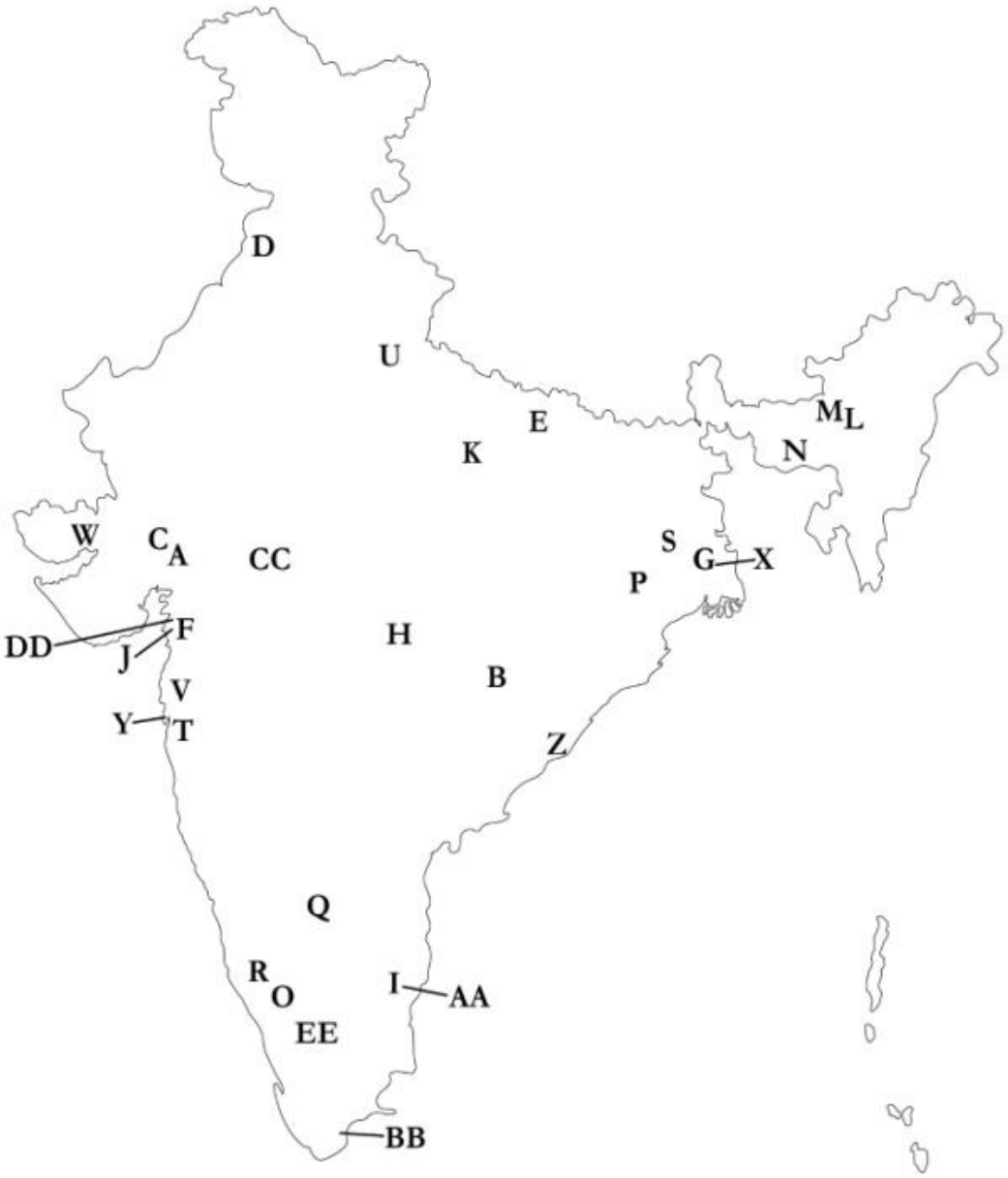
4. What is the benefit of Priya repaying the loan in instalments?
   a) Reduces her credit score
   b) Increases her debt burden
   c) Helps her manage cash flow and budget
   d) Waives the interest payment

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

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

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
(Old 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)

Section-A

Multiple Choice Questions (MCQs): (1 mark each)

[Prose]

1. Who is the narrator of the story 'Powder and Arms'?
    A. Captain Smollett
    B. Jim Hawkins
    C. Dr. Livesey
    D. A Huxely

Ans: B. Jim Hawkins

2. What is 'Hispaniola' in the story 'Powder and Arms'?
    A. the buried treasure
    B. the name of the ship
    C. the map of the island
    D. the name of book

Ans: B. the name of the ship

3. Mr. Arrow was
    A. a brown old sailor with earrings in his ears
    B. a sharp-looking man who seemed angry
    C. as clever as a monkey
    D. ugly looking beggar

Ans: C. a brown old sailor with earring in his ears

4. "He was so loose a talker." In the given context, 'He' refers to
    A. Mr. Arrow
    B. Jim Hawkins
    C. Captain Smollet
    D. Squire Trelawney

Ans: D. Squire Trelawney

5. The fable of the mountain and the mouse was mentioned by
    A. Captain Smollett
    B. Dr. Livesey
    C. Long John Silver
    D. Jim Hawkins

Ans: B. Dr. Livesey

6. If Dr. Livesey had not been there to mediate, the squire would have
    A. discharged Captain Smollett
    B. cancelled the voyage
    C. appointed Silver as the captain
    D. started the voyage

Ans: A. discharged Captain Smollett

7. Hunter, Joyce and Redruth are the
    A. Squire's men
    B. Captain's men
    C. crew members
    D. common people

Ans: A. squire's men

8. Long John Silver was the ship's
    A. captain
    B. cook
    C. captain
    D. Mechanic

Ans: B. cook

9. In the story, "Powder and Arms', what does Captain Smollett mean when he says, "Hands will want supper"?
    A. The crew will become hungry after a hard day's work
    B. Someone by the name of Hands will want supper
    C. Many hands are needed to make supper
    D. None of the Above

Ans: A. The crew will become hungry after a hard day's work

10. Captain Smollett ordered Jim
    A. to examine the swivel
    B. to help the cook
    C. to shift the powder and arms
    D. None of the Above

Ans: B. to help the cook

11. The name of Pips mother's was
    A. Joe Gargery
    B. Georgiana
    C. Alexandria
    D. Sonia

Ans: B. Georgiana

12. When the convict emptied Pip's pocket, he found
    A. cakes
    B. house keys
    C. purse

D. a piece of bread

Ans: D. a piece of bread

13. The convict told Pip to bring him
    A. a piece of bread
    B. a file and wittles
    C. keys
    D. purse

Ans: B. a file and wittles

14. From the inscription on the tombstone, Pip drew a childish conclusion that his mother was
    A. freckled and sickly
    B. dark and tall
    C. pretty and healthy
    D. not visible

Ans: A. freckled and sickly

15. Pip's sister was married to a
    A. blacksmith
    B. goldsmith
    C. priest
    D. Beggar

Ans: A. blacksmith

16. The convict held Pip very tightly and threatened to have his
    A. bread
    B. heart and liver
    C. belongings
    D. house

Ans: B. heart and liver

17. Pip identified, that the distant savage lair from which the wind was rushing was
    A. the river
    B. the lake
    C. the sea
    D. the marshes

Ans: C. the sea

18. 'A fearful man in coarse grey, with a great iron on his leg'. This description refers to
    A. Joe Gargery
    B. the convict
    C. the young man
    D. the old man

Ans: B. the convict

19. 'Darn me if I couldn't eat'em,' said the man, with a threatening shake of his head.

    The man threatens to eat
    A. a piece of bread
    B. cake
    C. Pip's fat cheeks
    D. Pip's heart and liver

Ans: C. Pip's fat cheeks

20. Pip's village lay
    A. beyond the savage lair
    B. on adjacent to the church
    C. about a mile from the church
    D. None of the above

Ans: C. about a mile from the church

21. Before Romeo left Juliet, he promised to write her from Mantua
    A. every minute in the day
    B. every two hours in the day
    C. every two minutes
    D. every hour in the day

Ans: D. every hour in the day

22. An apothecary is a
    A. doctor
    B. magician
    C. chemist
    D. dentist

Ans: C. chemist

23. In the deadly broil, Romeo slew
    A. Tybalt
    B. Count Paris
    C. Mercutio
    D. None of the above

Ans: A. Tybalt

24. Romeo was persuaded to go to the old Lord Capulet's great supper by
    A. Tybalt
    B. Benvolio
    C. Mercutio
    D. Count Paris

Ans: B. Benvolio

25. Count Paris had come to the tomb of Juliet
    A. to kill Romeo
    B. to take away her body
    C. to weep over her grave
    D. to tell stories

Ans: C. to weep over her grave

26. Who felt that a matrimonial alliance between Romeo and Juliet might make up the long breach between the two families?
    A. Benvolio
    B. Friar Lawrence
    C. Lord Capulet
    D. Count Paris

Ans: B. Friar Lawrence

27. The Prince of Verona was related to
    A. Benvolio
    B. Mercutio
    C. Count Paris
    D. Lord Capulet

Ans: B. Mercutio

28. 'Romeo and Juliet' is one of the most popular _____ of Shakespeare.
    A. Comedies
    B. Horror stories
    C. Comics
    D. Tragedies

Ans: D. Tragedies

29. After swallowing the potion offered by the Friar, Juliet remained in a trance for
    A. Forty and half hours
    B. Forty two hours
    C. Forty eight hours
    D. Forty hours

Ans: B.Forty two hours

30. When Juliet awoke from her trance and found Romeo dead,
    A. she swallowed the last drop of poison found in the cup
    B. she fled away
    C. she sat there
    D. she stabbed herself with a dagger

Ans: D. she stabbed herself with a dagger

31. When the Brahmans prodded the bottom of the baby prince's foot, he
    A. cried out in pain
    B. let out a hearty chuckle
    C. pushed them away with his foot
    D. None of the above

Ans: B. let out a hearty chuckle

32. The sword of the prince with which he attacked the Demon was
    A. forty-three inches long
    B. twenty-three inches long
    C. thirty inches long
    D. thirty-three inches long

Ans: C. thirty-three inches long

33. When the prince was leaving for Takkasila, his father gave him
    A. the five weapons
    B. a farewell gift
    C. a thousand pieces of money
    D. lunch box

Ans: C. a thousand pieces of money

34. The Demon had
    A. a blue belly
    B. the face of a hawk
    C. dark hands and feet
    D. small eyes

Ans: B. the face of a hawk

35. The prince shot
    A. hundred poisoned arrows at the Demon
    B. fifty poisoned arrows at the Demon
    C. thirty poisoned arrows at the Demon
    D. one poisoned arrow at the Demon

Ans: B. fifty poisoned arrows at the Demon

36. The Bodhisatta entered the forest even after being warned about the Demon because
    A. he had confidence in himself
    B. he did not believe in the people who warned him
    C. he was proud of his abilities
    D. he was careless

Ans: A. he had confidence in himself

37. How old was the prince when he was sent forTakkasila to complete his education?
    A. Fourteen years
    B. Sixteen years
    C. Eighteen years
    D. Two years

Ans: B. Sixteen years

38. The prince threatened to grind the Demon to
    A. dust

B. powder
C. paste
D. ash

Ans: B. powder

39. When the prince was snared, he was
    A. nervous
    B. frightened
    C. tensed
    D. fearless

Ans: D. fearless

40. The wisdom that the Bodhisatta imparted made the Demon
    A. self- denying
    B. angry
    C. wicked
    D. tensed

Ans: A. self-denying

41. What is the weather like at the beginning of the story 'The Monkey's Paw'?
    A. Cold and wet
    B. Warm and windy
    C. Dark and misty
    D. Cloudy

Ans: A. Cold and wet

42. Sergeant Major Morris decides to not sell the Monkey's paw because
    A. he thinks that no one would buy it
    B. he wants to give it to Mr. White as a present
    C. he feels that the monkey's paw has caused enough mischief
    D. None of the above

Ans: C. he feels that the monkey's paw has caused enough mischief

43. What is the first thing Mr. White wishes for?
    A. a bigger house
    B. 200 pounds
    C. to be an emperor
    D. gold

Ans: B. 200 pounds

44. How does the family know that the first wish has caused the tragedy of their son?
    A. the paw whispered it to them
    B. they take a lucky guess
    C. bad things happened
    D. because the company offered them 200 pounds

Ans: D. because the company offered them 200 pounds

45. Mr.White paid the sergeant a trifle for the paw. What does the word 'trifle' mean?
    A. A large sum
    B. A small amount
    C. A dollar
    D. Nothing

Ans: B. A small amount

46. What is the theme of the story "The Monkey's Paw"?
    A. Be careful what you wish for
    B. Greed is good
    C. Death is inevitable
    D. No fear

Ans: A. Be careful what you wish for

47. What does it mean to say someone is 'rubicund of visage'?
    A. Unhealthy skin
    B. A tan on the face
    C. Reddish, healthy face
    D. Dots on face

Ans: C. Reddish, healthy face

48. What is Mrs. White doing at the beginning of the story?
    A. Reading a book
    B. Knitting
    C. Playing chess with her husband
    D. cooking

Ans: B. Knitting

49. Pitch it on the fire again like a _____ man. (Complete the sentence)
    A. wise
    B. foolish
    C. sensible
    D. dangerous

Ans: C. sensible

50. In the story "The Monkey's Paw", the word 'talisman' means
    A. a lucky charm
    B. a lucky mark
    C. something sensible
    D. bad luck

Ans: A. a lucky charm

51. The setting of the play 'Fourteen' is _____
    A. the dining room of a New York residence
    B. the living room of a New York residence.
    C. the bedroom of a New York residence
    D. kitchen

Ans: A. The dining room of a New York residence

52. Mrs. Horace Pringle was a _____
    A. woman of fashion
    B. woman of valour
    C. woman of steel
    D. woman of fear

Ans: A. woman of fashion

53. Mrs. Pringle had organised dinner for
    A. thirteen people
    B. fourteen people
    C. sixteen people
    D. no one

Ans: B. fourteen people

54. The first guest who cancelled Mrs. Pringle's dinner invitation was
    A. Mr. Morgan
    B. Mr. Harper
    C. Mr. Darby
    D. Mr. Andrew

Ans: B. Mr. Harper

55. Mrs. Pringle wanted Elaine to sit next to
    A. Dunham
    B. Mrs Conley
    C. Oliver Farnsworth
    D. Don

Ans: C. Oliver Farnsworth

56. "She's far too pretty, too clever." This description refers to
    A. Ella Tuppers
    B. Hester Longley
    C. Jessica
    D. Amy

Ans: B. Hester Longley

57. Who do not serve drinks when they entertain, according to Mrs. Pringle?
    A. the Tuppers
    B. the Hatswoods
    C. the Darbys
    D. the Hesters

Ans: B. the Hatswoods

58. The line 'You murderous instrument!', exclaimed by Mrs Pringle, refers to
    A. the television
    B. the telephone
    C. the computer
    D. the radio

Ans: B. the telephone

59. Who had to leave for Boston suddenly on important business?
    A. Mr. Morgan
    B. Oliver Farnsworth
    C. the Prince of Wales
    D. Mr. Bond

Ans: B. Oliver Farnsworth

60. At the end of the play who, according to Mrs. Pringle, was the most considerate of men?
    A. Oliver Farnsworth
    B. Mr. Morgan
    C. Mr. Tupper
    D. Mr. Washington

Ans: A. Oliver Farnsworth

[Poetry]

61. What do the sages say according to the poem, 'Life'?
    A. Life is sunny
    B. Life is a bed of roses
    C. Life is good
    D. Life is dark and gloomy

Ans: D. Life is dark and gloomy

62. "Oft a little morning rain
    Foretells a _____
    A. pleasant day
    B. golden day
    C. sunny day
    D. cloudy day

Ans: A. pleasant day

63. What does the poet mean by the phrase "clouds of gloom"?
    A. Dark clouds
    B. Grey clouds
    C. Sorrowful times
    D. Clouds of rain

Ans: C.Sorrowful times

64. In the context of the poem, ‘Life’ what is the meaning of the expression, “Can courage quell despair”?
    A. Despair can put an end to courage
    B. Courage cannot suppress despair
    C. Courage can put an end to despair
    D. None of the above

Ans: C. Courage can put an end to despair

65. Who is the composer of the poem “Life”?
    A. Emily Bronte
    B. Charlotte Bronte
    C. Elizabeth Bronte
    D. Huxley

Ans: B. Charlotte Bronte

66. The Gift of India is a poem about
    A. patriotism
    B. celebration of victory
    C. loss of wealth
    D. despotism

Ans: A. patriotism

67. On Egyptian sands, the Indian soldiers were lying
    A. scattered like pebbles
    B. scattered like shells
    C. in the shades
    D. hidden

Ans: B. scattered like shells

68 On the battlefields, the Indian soldiers were
    A. fought with valour
    B. simply accepted their fate
    C. was honoured with ceremonial burial
    D. withdrew

Ans: A. fought with valour

69. “Blood-brown meadows” indicates the
    A. reddish and brown colour of the meadows
    B. rich and fertility of the meadows
    C. celebration
    D. horrors of war

Ans: D.horrors of war

70. Mother India wanted that her fallen sons should
    A. not be disturbed
    B. be remembered and honoured
    C. be returned to her
    D. be forgotten

Ans: B. be remembered and honoured

71. In the poem “The Solitary Reaper”, what is the young woman doing in the field?
    A. Singing and harvesting crops
    B. Pushing a cart down a path
    C. Pulling out the weeds
    D. Sitting

Ans: A. Singing and harvesting crops

72. The sweet melody of the reaper’s song has been compared to that of
    A. the pigeon and the dove
    B. the nightingale and the cuckoo
    C. the peacock and the parrot
    D. the singing wolf

Ans: B. the nightingale and the cuckoo

73. What is the tone of the reaper’s song?
    A. Happy
    B. Melancholic
    C. Relaxing
    D. Joyful

Ans: B. Melancholic

74. The tool that the solitary reaper is using in the field is
    A. a spade
    B. a sickle
    C. a knife
    D. a stone

Ans: B. a sickle

75. In the poem “The Solitary Reaper”, how does the poet know that the song is melancholic?
    A. From the conversation of the passers by
    B. From the words of the song
    C. From the background
    D. From its tune

Ans: D. From its tune

76. 'I climbed the wave' means

A. The poet swam
B. The poet rode the wave
C. The poet sat on the wave
D. The poet rode cycle on the wave

Ans: B. The poet rode the wave

77. _____ of the city, wanting the sea.
Which of the following words complete the line?

A. Weary
B. Sick
C. Tired
D. Wait

Ans: B. Sick

78. In the poem 'Exiled', the word 'shanty' means

A. a rush of fresh water flowing into the sea
B. a song often sung by sailors while they work together
C. an unpleasant feeling
D. None of the above

Ans: B. a song often sung by sailors while they work together

79. In the line "Dread the bell in the fog outside", what does the word 'dread' mean?

A. to fear greatly
B. to ring continuously
C. to strike hard
D. to be excited

Ans: A. to fear greatly

80. I have a need of _____ near.
Which of the following words complete the line?

A. the weirs
B. water
C. the sea
D. milk

Ans: B.. water

81. In the poem, 'The Village Schoolmaster' the word 'truant' refers to a pupil who

A. is punctual
B. attends school regularly
C. is absent from school without permission
D. None of the above

Ans: C.is absent from school without permission

82. "There, in his mansion, 'skill'd to rule'. The word 'mansion' here refers to

A. the little school
B. the house of the schoolmaster
C. the big house in the village
D. the cottage

Ans: A. the little school

83. Full well they laugh'd with _____ glee, Which of the following words complete the above line?

A. pretended
B. counterfeited
C. fake
D. real

Ans: B. counterfeited

84. Which of the following is not true of the village schoolmaster?

A. He could write and cipher
B. He could write poems and songs
C. He could argue even when he was defeated
D. All of the above not true

Ans: B. He could write poems and songs

85. The villagers were amazed by the schoolmaster's

A. arrogance
B. use of high-sounding words
C. pride
D. misery

Ans: B. use of high-sounding words

[Oliver Twist]

86. Oliver's early childhood was spent under the care of

A. Mr. Bumble
B. Mrs. Bedwin
C. Mrs. Mann
D. Mrs. Sears

Ans: C. Mrs. Mann

87. Noah Claypole was an_____of Mr.Sowerberry.

A. apprentice
B. official
C. unkind friend
D. None of the above

Ans: A. apprentice

88. Oliver was given the surname 'Twist' by

A. Mr. Bumble

B. Mrs. Mann
C. Mr. Sowerberry
D. Mr. Smith

Ans: A. Mr. Bumble

89. Mr. Brownlow notices that Oliver bears a close resemblance to
A. Rose Maylie
B. Mrs. Bedwin
C. The woman on the street
D. the woman in the portrait on the wall

Ans: D. the woman in the portrait on the wall

90. Which of the following describes Bill Sikes?
A. A shrivelled, villainous-looking old man
B. A stout, strong-looking man of about thirty-five
C. An unkempt man with long reddish curls
D. An ugly fellow

Ans: B. A stout, strong-looking man of about thirty-five

91. Nancy captured Oliver on his way to the book stall by calling him
A. her son
B. her younger brother.
C. her cousin

Ans: B. her younger brother

92. On the seventh morning after Oliver ran away from Mr. Sowerberry's, he reached the little town of
A. Pentonville
B. Chertsey
C. Barnet
D. Chester

Ans: C. Barnet

93. Oliver spent his ninth birthday
A. with his friends at the poorhouse
B. with Mr. Sowerberry
C. locked in a cellar with two other boys
D. with a puppy

Ans: C. locked in a cellar with two other boys

94. The boys at the poorhouse were served with one bowl of porridge
A. once a day
B. twice a day
C. thrice a day
D. ten times a day

Ans: C. thrice a day

95. Mr. Sowerberry was a tall, thin man, dressed always in
A. black
B. white
C. grey
D. red

Ans: A. black

96. The real name of the Artful Dodger was
A. Charley Bates
B. Jack Dawkins
C. Edward Leeford
D. Smith

Ans: B. Jack Dawkins

97. Mr. Grimwig was Mr. Brownlow's
A. friend
B. lawyer
C. servant
D. doctor

Ans: A. friend

98. When the Artful Dodger first met Oliver, he bought him
A. ham and bread
B. a bowl of porridge
C. a bowl of rice
D. fruit

Ans: A. ham and bread

99. Mr. Brownlow took Oliver to his house in
A. Chertsey
B. Pentonville
C. Bethnal Green
D. Chester

Ans: B. Pentonville

100. Oliver promised Mr. Brownlow to return from the book stall in
A. twenty minutes
B. fifteen minutes
C. one minute
D. ten minutes

Ans: D. ten minutes

101. Oliver was imprisoned in
A. Barnet
B. London
C. Whitechapel
D. London
Ans: C. Whitechapel

102. Fagin had inquired about the robbery at
A. Chertsey
B. Bethnal Green
C. Isleworth
D. Chapel
Ans: A. Chertsey

103. Oliver was taken to Bill Sikes in a
A. Car
B. Horse cab
C. Ox-driven cart
D. Boat
Ans: B. Horse cab

104. Oliver set out for Chertsey with Bill at
A. five in the morning
B. five in the afternoon
C. five in the evening
D. midnight
Ans: A. five in the morning

105. Who lived in the ruined house beside the river?
A. Bill Sikes
B. Toby Crackit
C. Nancy
D. Steve
Ans: B. Toby Crackit

106. The news of the failure of the robbery was brought to Fagin by
A. Toby Crackit
B. Nancy
C. Bill Sikes
D. None of the above
Ans: A. Toby Crackit

107. Oliver had injured his
A. arm
B. leg
C. kidney
D. face
Ans: A. arm

108. Dr. Losberne had accompanied Oliver to look for the house of
A. MrGrimwig
B. Mr Brownlow
C. Bill Sikes
D. Snowden
Ans: B.Mr Brownlow

109. Who was described as an unkempt man with long reddish curls wearing an ornamental ring on dirty fingers?
A. Toby Crackit
B. Bill Sikes
C. Monks
D. Smith
Ans: A. Toby Crackit

110. Bill Sikes' hideout was near
A. Chertsey
B. Whitechapel
C. Dave
D. Bethnal Green
Ans: D.Bethnal Green

111. Who shot Oliver?
A. Brittles
B. Giles
C. Neo
D. Harry
Ans: B. Giles

112. The shadow of a woman which passed along the wall outside was seen by
A. Fagin
B. Monks
C. Charley Bates
D. Dogs
Ans: B. Monks

113. Whose house did Bill Sikes and Toby try to rob?
A. MrsSowerberry
B. MrsMaylie
C. Mrs Bumble
D. Mr. Brown
Ans: B.MrsMaylie

114. Who had large dark eyes and the red mark on his cheek?
A. Toby Crackit

B. Bill Sikes
C. Shopkeeper
D. Monks

Ans: D. Monks

115. After selling all his goods, where did Mr. Brownlow go with Mrs. Bedwin and Mr. Grimwig from Pentonville?

A. To the West Indies
B. To Rome
C. To a distant part of America
D. To sea

Ans: A. To the West Indies

116. 'Mr Bumble had made a great mistake.' What is referred to as 'a great mistake' here?

A. He had married the matron because he thought that she was rich
B. He later knew that the matron was a married person
C. He learned that she had never been the matron of the poor house
D. None of the above

Ans: A. He had married the matron because he thought that she was rich

117. 'Mr. Bumble was addressed by a tall man with a red mark on his cheek.' Who is the tall man here?

A. Fagin
B. Bill Sikes
C. Shopkeeper
D. Monks

Ans: D. Monks

118. Mr and Mrs Bumble made their way to a group of ruined houses. These places were well known as

A. haunts of thieves and robbers
B. haunted house
C. waste houses
D. Nice house

Ans: A. haunts of thieves and robbers

119. Who was with the woman who nursed Oliver's mother on the night before she died?

A. Mrs Mann
B. Mrs. Bumble
C. MrsMaylie
D. Mrs. Wade

Ans: B. Mrs. Bumble

120. Nancy told Rose that every_____ from eleven till twelve, she would walk on London bridge.

A. night
B. Sunday night
C. Saturday night
D. Midnight

Ans: B. Sunday night

121. Rose wanted to postpone the stay in London because

A. she wanted to do something about Nancy's information
B. she wanted to have a good time with Oliver
C. she wanted to meet MrGrimwig
D. None of the above

Ans: A. she wanted to do something about Nancy's information

122. Fagin was worried because

A. Nancy was not feeling well
B. Nancy took the side of Oliver
C. Nancy gave up
D. he suspected Nancy had made new friends

Ans: D. he suspected Nancy had made new friends

123. Who did Fagin assign to follow Nancy without being seen?

A. Charley Bates
B. The Dodger
C. Bill Sikes
D. Dave

Ans: A. Charley Bates

124. Who accompanied Rose to meet Nancy at the London Bridge?

A. Mr. Brownlow
B. Mr. Grimwig
C. Dr. Losberne
D. Mr. Shane

Ans: A. Mr. Brownlow

125. ‘The listener crept out from his hiding place and made his way to the Jew's house.’ Who was the listener?

A. Bill Sikes
B. Charley Bates
C. Jack Dawkins
D. Shane

Ans: B. Charley Bates

126. 'You were watched tonight, every word you said was heard.' Who spoke the above words?

A. Bill Sikes
B. Mr. Brownlow
C. Fagin
D. Jack

Ans: A. Bill Sikes

127. Monks was kidnapped by

A. Mr Brownlow
B. MrGrimwig
C. DrLosberne
D. Mr. Smith

Ans: A. Mr. Brownlow

128. Monks’ mother was older than his father by

A. seven years
B. eight years
C. one year
D. ten years

Ans: D. ten years

129. For how many days did Rose and MrsMaylie initially intend to stay in London?

A. Two days
B. Three days
C. Four days
D. Ten days

Ans: B. Three days

130. How many daughters did Agnes' father have?

A. Three
B. Two
C. Four
D. Five

Ans: B. Two

131. Who attacked Sikes on seeing him in the ruined house at Rotherhithe?

A. Toby Crackit
B. Fagin
C. Jack
D. Charley Bates

Ans: D. Charley Bates

132. Sikes fastened one end of his rope round

A. the chimney stack
B. one of the pillars
C. a light post
D. Balcony

Ans: A. the chimney stack

133. Bill Sikes met his end by

A. drowning
B. poisoning
C. hanging himself accidentally
D. Jumping

Ans: C. hanging himself accidentally

134. Sikes was determined to make one last effort to save his life by

A. asking for forgiveness from the crowd
B. surrendering himself to the officers of the law
C. dropping into the river bed and trying to escape in the noise and darkness
D. None of the above

Ans: C. dropping into the river bed and trying to escape in the noise and darkness

135. Charley Bates attacked Bill Sikes for

A. revealing their hideouts to the law officers
B. leaving Oliver in the ditch
C. not sharing money
D. murdering Nancy

Ans: D. murdering Nancy

136. Monk's father was

A. Edward Leeford
B. Edwin Leeford
C. Mr. Fleming
D. Smith

Ans: B. Edwin Leeford

137. Before dying, whom did Old Sally give the locket and the ring that she had stolen from Oliver's mother?

A. Mrs. Bumble
B. Mr. Bumble
C. Monk's mother
D. Mr. Jack

Ans: A. Mrs. Bumble

138. Rose married

A. Charley Bates
B. Dr. Losberne
C. Harry Maylie
D. Smith

Ans: C. Harry Maylie

139. Among the papers on Edwin Leeford's desk, Monks and his mother found a letter and

A. an agreement
B. a report
C. a will
D. jewelry

Ans: C. a will

140. What did Monk's mother do to Edwin's will?

A. Sent it to her lawyer
B. Hid it
C. Burnt it
D. Threw it

Ans: C. Burnt it

141. Monks paid money to Fagin to

A. keep Oliver from his friends and introduce him to a life of crime
B. take him to Oliver's house
C. destroy Oliver's identity
D. leave

Ans: A. keep Oliver from his friends and introduce him to a life of crime

142. Who adopted Oliver as his son?

A. Dr. Losberne
B. Mr. Brownlow
C. Mr. Grimwig
D. Mr. Jack

Ans: B. Mr. Brownlow

143. Mr. Brownlow told Monks that he would divide his father's property between him and Oliver only if

A. he left the country and never returned
B. he reconciled with Oliver
C. he surrendered himself to the law
D. he run away

Ans: A. he left the country and never returned

144. What sole proof of Oliver's identity did old Sally steal from Agnes Fleming?

A. A watch and a ring
B. A bracelet and a locket
C. A necklace
D. A locket and a ring

Ans: D. A locket and a ring

145. Who was sentenced to die by public hanging?

A. Monks
B. The Dodger
C. Fagin
D. Smith

Ans: C. Fagin

Grammar

In the Board Examination, Q. No. 15-20 (6 MCQs) will be on Grammar (Active & Passive Voice, Tenses, Preposition, Reported Speech, Idioms &Phrses)

[Active & Passive Voice]

146. Which of the following sentences is in the active voice?

A) The cake was baked by Mary.
B) Mary baked the cake.
C) The book was read by the student.
D) The student was given a book.

Ans. B

147. Convert the following sentence into passive voice: "The teacher explains the lesson."

A) The lesson is explained by the teacher.
B) The teacher is explaining the lesson.
C) The lesson was explained by the teacher.
D) The lesson explained by the teacher.

Ans. A

148. Which of the following sentences is correctly written in passive voice?
A) The letter will be delivered by the postman.
B) The postman delivered the letter.
C) The letter was delivered by the postman.
D) The letter delivered by the postman.

Ans. C

149. Identify the passive voice form of the sentence: "The chef cooked a delicious meal."
A) A delicious meal is cooked by the chef.
B) A delicious meal was cooked by the chef.
C) A delicious meal has been cooked by the chef.
D) A delicious meal cooks by the chef.

Ans. B

150. Convert the following sentence into active voice: "The song was sung by the choir."
A) The choir sings the song.
B) The choir is singing the song.
C) The choir sang the song.
D) The choir will sing the song.

Ans. C

151. Which of the following sentences is in passive voice?
A) The students are preparing their presentations.
B) The presentations are being prepared by the students.
C) The students prepared their presentations.
D) The students will prepare their presentations.

Ans. B

152. What is the passive voice form of: "They will finish the project by tomorrow."
A) The project will be finished by them by tomorrow.
B) The project is finished by them by tomorrow.
C) The project will be finished by tomorrow.
D) The project was finished by them by tomorrow.

Ans. C

153. Convert the following sentence into passive voice: "The committee is reviewing the proposals."
A) The proposals are being reviewed by the committee.
B) The proposals are reviewed by the committee.
C) The committee reviewed the proposals.
D) The proposals were being reviewed by the committee.

Ans. A

154. Which of the following sentences is in the active voice?
A) The project was completed by the team.
B) The team completed the project.
C) The project has been completed by the team.
D) The project is being completed by the team.

Ans. B

155. Identify the passive voice form of the sentence: "The gardener plants the flowers."
A) The flowers are planted by the gardener.
B) The flowers were planted by the gardener.
C) The flowers have been planted by the gardener.
D) The flowers are being planted by the gardener.

Ans. A

156. Convert this sentence to passive voice: "The librarian has organized the books."
A) The books have been organized by the librarian.
B) The books were organized by the librarian.
C) The librarian organizes the books.

D) The books are organized by the librarian.

Ans. A

157. Which of the following sentences is in passive voice?
A) She will answer the questions.
B) The questions were answered by her.
C) She answers the questions.
D) She is answering the questions.

Ans. B

[Tenses]

158. 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

159. Choose the correct tense for the sentence: "She ___ to the store every Saturday."

A) go
B) going
C) went
D) goes
Ans. D

160. 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

161. 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

162. Select the correct past simple tense form: "He ___ to the cinema last night."

A) goes
B) going
C) went
D) gone
Ans. C

163. 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

164. 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

165. 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

166. 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

167. 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

168. 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

169. 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

[Preposition]

170. Which preposition correctly completes the sentence? "She is interested ___ learning new languages."
A) of
B) in
C) on
D) at

Answer: B) in

171. Choose the correct preposition to complete the sentence: "The cat jumped ___ the table."
A) on
B) in
C) at
D) under

Answer: A) on

172. Which preposition is appropriate for this sentence? "They will arrive ___ the airport at 6 PM."
A) at
B) in
C) on
D) by

Answer: A) at

173. Select the correct preposition: "He is good ___ playing the guitar."
A) at
B) in
C) on
D) with

Answer: A) at

174. Fill in the blank with the correct preposition: "The book is ___ the shelf."
A) under
B) over
C) between
D) on

Answer: D) on

175. Choose the right preposition: "She walked ___ the park yesterday."
A) through
B) over
C) in
D) at

Answer: A) through

176. What is the correct preposition for this sentence? "They are sitting ___ the corner of the room."
A) on
B) in
C) at
D) under

Answer: C) at

177. Complete the sentence with the appropriate preposition: "He is allergic ___ peanuts."
A) of
B) to
C) for
D) with

Answer: B) to

178. Which preposition fits this sentence? "The restaurant is located ___ the street from the school."

A) across
B) on
C) in
D) near

Answer: A) across

179. Select the correct preposition: "She is excited ___ her upcoming vacation."

A) about
B) for
C) in
D) at

Answer: A) about

180. Fill in the blank with the right preposition: "The movie starts ___ 7 PM."

A) in
B) on
C) at
D) by

Answer: C) at

181. Choose the correct preposition to complete the sentence: "He was surprised ___ the news."

A) with
B) at
C) by
D) for

Answer: B) at

[Reported Speech]

182. 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

183. 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

184. 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

185. 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

186. 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

187. 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

188. 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

189. 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

190. 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

191. 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

192. 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

193. 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

[Idioms & Phrases]

194. What does the idiom "a black sheep" mean?
    A) Someone who is the most talented
    B) A person who is considered different or out of place in a group
    C) A person who is highly respected
    D) Someone who is very lucky

    Answer: B) A person who is considered different or out of place in a group

195. What does the phrase "bed of roses" mean?
    A) A place filled with physical comfort
    B) A situation that is very pleasant and comfortable
    C) A place where roses are grown
    D) A bed covered with rose petals

    Answer: B) A situation that is very pleasant and comfortable

196. What is meant by "a burning question"?
A) A question that is related to fire safety
B) An urgent and important question that needs immediate attention
C) A question asked repeatedly
D) A question that has already been answered

Answer: B) An urgent and important question that needs immediate attention

197. What do "crocodile tears" refer to?
A) Genuine tears of sadness
B) Fake or insincere tears
C) Tears caused by cutting onions
D) Tears caused by joy

Answer: B) Fake or insincere tears

198. What does the phrase "a cock and bull story" mean?
A) A detailed historical account
B) A very strange or unbelievable story
C) A story about animals
D) A funny anecdote

Answer: B) A very strange or unbelievable story

199. If someone feels "like a fish out of water," what does it mean?
A) They are in a very comfortable situation
B) They are confused and uncomfortable in a new or unfamiliar situation
C) They are very skilled in a particular area
D) They are in their natural environment

Answer: B) They are confused and uncomfortable in a new or unfamiliar situation

200. What does "a hard nut to crack" mean?
A) A problem or situation that is difficult to solve
B) A very tough person
C) A challenging nut to open
D) A sweet and simple problem

Answer: A) A problem or situation that is difficult to solve

201. What is "a maiden speech"?
A) A speech given by someone who is new to public speaking
B) A first public speech made by a person
C) A speech made during a wedding ceremony
D) A speech given by a young person

Answer: B) A first public speech made by a person

202. What does "part and parcel" mean?
A) An important component or essential part of something
B) A package of items
C) A part that is separate from the whole
D) An insignificant detail

Answer: A) An important component or essential part of something

203. What are "the pros and cons"?
A) The positive and negative aspects of something
B) Advantages only
C) Disadvantages only
D) Unrelated factors

Answer: A) The positive and negative aspects of something

204. What does "fair and square" mean?
A) Done honestly and without cheating
B) A fair shape and size
C) Something that is neatly organized
D) A square object that is fair

Answer: A) Done honestly and without cheating

205. What does "null and void" mean?
A) Valid and applicable
B) No longer legally effective or valid
C) Partially effective
D) Completely valid

Answer: B) No longer legally effective or valid

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, **only**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
Creative Writing Skills

[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

Subject: 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]

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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.

Email Writing

15. Write an email to your friend DivyaChaudhari telling her about your school trip to Corbett

Park, Dehradun.

Date: 3rd August 2024

From: anjanashrivastava23@gmail.com

To: divyachaudhari12@gmail.com

Subject: School trip to Corbett National Park

Dear Divya,

How are you? It has been a long time since we have written emails to each other. I heard from your mother that you have won the first prize in the inter-school debate competition. I am very happy for you.

I want to tell you that my school has organized a small trip of 3 days to Corbett National Park in Dehradun. I am really excited for the trip. We would be doing a jungle safari there. Though I am a bit scared but it is going to be an exciting trip. I am looking forward to it.

I really miss you. Hope to meet you soon. Come back home so that we can talk to each other for hours, there's a lot that I want to tell you about.

With love

Anjana

16. You are Mohit. Write an e-mail to your friend Ashish/Anusha describing to him/her your first experience of snowfall at a hill station.

Date: 11th March, 2024

To: anusharajan12@ymail.com

From: mohitkumar@rediff.com

Subject: Snowfall fun!

Dear Anusha,

Life is full of experiences. I have been to different hill stations, but have never had the luck of experiencing a snowfall. This winter we went to Gulmarg to watch the Winter Games there. The landscape took my breath away. The mountains all around were covered with sheets of snow. Although there was snow everywhere, there wasn't any snowfall. Then, the most unexpected thing happened. From my hotel room window. I saw flakes of snow falling outside. We ran out to enjoy the snowfall.

I threw snowballs at the others and we also made a snowman. It seemed as if I had been transported to the world of fairies.

I shall look forward to hearing from you soon.

Mohit

17. You are Shilpi/ Shekhar. Compose an email to your friend Rachna/ Raj, expressing your thoughts on the importance of hard work.

Date: 15th August 2024

To: rachna@rediffmail.com

From: shilpi13@gmail.com

Subject: Just a Thought on Hard Work

Dear Rachna,

I hope you are doing well! I've been thinking a lot about the importance of hard work lately and wanted to share some thoughts with you.

You know, it is crazy how much we hear about talent and luck, but I feel like hard work is really what is important. It is the one thing we have full control over. Sure, some people might have a natural gift or get a lucky break, but at the end of the day, it is the effort you put in that makes the difference.

When I look back at the times I have accomplished something I'm proud of, it was not just about being good at it—it was about pushing through when things got tough. Whether it is studying for exams, working on a project, or even just sticking to a workout routine, that persistence pays off.

I know life can get overwhelming, and it's easy to feel like we're not getting anywhere fast enough. But I truly believe that if we keep at it and put in the work, we shall get to where we want to be, even if it is one small step at a time.

Anyway, I just wanted to share what has been on my mind. Let's catch up soon!

Take care,

Shilpi

18. Compose an email to your friend describing to him/her the beauty of your hometown.

Date: 8th August 2024

To: Veronica15@gmail.com

From: Shan@gmail.com

Subject: A Little Glimpse of My Hometown

Dear Veronica,

I hope you're doing well! I've been meaning to tell you about my hometown – a little village that I'm sure you would love.

It is a peaceful place, far from the chaos of the city. The first thing you would notice is the fresh air; it is like taking a deep breath of nature itself. The village is surrounded by lush green fields, and when the sun sets, it paints the sky in the most beautiful shades of orange and pink. There is a river nearby, where the water is so clear you can see the pebbles at the bottom.

The best part is the people here. Everyone knows each other, and there's a real sense of community. Every evening, you'll see kids playing in the open spaces and the elders chatting away on their porches. And don't get me started on the food – it's all fresh and full of flavor, made from ingredients that come straight from the farms.

I miss it sometimes, especially when life gets a bit too hectic. It's my little slice of heaven, and I can't wait to show you around one day. I think you would really enjoy the calmness and simplicity of it all.

Let me know how you are doing when you get a chance.

Take care,

Shan

Story Writing

19. Complete the story in 150 - 200 words, also give a suitable title.

Jenny's younger brother, Johnny, was a studious boy. But for the last few days she has been noticing a sudden change in his behaviour and performance. She was worried. One day....

Johnny's Secret Struggle

Jenny's younger brother, Johnny, was a studious boy. But for the last few days, she had been noticing a sudden change in his behaviour and performance. He was distracted, absent-minded, and his grades were slipping. She was worried. One day, she decided to confront him.

"Johnny, what's going on? You're not yourself lately," Jenny said, sitting beside him on the bed.

Johnny hesitated, then revealed, "I've been having trouble sleeping at night. I hear strange noises and feel scared."

Jenny's concern deepened. "Why didn't you tell Mom or Dad?"

"I didn't want to worry them," Johnny said, looking down.

Jenny hugged him. "We're in this together, bro. We'll face it together." She encouraged him to open up to their parents, and together, they found a solution. Johnny's fears subsided, and his performance improved. Jenny was relieved, proud of her brother's courage, and grateful for the bond they shared.

20. Complete the story, in 150 - 200 words, which begins as follows:

    Amina loves her family a lot but she is fond of roaming about. Once she started walking and out of curiosity she kept on walking and reached a point where she did not know the route back to her home. Suddenly she saw….. (Give a suitable title for the story)

    Amina's Unexpected Adventure

    Amina loves her family a lot but she is fond of roaming about. Once she started walking and out of curiosity she kept on walking and reached a point where she did not know the route back to her home. Suddenly she saw a beautiful garden filled with vibrant flowers and a stunning waterfall. She had never seen anything so breathtaking before.

    As she explored the garden, she met an old woman who introduced herself as the guardian of the garden. The woman offered Amina food and shelter for the night, and Amina gratefully accepted. The next morning, the woman showed Amina a hidden path that led her back home.

    Amina was overjoyed to see her family waiting for her anxiously. She realised that her love for adventure was precious, but her family's love and concern for her was even more precious. From then on, Amina continued to explore, but never without letting her family know where she was going. The old woman's parting words stayed with her: "The world is full of wonders, but home is where the heart is."

21. You are Bankin, after changing five schools due to your father's transfer you have stopped making friends. But there was something different in this new friend of yours you felt very familiar....

    Develop a story in 150 - 200 words.

    Familiarity Explained

    I, Bankin, trudged through the school gates, my fifth in as many years. Father's transfers had made me a pro at saying goodbyes, but terrible at forming connections. That was until I met Aryan.

    "Hey, I'm Aryan! Welcome to the school!" he said with a bright smile.

    "Thanks...I'm Bankin," I replied, taken aback by his warmth.

    As we spent more time together, I felt an inexplicable sense of familiarity.

    "Hey, have we met before?" I asked Aryan one day.

    "I don't think so...but you do seem really familiar!" he replied, scrunching his face in thought.

    Later, while rummaging through my old trunk, I found a faded photograph.

    "Aryan, come check this out!" I called out.

    As he approached, his eyes widened. "That's me! And that's...you!"

    Our eyes met, and the puzzle pieces fell into place.

    "We were childhood friends! I can't believe it!" I exclaimed.

    Aryan grinned. "I know, right? I've found my long-lost friend!"

We hugged, and for the first time in years, I felt like I was home.

22. Write a story which highlights the value of strong will and determination.

Outlines: Shem wants to be an IPS officer - he comes from a poor family - his friends laugh at him for his wish - unmindful of all the discouragement he went on to achieve his dream.

Shem's Unwavering Dream

Shem grew up in a small village, where poverty and hardship were a way of life. Despite the odds, Shem nurtured a big dream - to become an Indian Police Service (IPS) officer. He was fascinated by the uniform and the power to make a difference.

When Shem shared his dream with his friends, they laughed and ridiculed him. "You're from a poor family, Shem! You'll never make it!" But Shem refused to let their discouragement deter him. He worked hard, studying late into the night, often by the light of a flickering candle.

Shem's determination and strong will propelled him forward. He cleared his exams with flying colours, earning a scholarship to a prestigious academy. Years later, Shem stood proudly in his IPS uniform, a beacon of hope for his village.

His friends, who had once mocked him, now looked up to him with pride. Shem's unwavering resolve had transformed his dream into a reality, inspiring others to chase their own aspirations, no matter how impossible they seemed.

23. Read the outlines given below and write a story in about 150 - 200 words. Give a title to your story.

Outlines: Andrew, a slave, runs away from his cruel master - a lion in the forest - crying in pain - the slave remove thorn from his foot - a few months later - the slave caught by his master's men - ordered to be thrown before a hungry lion - lion licks his feet - both set free.

"The Lion's Debt"

Andrew, a weary slave, fled his cruel master's estate, seeking freedom. As he ran through the forest, a lion's roar echoed through the trees. The lion, in pain, cried out as Andrew approached. A thorn was lodged in its paw. Andrew, despite his own fears, carefully removed the thorn, and the lion's gratitude was palpable.

"Thank you, kind stranger," the lion said in a low, rumbling voice. "I owe you a debt I can never fully repay."

Months passed, and Andrew was captured by his master's men. As punishment, he was thrown into the lion's den, expecting a gruesome fate. But the lion, remembering Andrew's kindness, instead licked his feet.

"Andrew, my friend," the lion said, "I told you I could never fully repay my debt, but this is a start. You freed me from pain, and now I free you from fear."

The master, witnessing this unexpected scene, was moved to mercy. "You have both shown me that compassion can conquer even the greatest of cruelties. Go, Andrew, you are free. And you, noble lion, you are free as well."

Andrew and the lion walked out of the den together, their bond a testament to the transformative power of compassion.

"Thank you, my lion friend," Andrew said, smiling. "We are both free, indeed."

"And our friendship will forever be the proof of that freedom," the lion replied, with a gentle nuzzle.

Section-C
Short Answer-type Questions: (2 marks each)

[Prose]

1. What suggestions does the captain make to Squire Trelawney?

Ans: Captain Smollett makes certain suggestions to Squire Trelawney for the safety of the voyage. He suggests that the powder and the arms should be kept under the cabin instead of the forehold. Secondly, the four men of the squire's party should be given berths beside the cabin close to the arms and powder on board. Finally, the captain suggests that the map of the treasure island be kept secret even from him and Mr. Arrow.

2. Why has Mr. Trelawney hired the captain, the ship and the crew?

Ans: Squire Trelawney has planned an expedition to hunt for hidden treasure on a remote island. He has a map of the island which shows its direction with exact latitude and longitude and the location of the buried treasure marked with crosses. Therefore, the squire has hired the ship 'Hispaniola' and appointed its captain and the crew.

3. What two things did Pip see on the edge of the river?

Ans. On the side of the river Pip saw two things – one was the beacon by which the sailors steered, and the other was a gibbet with some chains hanging to it, which once held a pirate.

4. How was the convict dressed?

Ans. The convict was dressed all in coarse grey, with a great iron on his leg. He had no hat and wore broken shoes, with an old rag tied round his head.

5. Why did Friar Lawrence consent to join the hands of Romeo and Juliet in marriage?

Ans: Friar Lawrence consented to join the hands of Romeo and Juliet in marriage with a noble intention. He thought that a matrimonial alliance between the two lovers might be the means of making up the long breach between the Capulets and the Montagues.

6. How did Romeo react when he heard the news of his banishment?

Ans: After hearing the news of his banishment from Verona, Romeo was in utter despair. He felt that his life would be useless if he had to live away from his beloved Juliet. He began to behave like a madman. He tore his hair and threw himself upon the ground to take the measure of his grave.

7. Why did a hush descend on the crowded hall in the King's house?

Ans: When it was time for the Brahmans to examine the baby prince's lucky marks, hush descended on the crowded hall in the King's household. Everyone present became silent because they wanted to know what the Brahmans would predict about the future of the prince.

8. How did the prince spend his time with his teacher?

Ans: The prince lived in the teacher's house in Takkasila. He served his teacher and did household chores by day. At night his teacher taught him lessons on the use of five weapons, and about the disadvantage of five kinds of wickedness and the profit of five kinds of virtue.

9. Who is Sergeant-Major Morris?

Ans: Sergeant-Major Morris is a fictional character in the short story "The Monkey's Paw" by W.W.Jacobs. He is a retired British Army sergeant major who has served in India. Morris brings the mummified monkey's paw to the White family, which sets off the events of the story.

10. How did Sergeant Major Morris get the monkey's paw?

Ans: While in India, the Sergeant claims to have met a man who was in possession of the monkey's paw. The man got his three wishes granted, but his third wish was death. This is how he got the monkey's paw.

11. Why did Mr. Harper send Mrs. Pringle flowers?

Ans: Mr. Harper was invited by Mrs. Pringle to a dinner party in her house. But as he was suddenly called away to the bedside of his ailing friend, he courteously sent

her flowers with his apologies for his inability to accept her invitation.

12. What was wrong with just having twelve guests in the play 'Fourteen?

Ans: With twelve guests, Mr. Pringle would not be able to sit at the head of the table. Mrs. Pringle thought that it looked undignified when the man of the house was pushed to the side of the table.

[Poetry]

13. How according to Charlotte Bronte, should the 'sunny hours' of life be enjoyed?

Ans: According to Charlotte Bronte, the 'sunny hours' of life is temporary or short lived just like the dark times of life. They pass by very quickly. We must be grateful for the happy moments in our life and enjoy them happily.

14. How, according to the poem 'Life', can hope help us?

Ans: According to the poem 'Life', sorrows and death are part and parcel of life. When they come in our life, hope springs back like elastic. It is unconquered and enables us to overcome any adverse situation

15. According to Sarojini Naidu, how should the fallen soldiers be treated?

Ans: In the voice of Mother India, Sarojini Naidu asks the readers and those responsible for the death of her sons to show love and gratitude through memorials towards those who fought bravely. She also asks them to honour the deeds of these courageous soldiers.

16. What happened to the Indian soldiers who died in the battlefields? 2

Ans: The Indian soldiers lay dead on the battlefield. Their bodies, broken and pale, were scattered like shells on the Egyptian desert. They were strewn like unfortunate and trampled flowers mown down by chance. Later, they were buried in alien graves.

17. Why was William Wordsworth fascinated by the solitary reaper's song?

Ans: The poet was spellbound when he heard the melancholic song of the solitary reaper. The melodious song fascinated him so much that he stopped to listen to it and when he left, he carried the sweet melody of her song which remains in his heart and keeps on echoing for a long time afterwards.

18. The poet did not understand the theme of the song. What are the guesses made by him regarding its theme?

Ans: The poet could not understand the meaning or the theme of the reaper's song as the girl was probably singing in her native language. However, from the sad tone of the song, he simply guessed that the girl was singing about some old, unhappy far-off things or about some battles fought long ago. The poet also thought that it might be an ordinary song, relating to some natural sorrow, loss or pain which keeps on occurring in day-to-day life.

19. Where does the wild sweet-pea grow and what does it mark?

Ans: The wild sweet-pea grows in the sand in the poet'sfront yard. It marks the point where the winter sea reaches the shore.

20. Who sang the 'shanties' and why are they straining?

Ans: The 'shanties' are the songs sung by the sailors while they work together on the ships. They strain as they sing because they have to work quickly to be able to set sail before the turning of the tide.

21. How did the students react to the schoolmaster's jokes ?

Ans: The village schoolmaster had a store of jokes. Whenever he cracked jokes, the children would burst into fake laughter under the pretext that the jokes were hilarious.

22. What are the skills and abilities that the schoolmaster has?

Ans: The schoolmaster can tell jokes, argue and use high sounding words and

vocabulary . He can also write, calculate, measure land and even predict tides.

[Oliver Twist]

23. Who was Mr. Bumble?
Ans: Mr. Bumble was the town beadle. He was a foolish, fat man with a lot of self-importance. He had great power over the miserable poor people of the town.

24. Describe the appearance of Fagin when Oliver first saw him.
Ans: It appeared to Oliver that Fagin was old, shrivelled and villainous-looking. His horrible face was nearly hidden by a quantity of matted red hair and he wore a greasy flannel gown.

25. Why did Mr Fang discharge Oliver?
Ans: Mr. Fang, the magistrate, declared that Oliver should be given three months of hard labour for pickpocketing the old man at the bookstall. Just then, the keeper of the bookstall rushed in and vouched for Oliver's innocence. He claimed to have seen two other boys with Oliver and that he was not the thief. On hearing it, Mr. Fang discharged Oliver.

26. Why did Fagin and Sikes want Nancy to go to the police station?
Ans: After Oliver had been arrested and taken to the police station, Bill Sikes and Fagin wanted Nancy to go and see what had happened to Oliver. Nobody at the police station knew her, so she would be the best person to find out the fate of Oliver.

27. What kind of life did Oliver have in Pentonville?
Ans: Oliver received the best care and attention in Mr. Brownlow's house in Pentonville. He passed his days there happily. Everything was so quiet, neat and orderly. Everybody was so kind and gentle that Oliver began to think that it was heaven after the kind of life he had lived before.

28. Why did Oliver beg Fagin to send the books back?
Ans: Oliver begged Fagin to send the books back so that Mr. Brownlow and his housekeeper, Mrs. Bedwin, would not think that he had stolen them. They were good and kind, treated him with love and affection, and had nursed him when he was ill. Oliver did not want to lose their trust and be considered a thief.

29. What did Nancy tell Oliver before taking him to Sikes?
Ans: Nancy was entrusted to fetch Oliver from Fagin's house and bring him to Sikes' house so that he could help them in the planned burglary at MrsMaylie's house at Chertsey. So, before taking him to Sikes, Nancy told Oliver that he could not help himself and it was not the time to escape. She also said that Oliver was not at fault for what he would be made to do.

30. Why was Oliver left in a ditch?
Ans: Oliver was badly wounded due to the shooting by Giles, the servant of MrsMaylie. Bill Sikes carried Oliver on his back for some time. But when it became too difficult for him to run with the boy on his back, he left him in a ditch so as not to be caught by the chasers with dogs.

31. What request did Rose make to her aunt when they saw Oliver in deep sleep with his arm bandaged?
Ans: When they saw Oliver in deep sleep with his arm bandaged, Rose requested her Aunt not to allow the police to take Oliver to prison. She took him to be a very young child who might never have known a mother's love or the comfort of a home, even if he had been wicked.

32. What happened one evening when Oliver was working on his books?
Ans: One evening when Oliver was working on his books, he had fallen into a daydream. He saw Fagin in his usual corner, whispering to an unknown man. Suddenly, he roused on hearing Fagin speak. He saw Fagin and the man with the red mark on the cheek right outside the window of his room. Oliver was shocked and shouted for help. Harry Maylie and Dr.

Losberne searched for them, but they could not find any trace of them.

33. What was the bargain that Monks made with Fagin?
Ans: Monks struck a bargain with Fagin that if Oliver was recaptured, Fagin would receive a handsome amount of money and even more if he could make him into a thief.

34. Why was Fagin worried about Nancy's behaviour?
Ans: Fagin was worried about Nancy's behaviour because of her persistence to go out even when she was not allowed by Sikes. He was thinking hard if Nancy had grown tired of Bill's cruelty and had found new friends which alerted him that they might all be in danger if she talked too much.

35. How did Nancy describe Monks to Rose and Mr Brownlow?
Ans: Nancy described Monks as a tall, strongly built man and had large eyes which were very deeply set in his head with a strange stare. He had frequent fits and a broad red mark, like a burn or scald, could be seen on his cheeks.

36. How were Monks' parents separated?

Ans: When Monks' father was very young, his parents forced him into a most unhappy marriage. The couple grew more and more unhappy until they finally agreed to separate from each other.

37. What happened to the person who discovered Nancy's corpse?

Ans: Nancy's dreadful corpse had been discovered by her friend Bet in the room where Sikes had murdered her. The sight had sent poor Bet mad, screaming and raving. She had been forcibly restrained and taken away to the hospital.

38. Why was Monks so anxious that Oliver should work for Fagin?
Ans: Monks was so anxious that Oliver should work with Fagin because he wanted Oliver to be engaged and caught in criminal activities. If Oliver could be turned into a criminal, he would stain his father's name and forfeit the large sum of money that his father had left for him. In such a case, Monks would be able to inherit the money that was due to Oliver.

39. What was the content of Edwin Leeford's letter to Agnes Fleming?
Ans: Edwin wrote to Agnes of the immense love he had for her and all that he meant to do to hide her shame. Agnes had believed his words to marry her and had trusted him too far. He begged her not to curse his memory and reminded her of the day he had given her the locket and the ring with her name engraved inside it.

40. What did the will of Edwin Leeford state?
Ans: Edwin's will stated that he had left for Monks and his mother each hundred pounds a year. The rest of his property, he divided into two equal parts, one for Agnes Fleming, the other for their child. If it were a girl, she should inherit the money when she came of age. But if it were a boy, he should only have the money if he had never stained his name with any public act of wrong-doing.

41. What happened to the sister of Agnes Fleming after their father's death?
Ans: After their father's death, the sister of Agnes Fleming, who was then a child, was taken by some poor cottagers. They brought her up as their own child. But when Monks' mother found her, she warned the cottagers of the girl's bad blood and told many lies about her family. The child lived there miserably, until by chance she was seen by a widow who pitied her and took her home with her. In spite of Monks and his mother's efforts to harm her, she remained there and was happy.

42. What information did Fagin give Oliver when he and Mr Brownlow visited him in the prison?
Ans: When Mr Brownlow and Oliver visited Fagin in prison, he thought that it was only Oliver who could save his life. He, therefore, told Oliver about the letter from Oliver's father

to his mother, which Monks had given him and which was the proof of Oliver's identity. He disclosed that the letter was in a canvas bag which he had hidden in a hole in the chimney of the wretched room where Oliver had been imprisoned for so long.

Long answer- type Question (6 marks each)

[Prose]

1. What complaints does Captain Smollett make to the squire and the doctor?

Ans: Captain Smollett complains to Squire Trelawney and Dr. Livesey about the arrangements they have made for the voyage to the treasure island. He says that he does not like the voyage, his crew and the mate, Mr. Arrow. He alleges that although he has been appointed on sealed orders to sail the ship, he learns from his crew that they are going on a treasure hunt. The captain makes it clear that he does not like any treasure voyages, and especially when they are secret. Moreover, he is worried that the purpose of their voyage is no longer a secret to anybody. Even some confidential details of the treasure map have been revealed to the crew, and he fears a risk involved in the voyage. Further, he is disappointed that he has not been consulted while selecting the crew whom the captain himself usually chooses. Mr. Smollett is also displeased at the behaviour of Mr. Arrow who is too familiar with the crew to be a good officer.

2. Who did Pip meet in the graveyard and what was he doing there? Why was he interested to hear that Pip's brother-in-law was a blacksmith?

Ans. In the graveyard, Pip met a fearful man dressed in coarse grey, with a great iron on his leg. He sprang up suddenly from among the graves and startled Pip. He growled at Pip and threatened to kill him if he made a noise or moved, Pip was in the graveyard to visit the graves of his parents and also his five little brothers who lay in a neat row beside their parents grave.

The convict, was very interested to hear that Pip's brother-in-law was a blacksmith because he was shackled on his leg. It made him impossible to move around freely, and to saw the leg-iron off, he needed a metal file which is readily available with a blacksmith.

3. Narrate how Romeo came to be banished from Verona.

Ans: Romeo married Juliet in secret with the help of Friar Lawrence. Soon after their marriage, a group of Capulets, headed by Tybalt, happened to meet Benvolio and Mercutio on a street of Verona. Tybalt accused Mercutio associating with Romeo. The hot-tempered Mercutio, responded sharply and a quarrel began. Meanwhile, Romeo arrived on the scene and the fierce Tybalt insulted Romeo by calling him a villain. Romeo tried to avoid the quarrel as Tybalt was Juliet's dear cousin. Besides, Romeo was wise and gentle by nature and had never entered into their family quarrel. He tried to reason with Tybalt, but Tybalt ignored him and drew his weapon. Mercutio could not endure the insult of his friend and he provoked Tybalt. In the fight between them Tybalt killed Mercutio. Romeo lost his temper when he saw his friend dead. He in turn killed Tybalt. The news of this deadly broil soon brought a crowd to the spot, including the Lords Montague and Capulet with their wives and also the Prince of Verona. Benvolio was commanded by the Prince to relate the origin of the fight. He did so but without injury to Romeo. Lady Capulet urged the Prince to strictly punish the murderer of Tybalt, while Lady Montague, pleaded for her son's life. The Prince, unmoved by the passionate exclamations of the two ladies, pronounced his judgement and banished Romeo from Verona.

4. The Bodhisatta announced to the people living near the entrance of the forest that the Demon was no longer a threat. How did the Bodhisatta succeed in transforming the Demon?

Ans: The Demon had trapped the Bodhisatta along with his weapons in his matted hair but realising that he would not be able to digest even a tiny portion of this brave man's flesh, he released the prince. The Bodhisatta however, decided to conquer the Demon with the power of his knowledge before leaving the forest. He told the Demon that his wicked deeds in his past life had resulted in his birth as a Demon in his present life. The Bodhisatta told the Demon that killing other living creatures results in reincarnation as an animal or an evil creature. He also told the Demon about the disadvantage of five kinds of wickedness and the profit of the five kinds of virtue. All this frightened the Demon who understood that his evil acts would have adverse consequences. Thus, the Demon was subdued and transformed. He would no longer be a threat to other living creatures.

5. How does the first wish of Mr. White come true?

Ans: Mr. White's first wish for two hundred pounds comes true in a tragic and unexpected way. The day after Mr. White wishes for the two hundred pounds, a representative from Herbert's workplace, Maw and Meggins visits the White's home. The representative informs them that their son, Herbert, has been killed in a tragic accident at work, and the company is offering a compensation of two hundred pounds to the family. In other words, Mr. White's wish for two hundred pounds is granted, but at the terrible cost of Herbert's life. This twist illustrates the dark and sinister power of the monkey's paw, granting wishes in a way that brings suffering and tragedy to those involved.

6. Give a character sketch of Mrs. Horace Pringle.

Ans: Mrs. Horace Pringle is a woman of fashion and looks impressive. She is excitable in temperament but lively and humorously charming. She is able to get things executed the way she wants them to be done. She does not approve of young men who refuse her invitation to dinner at the last moment. She is a socialite and is proud of being a very sought-after hostess. She is often seen to absent minded, forgetting things and getting flustered by the changes in the arrangements. Mrs. Pringle is very keen to set her daughter up with Mr. Oliver Farnsworth because he is a very rich and eligible bachelor. She belongs to the upper class of society and ignores all else in an attempt to maintain the etiquette of high society. Mrs. Pringle is double-faced in her manner and words. She is delighted when Mrs. Sedgwick informs her about her inability to attend the dinner party, though outwardly she expresses her feeling of regret to her. She is suspicious by nature and is quick to jump into conclusions. She does not believe the excuses put forward by Mr. Harper and Mr. Farnsworth for not attending the dinner. She is fickle-minded and changes her opinion about people frequently. When Mr. Farnsworth cancels her invitation, she is furious and renounces the intricacies of social life, but this is all put aside when the Prince of Wales attends the dinner on behalf of Mr. Farnsworth. Throughout the play, her nature keeps swinging from delight to anger and from disappointment to delight.

[Poetry]

7. What message does the poem 'Life' convey?

Ans: Charlotte Bronte is refreshingly optimistic throughout her poem 'Life'. According to her, life is not so dark as

most wise men believe it to be. She tells us not to despair when we go through difficult times. Our sorrows, sufferings or bad times do not last forever. Even if we are stuck with sorrow, we must remember that things can get better. Good things are often borne out of bad things, so we must not take the negatives so seriously. Again, the poetess tells us to enjoy the happy moments in our life and be grateful for them as they too are short-lived. Further, she makes a point that death which sometimes takes away our loved ones is not so significant as people think it to be. Death and sorrow are part and parcel of life. Sometimes bad times may come in our life and sorrow seems to be winning over our hope, but we instantly rebuild our hope in overcoming the situation. Hope is unconquered and it springs back like elastic. Hence, instead of losing faith in ourselves, we should be strong enough to fight all our adversities.

8. "The Gift of India' is an anti-war poem" - Explain.

Ans: 'The Gift of India' by Sarojini Naidu is a patriotic poem, however at one point it appears as an anti-war poem. Throughout the poem, the poet gives expression to her hatred of war and violence. She depicts the horrors of the war through brutal killings of the Indian soldiers in the First World War. Torn away from their mother's bosom, the Indian soldiers laid down their lives without knowing why they were fighting. They fought valiantly in alien lands, however, they were not treated well by their British masters. Naidu envisions terrifying scenes of dead bodies of Indian soldiers lying unattended on the battlefields. Their dead bodies lay lifeless like the shells scattered on sands. Their severed limbs and bloodstained bodies are proof enough of the horrors of the war. The immeasurable grief of Mother India at the loss of the brave Indian soldiers in the poem reflects Naidu's anti-war attitude. However, Mother India hopes that one day terror and hate shall cease, and it is then that life will be remodelled with newfound peace in the world.

9. How does William Wordsworth show that the song sung by the solitary reaper was really enchanting and beautiful?

Ans: The poet, William Wordsworth, while travelling in the Highland valleys, came across a solitary girl who was cutting and binding grain in a field. While doing her work, the girl was singing a melancholic song, the sweet music of which was overflowing the entire valley. Her voice was so beautiful and melodious that the poet compared it to that of the two sweet singing birds - the nightingale and the cuckoo. The melody of the Highland girl seemed to him to be sweeter than the song of the nightingale which appears to be very enchanting to a weary band of travellers in an Arabian desert, and more thrilling than the song of the cuckoo that breaks the silence of the sea among the distant Hebrides at the advent of the spring. The poet could not understand the meaning of her song as she was probably singing in her native language. However, from its sad tone, he simply guessed that the girl was singing about some old, unhappy far-off things or about some battles fought long ago. The poet also thought that it might be an ordinary song, relating to some natural sorrow, loss or pain which keeps on occurring in day-to-day life. Whatever might be the subject matter of her song, the poet was mesmerized by its sweet melody. He stood motionless listening to her song as it seemed to have no ending to him. When the poet walked up the hill, the music of the maiden could no longer be heard, but he carried its melody which remained in his heart for a long time afterwards.

10. Why is the poet weary of the city life and what are the recollections that she has about the sea that make her long for it?

Ans: In the poem 'Exiled', the poet expresses her disgust for the city life and her

longing for the sea. She is sick of the city, its people, their words and lifestyle. She feels imprisoned living in the city, surrounded by tall buildings, stricken with noise and confused with artificial lights. The poet was happy when she could spend all day long on the coast of Maine. She wishes to savour once again the sticky saltiness of sea breeze and hear the loud and soft sound of the waves breaking on the shoreline. She remembers her days when she dwelt near the sea and could see the wild sweet-pea that marks the advent of winter, growing near her door. The poet wishes that she could hear the groans of the green piles under the wooden piers and the hungry cries of the wheeling gulls. She wishes to see the barrels bobbing on the water, the black sticks fencing the weirs and the weedy mussels crusting the rotting hulls of the ship. She also wants to hear the 'shanties' sung by the sailors in rhythm with the roaring of the waves. She imagines the perils of the sea and fears that if the bell is not rung on a foggy night, it might put the ships in danger. The poet asserts that she will be happy only when she is near the sea once again and is able to touch shells, anchors and ships, berthed along the coast.

11. What are the characteristics of the village schoolmaster and how was he looked upon by the students and the villagers?

Ans: The village schoolmaster is characterized as stern, disciplined, and authoritative, commanding respect from his students. Despite his stern look and strict demeanur, he is a kind-hearted person who always has a joke to tell. He is wise and passionate about learning. He can read, write, forecast weather and tides and also solve difficult calculations. He is admired and respected not only by the students but also by the villagers for his knowledge and his eloquence. He has the ability to argue, even upon being defeated. He would impress the uneducated village folk by using high-sounding words. Even the parson acknowledges his skill for debate. The amount of knowledge he has, left the villagers in awe. They wonder how one small head can carry so much knowledge.

Extract based questions: (4 marks each)

[Prose]

1. "You don't, you say, like this cruise. Now, why?"

   a. Who said this and to whom? (1)

   Ans: Dr. Livesey said the given words to Captain Smollett.

   b. When was this said?

   Ans: This was said when the doctor interrupted a talk between Squire Trelawney and Captain Smollett who came up with some complaints.

   c. What was the reply given? (2)

   Ans: Captain Smollett replied that he had been appointed on sealed orders to sail the ship, but he found that his crew knew more than he did. He heard them say that they were going on a secret treasure hunt.

2. "It's my belief neither of you gentlemen know what you are about."

   a. Who said this and to whom? (1)

   Ans: Captain Smollett said the given words to Dr. Livesey in the presence of Squire Trelawney.

   b. What did the speaker mean by this statement? (1)

   Ans: By the given statement, the captain meant that the squire and the doctor had no idea of the risk involved in the voyage.

   c. What reply did the speaker receive? (2)

   Ans: The doctor replied that the captain's words were very clear and true. He agreed that they took the risk, but they were not as

ignorant as the captain believed them to be.

3. "Say Lord strike me dead if you don't !" Said the man. I said so, and he took me down.

   a. Whom is the man speaking to and why does he say this? 2

   Ans. The man is speaking to Pip. He says this to make Pip remember what he has assured to do for him

   b. Why does the responder take the oath? 1

   Ans. Pip, takes the oath because the man has threatened to take his heart and liver out if he disobey.

   c. What does 'take me down' refer to?1

   Ans. The phrase, 'take me down' means removing Pip from the top of the tombstone where the convict had placed him.

4. "That young man has a secret way peculiar to himself, of getting at a boy, and at his heart and at his liver".

   a. Who spoke the above statement and to whom? 2

   Ans. The above statement was spoken by the convict to Pip.

   b. Who is the 'young man' referred to here? 1

   Ans. 'The young man' referred to here is the convict's companion.

   c. Why did the speaker tell the boy about the man? 1

   Ans. The convict told Pip about the man to frighten him so that Pip would get him the file and wittles.

5. 'O Romeo, Romeo! Wherefore art thou, Romeo? Deny thy Father and refuse thy name, for my sake;'

   a. Who uttered these words?

   Ans: Juliet uttered the above words.

   b. Where was the speaker?

   Ans: Juliet was in her room. She appeared at a window while uttering the given words.

   c. Why did the speaker utter the above words?

   Ans: Juliet fell in deep love with Romeo, not knowing that he was a Montague, the bitter enemy of the Capulets. When she came to know his actual identity, she wished that Romeo should deny his family name for her sake.

   d. Who overheard her words?

   Ans: Romeo himself overheard Juliet's words as he was in the garden just below her window.

6. "The terrified Juliet was in a sad perplexity at her father's offer."

   a. What did Juliet's father offer her?

   Ans: Juliet's father told her to marry Count Paris whom he had chosen for her.

   b. Why was she terrified?

   Ans: Juliet was terrified because she was already married to Romeo who was a Montague, her family rival.

   c. How did she react to his offer?

   Ans: Juliet pleaded every reason to Lord Capulet against the match between her and Count Paris.

   d. Give a synonym of the word 'perplexity'?

   Ans: Confusion

7. "The King and Queen had invited eight hundred Brahmans to the feast."

   a. What is the name of the King mentioned here?

   Ans: The King mentioned here is King Brahmadatta of Banaras.

   b. What was the occasion of the feast?

   Ans: The feast was held on the name-day of the prince.

   c. What were the Brahmans known for?

   Ans: The Brahmans were known for their ability to read the lucky marks on a baby's skin and predict its future.

   d. How were the Brahmans treated?

Ans: The Brahmans were treated to food and drink and everything they could wish for.

8. "Young Sir, you are a lion of a man! I will not eat you up."

a. Who said this and to whom?

Ans: These words were spoken by the Demon to the prince.

b. Why did the speaker call the 'young sir' a 'lion'?

Ans: The Demon called the prince a lion because he showed no fear even when he was trapped completely in the matted hair of the Demon.

c. Why did the speaker decide not to eat the young man?

Ans: The Demon decided not to eat the young man because he feared that he would not be able to digest even a piece of flesh of such a lion- man.

d. Why was the young man not afraid to die?

Ans: The prince in his wisdom, knew that in one life a man death is inevitable and can die only once. Thus, he was not afraid to die.

9. 'Hark at the wind', said Mr. White

a. To whom did Mr. White say these words?

Ans: Mr. White said these words to his son, Herbert White.

b. When did he say these words?

Ans: Mr. White said these words while he and his son were playing the game of chess.

c. Why did Mr. White utter these words?

Ans: Mr. White uttered these words to keep his son from seeing the mistake he had made.

d. What is the synonym of the word 'hark'.

Ans: The synonym of the word 'hark' is 'listen'

10. 'For God's sake, don't let it in,' cried the old man, trembling.

a. Who is the old man here?

Ans: The old man here is Mr. White, the father of Herbert White.

b. What does 'it' refer to in the line?

Ans: The word 'it' refers to the creature knocking on their door, whom they believed was their son, Herbert White, returning from the dead.

c. Why did the old man plead not to let it in?

Ans: The old man implored not to let it in because he was aware that the creature was not his son, but a monstrous version of him.

d. Why does Mr. White try to prevent 'it' from getting in?

Ans: Mr. White tries to prevent 'it' from letting in because he does not want to see the monstrous form.

11. "The Prince of Wales! Oh! What would not I give to have him in my house!"

a. Who is the speaker of the above line?

Ans: Mrs. Pringle is the speaker of the given line.

b. What would the speaker gain by the presence of the Prince of Wales?

Ans: Mrs. Pringle would establish her social position for life by the presence of the Prince of Wales at her dinner party.

c. What kind of reputation does the speaker have?

Ans: Mrs. Pringle has the reputation for being a wonderful hostess.

d. How is the speaker's wish fulfilled in the end?

Ans: Mrs. Pringle's wish is fulfilled when the Prince of Wales attends the dinner on behalf of Mr. Oliver Farnsworth.

12. "Yes, madam, there are two strange gentlemen in the lower hall. They presented this letter."

a. Who spoke the above words and to whom?

Ans: Dunham spoke the given words to Mrs. Pringle.

b. Who were the two 'strange gentlemen'?

Ans: The two 'strange gentlemen' were the Prince of Wales and the secretary of Mr. Oliver Farnsworth.

c. What 'letter' is referred to here?

Ans: It was a letter from Oliver Farnsworth, addressed to Mrs. Pringle.

d. How did the arrival of the two gentlemen improve the situation?

Ans: Mrs. Pringle had altogether twelve people to dine, but the arrival of the two gentlemen increased the total number of guest to fourteen, which she had desired.

[Poetry]

13. "Sometimes there are clouds of gloom,
But these are transient all:"

i. What does 'clouds of gloom' represent? 1

Ans: The phrase 'clouds of gloom' represents sorrows and hardships in life.

ii. Why is the phrase apt? 2

Ans: The phrase is apt because just like clouds, sorrow and hardships in our life are not permanent. Clouds bring rain, similarly, the problems we face in life make for better times ahead.

iii. What does the word 'transient' mean? 1

Ans: The word 'transient' means lasting for only a short time.

14. "What though death at times steps in
And calls our Best away?"

i. Where does 'Death' step in? 1

Ans: Death steps in human life.

ii. Who does 'our Best'refer to? 1

Ans: The expression 'our Best' refers to our near and dear ones or the people we love most.

iii. How, according to the poet, might we overcome the situation? 2

Ans: According to the poet, if death at times takes away our loved ones, we should not despair. We should accept the situation, considering it a temporary phase in our life and hope for better times.

15. Can ye measure the grief of the tears I keep
Or compass the woe of the watch I keep?
Or the pride that thrills thro' my heart's despair …..

i. Who is 'I'?

Ans: 'I' stands for Mother India.

ii. Why does the speaker weep?

Ans: Mother India weeps because her sons were killed in the battlefield.

iii. What does the expression "compass the woe" mean here?

Ans: This expression means the ability of the reader to comprehend the depth of her misery.

iv. Why does the speaker feel proud?

Ans: Mother India feels proud because her sons fought bravely even in the face of death.

16. And yielded the sons of my stricken womb
To the drum-beats of duty, the sabre of doom.

i. Whose sons are they?

Ans: They are the sons of Mother India.

ii. Where were they 'yielded'?

Ans: The Indian soldiers were yielded to the battlefield.

iii. How did the speaker feel when her sons were taken away?

Ans: Mother India grieved when her sons were taken away as she knew the danger they were in.

iv. What happened to them there?

Ans: The Indian soldiers were killed in the war and their bodies were

buried in unmarked graves on foreign lands.

17. ‘Behold her, single in the field,
Yon Solitary Highland Lass!
Reaping and singing by herself;
Stop here or gently pass!’

i. Who is the reaper here? 1

Ans: The reaper is the solitary Highland girl.

ii. What does the expression ‘Behold her’ mean? 1

Ans: The expression means ‘to look at her’

iii. What advice does the poet give the passers-by? 2

Ans: The poet advises the passer-by not to disturb the girl. They should either stop and listen to her melodious song or pass gently.

18. I listened, motionless and still;
And, as I mounted up the hill,
The music in my heart I bore,
Long after it was heard no more

i. What music is the poet talking about in these lines?

Ans: The poet is talking about the music of the maiden’s song in these lines.

ii. Mention the two other kinds of music, listed by the poet that were surpassed by this music.

Ans: The two other kinds of music, listed by the poet, which were surpassed by the reaper’s voice, are the welcoming notes of the nightingale and the thrilling voice of the cuckoo.

iii. How does the poet react on hearing the music?

Ans: The music mesmerizes the poet and he stops to listen to it.

iv. Why is ‘the music’ heard no more?

Ans: ‘The music’ is heard no more because the poet left the valley and mounted up the hill.

19. Searching my heart for its true sorrow
This is the thing I find to be:
That I am weary of words and people
Sick of the city, and wanting the sea;

a. What is it that the poet is searching for in her heart?

Ans: The poet is searching for the cause of her sorrow.

b. What is making the poet unhappy?

Ans: The life of the city, its people and their words are making the poet unhappy.

c. What is it that will make the poet happy?

Ans: The poet will be happy only when she is near the sea.

d. What does the expression 'weary of words' mean?

Ans: The expression means that the poet is tired of the lack of sincerity in people's words.

20. If I could see the weedy mussels
Crusting the wrecked and rotting hulls;

a. Besides the weedy mussels, what other sights does the poet want to see?

Ans: Besides the weedy mussels, the poet wants to see the bobbing barrels and the black sticks that fence the weirs.

b. What are the weedy mussels?

Ans: The weedy mussels are a weak type of small, orange sea creatures that live inside a black oval shell.

c. Where are the weedy mussels?

Ans: The weedy mussels crust the wrecked and rotting hulls.

d. What does the poet refer to when she says 'rotting hulls'?

Ans: When the poet says 'rotting hulls', she refers to the decayed hulls' of wrecked ships.

21. “Beside yon straggling fence that skirts the way
With blossom’d furze unprofitably gay,

There, in his noisy mansion, skill'd to rule,
The village master taught his little school;"

a. Where was the school situated?

Ans: The school was situated in the small village next to an irregular fence lined with beautiful ornamental flowers.

b. Why do you think the furze is described as'unprofitably gay'?

Ans: The furze is described as 'unprofitably gay' because nobody notices or appreciates its beauty.

c. What does the word 'mansion' refers to?

Ans: The word 'mansion' refers to the school building

d. What is the synonym of 'skill'd?

Ans: The synonym of 'skill'd' is talented.

22. 'Well had the boding tremblers learn'd to trace
The days disasters in his morning face;
Full well they laugh'd with counterfeited glee,
At all his jokes, for many a joke had he:"

a. Who were the 'boding tremblers'?

Ans: The term 'Boding tremblers' refers to those students who are afraid of the schoolmaster.

b. Whose face is being referred to?

Ans: The face of the village schoolmaster is being referred to here.

c. What did the tremblers learn by observing his face?

Ans: The students could sense the mood of the schoolmaster and foretell the day's trouble.

d. Why did the children laugh with 'counterfeited glee'?

Ans: The children laughed with 'counterfeited glee' because they wanted to please him.

[Oliver Twist]

23. "You need food, and you shall have it. Up you come."

(a) Who said the above words and to whom?(1)

Ans: The above words were spoken by Jack Dawkins (the Artful Dodger) to Oliver Twist.

(b) What prompted the speaker to say so? (3)

Ans: When Oliver reached the little town of Barnet, he sat on a cold doorstep with bleeding feet and covered with dirt. He then happened to meet Jack Dawkins who asked him what his trouble was. Oliver replied with tears in his eyes that he was very hungry and tired. He also said that he had walked a long way for seven days. On hearing this, the Dodger felt sorry for him and decided to buy him food.

24. He shouted, "Stop thief!" and began to give chase.

(a) Who uttered 'Stop thief' and to whom?

Ans: The given words were uttered by the old gentleman, Mr. Brownlow, to Oliver Twist.

(b) What made the listener run?

Ans: Mr Brownlow was absorbed with a book at the bookstall. Oliver was horrified to see the Dodger put his hand into Mr Brownlow's pocket, pull out his handkerchief and run off at full speed, followed by Charley Bates. All at once, he understood the meaning of Fagin's games. Confused and frightened, he also ran away. But at that moment the old gentleman discovered his loss and turned around. Seeing Oliver running, he thought him to be the thief and shouted at him to stop.

25. "Oh! You really expect him to come back, do you?"

(a) Who said the above words and to whom? (1)

Ans: The given words were spoken by Mr. Grimwig to Mr. Brownlow.

(b) What made the speaker doubt the return of the person referred to in the above line?(3)

Ans: When Mr. Brownlow introduced Oliver to Mr. Grimwig, the latter argued that Oliver might be deceiving him. In order to prove

Oliver's honesty to Mr. Grimwig, Mr. Brownlow asked Oliver to return a parcel of books to the bookseller and sent him off with five pounds with which to pay for them. MrGrimwig, who did not trust Oliver, doubted his return as he thought that Oliver had got a new suit, valuable books and a five pound note and he would go back to his old friends, the thieves, and laugh at Mr Brownlow.

26. "What about the job at Chertsey, Bill?" said the Jew.

(a) What was the job?(1)
Ans: The job was the plan to rob the house of an old lady at Chertsey.

(b) Why did the Jew want Oliver to help with that job? (3)
Ans: Bill Sikes examined the old lady's house one night and discovered a very small window through which only a small boy could be admitted into the house. Fagin thought of Oliver who was just the size to help with the burglary. He felt that Oliver would start thinking of himself as a thief once he realised that he had been involved in a burglary. Moreover, Oliver had an innocent appearance that would avoid detection or suspicion. Hence, the Jew wanted Oliver to help with that job.

27. "Let me run away and die in the field. Oh' pray have mercy on me and do not make me steal!"

(a) Who is the speaker here and whom is he pleading to?
Ans: Oliver is the speaker here and he is pleading to Bill Sikes and Toby Crackit.

(b) What was his plan and what happened before he could carry out his plan? (3)
Ans: Bill Sikes and Toby Crackit made Oliver enter through a small window of the house forcefully at gunpoint. They asked him to go softly up the steps leading to the little hall, unfasten the street door and let them in. Oliver, who was reluctant to rob, made a desperate plan to make a dash up the stairs and warn the family about the robbery. But before he could carry out his plan, there was a loud cry; and, to his horror, Oliver saw two terrified half-dressed men standing at the top of the stairs with a lamp. There was a shot and Oliver staggered backwards. Sikes grabbed Oliver by the collar, dragged him up and pulled him out through the window. Oliver was bleeding and he only sensed that he was being carried away rapidly from the spot.

28. "Has he, ma'am?" cried Oliver, with great pleasure.

(a) Why did Oliver cry out with pleasure? (1)
Ans: Oliver cried with pleasure when Rose told him that DrLosborne would take him to see Mr Brownlow.

(b) What did Oliver find when the doctor took him to look for Mr Brownlow's house? (3)
Ans: After recovering from his illness, Oliver set out with Doctor Losberne in MrsMaylie's carriage to meet Mr Brownlow in his house. However, when they reached, they discovered that the house was empty, with a sign in the window, 'To Let'. The servant next door told them that Mr Brownlow had sold all his goods and moved, along with MrsBedwin and MrGrimwig, to the West Indies six weeks before. When Oliver heard this, he was bitterly disappointed as he was eagerly looking forward to meeting Mr Brownlow and MrsBedwin.

29. 'He scribbled on a piece of paper and gave it to Mr. Bumble.'
(a) What was scribbled on the piece of paper? (1)
Ans: Monks scribbled his address on the piece of paper which he gave to Mr Bumble.
(b) Describe the evening when Mr and Mrs Bumble went to meet Monks. (3)
Ans: It was a dull, hot evening when Mr and Mrs Bumble left the town to meet Monks. They made their way to a group of ruined houses near the river. These were well known as the haunts of thieves and robbers. As they drew near the address Monks had given, thunder began to be heard in the distance and rain started to fall.

30. 'Let me go' pleaded Nancy, earnestly.
(a) To whom did Nancy plead? (1)
Ans: Nancy pleaded with Bill Sikes to allow her to go out for a breath of fresh air.
(b) What did the person do when Nancy tried to leave the house? (3)
Ans: When Nancy tried to leave the house, Sikes stood up from his place, locked the door and pulled Nancy's bonnet from her head. Nancy tried to free herself but Sikes stopped her by threatening her that if she uttered another word, his dog would get her by the throat. She then desperately pleaded with him, but Sikes seized her by the arm and pushed her into an adjoining room and into a chair, where he held her by force. She struggled and pleaded in turn until midnight, then exhausted and ceased to fight. Sikes then left her alone to recover and returned to Fagin.

31. 'Quick!' she said, 'tell them to fetch a coach and be ready to go with me.'
(a) Who is the speaker of the above words? (1)
Ans: The speaker of the above words is Rose Maylie.
(b) What did the speaker do on reaching the place? (3)
Ans: When Rose and Oliver arrived at Mr Brownlow's place, she left Oliver in the coach, saying that she would prepare Mr Brownlow to receive him. After entering the house, she found the old gentleman sitting with his friend, MrGrimwig. She told them all that had happened with Oliver since they last saw him. After hearing the story, Mr Brownlow fetched Oliver in at once and he was happily reunited with MrGrimwig and MrsBedwin.

32. “Give me a rope, a long one,” said Sikes.
(a) Why did Sikes ask for a rope? (1)
Ans: Bill Sikes demanded a rope so that he could escape from the house by dropping into the river which was at the back of the house.
(b) Was the rope of any help to him? Elaborate. (3)
Ans: No, the rope did not help Bill Sikes. After getting the rope, Sikes hurried up onto the roof of the house. But when he looked over the edge, he found that the tide was out, and there was no water below. Meanwhile, he heard the shouts of people entering through the front door of the house. Sikes gambled on the chance of lowering himself from the rooftop. He tied one end of the rope around the chimney stack and put the other end, in a running noose, around his neck. But, before he could get it under his arms, he seemed to have seen the ghost of Nancy and in a yell of terror, he threw his arms above his head. To his horror, he lost his balance and fell off the roof, hanging by the noose that he had tied himself.

33. "And the will?" asked Mr. Brownlow.
(a) Whose will was Mr. Brownlow referring to? (1)
Ans: Mr. Brownlow was referring to the will of Edwin Ledford, Oliver’s father.
(b) What were the conditions of the will? (3)
Ans: According to the conditions laid down in the will, Monks and his mother would each get eight hundred pounds a year. The rest of the property was divided into two equal parts - one for Agnes Fleming and the other for her expected child. If it were a girl child, she should inherit the money when she came of age. But if a boy child were born, he should only have the money on the condition that he had never brought dishonour to his father’s name with any public act of wrong-doing.

34. ‘While he was awaiting his end, he was visited in prison by Mr Brownlow and Oliver’.

(a) Who was ‘he’ and what happened to him ? (2)
Ans: Fagin is referred to here as ‘he’. He had been caught and brought to justice. He was tried by a jury, found guilty of many crimes and was sentenced to death by public hanging.

(b) Why did Mr Brownlow take Oliver to the prison? (2)
Ans: Fagin was in prison awaiting his end. Mr. Brownlow took Oliver to the prison in order to let him see the Jew in the terror and misery to which his villainy had brought him.

***

Sample Question Paper

(SSLC Examination 2024-25)

English

(Old Course)

by

Meghalaya Board of School Education (MBOSE)

A. Scheme of Theory Examination

Section	Topics	Marks
Section-A: Multiple Choice Questions (MCQs)	• Literature; • Grammar; and • Reading Skills (Conceptual)	30
Section-B: Creative Writing Skills	• Letter Writing based on a given situation • Article Writing on the given topic • Email Writing • Story Writing	18
Section-D: English Reader and Supplementary Reader	• Short Answer Type Questions • Long Answer Type Questions • Extract from English Reader and Supplementary Reader	32
Total		**80**

Sample Question Paper

English (old course)
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 49Questions.
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 and C.
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.
    a. Questions 1 to 14 are from the Reading Circle and Oliver Twist.
    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.
7. Section-B contains Creative Writing Questions.
8. Section-C contains Questions based on Reading Circle and Oliver Twist

Section-A

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

(Questions 1 to 14 are from the Reading Circle and the Oliver Twist)

1. The convict held Pip very tightly and threatened to have his

A) bread B)heart and liver C) belongings

2. The fable of the mountain and the mouse was mentioned by

A) Captain Smollett B)Dr. Livesey C) Long John Silver

3. Before Romeo left Juliet, he promised to write her from Mantua

i . every minute in the day
B) every two hours in the day
C) every hour in the day

4. When the Brahmans prodded the bottom of the baby prince's foot, he

A) cried out in pain
B) let out a hearty chuckle
C) pushed them away with his foot

5. Sergeant Major Morris decides to not sell the Monkey's paw because

i. he thinks that no one would buy it
ii. he wanted to give it to Mr.White as a present
iii. he feels that the Monkey's paw has caused enough mischief

6. "She's far too pretty, too clever." This description refers to

A) Ella Tuppers B) Hester Longley
C) Jessica

7. 'I climbed the wave' means

A) the poet swam
B) the poet rode the wave
C) the poet sat on the wave

8. What does the poet mean by the phrase "clouds of gloom"?

A) Dark clouds
B) Grey clouds
C) Sorrowful times

9. "Blood-brown meadows" indicates the

A) reddish and brown colour of the meadows
B) rich and fertility of the meadows
C) horrors of war

10. The sweet melody of the reaper's song has been compared to that of

A) The pigeon and the dove
B) The nightingale and the cuckoo
C) The peacock and the parrot

11. The shadow of a woman, in a cloak and bonnet which passed along the wall outside, was seen by

A) Fagin B) Monks
C) Sikes D)Charley Bates

12. Mr. Brownlow took Oliver to his house in

A) Chertsey B)Pentonville
C)Bethnal Green D)Isleworth

13. Old Sally had stolen _____from the dead mother of Oliver Twist.

A) a handkerchief B) a will
C) a locket and a ring D)a five pound note

14. Mr. Brownlow notices that Oliver bears a close resemblance to

A) Monks B) Rose Maylie
C) Mrs. BedwinD)the woman in the portrait on his wall

(*Questions 15 to 20 are from Grammar Section. Read the given instructions carefully before answering)*

15. Jacob said to me, "Have you read this book?" (Choose the correct option)

A) Jacob asked me if I have read this book.
B) Jacob asked me if I had read that book.
C) Jacob asked me if I would read this book.
D) Jacob asked me if I had been reading this book.

16. 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.

17. Vinay said that the maid had taken a day off. (Choose the correct option)
A) Vinay said, "The maid is on a leave."
B) Vinay said, "The maid will take a day off."
C) Vinay said, "The maid has taken a day off."
D) Vinay said, "The maid takes a day off."

18. The tickets had already been booked by my friend. (Choose the correct active form)
A) My friend already booked the tickets.
B) The tickets had already booked my friend
C) My friend had already booked the tickets.
D) The tickets are already booked by my friend.

19. Tragedy _____ ten year old Rajkumar when he met with an accident on Monday. (Choose the most appropriate word from the given options)
A) strike
B) strikes
C) struck
D) had struck

20. I _____ waiting for him for three hours.
(Choose the most appropriate word from the given options)
A) had been
B) have been
C) has been
D) will

(Questions 21 to 30 are based on the passage given below. Read the passage carefully then choose the most appropriate options for the questions.)

Read the following passage carefully:

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.

On the basis of the above passage answer the following questions by choosing the most appropriate options:

21. What are habits, according to the passage?
A) Conscious decisions
B) Automatic responses to specific situations
C) Innate behaviours
D) Learned skills

22. 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

23. 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

24. 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

25. 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

26. What can we become by controlling our habits?
    A) Less productive
    B) Less confident
    C) More productive, confident, and successful
    D) Unchanged

27. What is the author's attitude towards habits?
    A) Neutral
    B) Positive
    C) Negative
    D) Critical

28. 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

29. 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

30. 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

Section- B

Creative Writing Skill

Creative Writing Skill: **Answer any 2 (two)** (2x9 = 18 Marks)

31. You are Andruf / Medari and you are very concerned about the water leakage from broken pipes in your locality. Write a letter to the Chairman of the Municipal Board, stating the problems and what might happen if further action is not taken.
32. Imagine you are John/Mary and you just visited an old-age home. Write an email to your friend Nikita, telling her how you took care of some old people there.
33. Write a story in about 150 words which begins with the words given below. Give a suitable title too:

    Jenny's younger brother, Johnny, had been a studious boy. But for the last few days she noticed a sudden change in his behaviour and performance. She was worried. One day.....

34. You are well aware of the negative impact of single- use plastic on the environment. Write an article in about 120 words on “Menace of Plastic”.

Section-C

(Reading Circle & Oliver Twist)

Q. No. 35-40: Short Answer Questions: Answer any 4 (Four) (4 x 2 = 8)

35. Why has Mr. Trelawney hired the captain, the ship and the crew?
36. Who is Sergeant-Major Morris?
37. Why did Friar Lawrence consent to join the hands of Romeo and Juliet in marriage?
38. Where does the wild sweet-pea grow and what does it mark?
39. According to Sarojini Naidu, how should the fallen soldiers be treated?
40. Why did Fagin and Sikes want Nancy to go to the police station?

Q. No. 41-44: Long Answer Questions: Answer any 2 (Two)

41. Give a character sketch of Mrs. Horace Pringle.
42. Narrate how Romeo came to be banished from Verona.
43. "'The Gift of India' is an anti-war poem" - Explain.
44. How does William Wordsworth show that the song sung by the solitary reaper was really enchanting and beautiful?

Q. No. 45-49: Extract based Questions: Answer any 3 (three)

Read the following extracts and answer the questions that follow:

45. 'For God's sake, don't let it in,' cried the old man, trembling.
    i. Who is the old man here? (1)
    ii. What does 'it' refer to in the line? (1)
    iii. Why did the old man plead not to let it in and why was he trying to prevent it from getting in? (2)

46. "Young Sir, you are a lion of a man! I will not eat you up."
    i. Who said this and to whom? (1)
    ii. Why did the speaker call the 'young sir' a 'lion'? (1)
    iii. Why did the speaker decide not to eat the young man? (2)

47. 'Well had the boding tremblers learn'd to trace
    The days disasters in his morning face;
    Full well they laugh'd with counterfeited glee, At all his jokes, for many a joke had he:"
    i. Who were the 'boding tremblers'? (1)
    ii. Whose face is being referred and what did the tremblers learn by observing the face? (2)
    iii. Why did the children laugh with 'counterfeited glee'? (1)

48. "What though death at times steps in
    And calls our Best away?"
    i. Where does 'Death' step in? (1)
    ii. Who does 'our Best' refer to? (1)
    iii. How, according to the poet, might we overcome the situation? (2)

49. "What about the job at Chertsey, Bill?" said the Jew.
    i. What was the job? (1)
    ii. Why did the Jew want Oliver to help with that job?(3)

*** End of the Question Paper***

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

Mathematics
Class-X
(Old 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)

Section-A

(Multiple Choice Questions) – 1 Mark

1. For some integer m, every even integer is of the form:
   (A) m (B) m + 1 (C) 2m
   (D) 2m + 1

   Ans. (C) 2m

2. If p^2 is an even integer, then p is an:

   (A) odd integer (B) even integer

   (C) multiple of 3 (D) none of these

   Ans. (B) even integer

3. If HCF of 336 and 54 is 6, then LCM is:
   (A) 3023 (B) 3024 (C) 3025
   (D) none of these
   Ans. (b 3024

4. Prime factors of 4050 is:
   (A) $2 \times 3^3 \times 5$ (B) $2 \times 3^4 \times 5$
   (C) $2 \times 3^4 \times 5^2$ (D) $2 \times 3^4 \times 5^3$
   Ans. (C) $2 \times 3^4 \times 5^2$

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) primes

6. If two positive integers p and q can be expressed as $p = a^2 b^3$ and $q = a b$; a, b being prime numbers, then LCM (p, q) is:
   (A) a b (B) $a^2 b^2$ (C) $a^2 b^3$
   (D) $a^3 b^3$
   Ans. (C) $a^2 b^3$

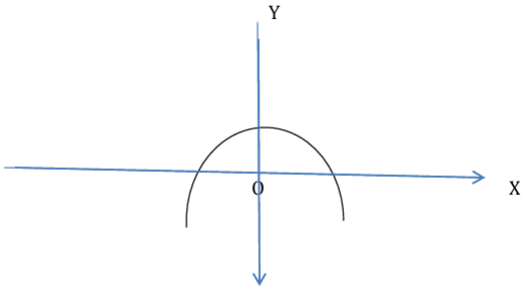
7. The decimal expansion of a rational number is always:
   (A) non- terminating
   (B) non-terminating and non-repeating
   (C) Terminating or non-terminating repeated
   (D) none of these
   Ans. (C) Terminating or non-terminating repeated

8. 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) an irrational number

9. Which of the following is false?
   (A) HCF (p, q) X LCM (p, q) = p x q
   (B) HCF(p, q, r) = 1; if p, q, r, are prime numbers
   (C) LCM (p, q, r) = p x q x r ; if p, q, r, are prime numbers
   (D) HCF(p, q, r) X LCM (p, q, r) = p x q x r
   Ans. (D) HCF(p, q, r) X LCM (p, q, r) = p x q x r
   Note: HCF (p, q, r) X LCM (p, q, r) ≠ p x q x r, where p, q, r, are positive integers

10. If HCF of 336 and 54 is 6, then LCM is:
    (A) 2236 (B) 2338 (C) 22338
    (D) 757
    Ans. (C) 22338

11. The graph of f(x) is shown below. The number of zeroes of f(x) are:



(A) 1 (B) 2 (C) 3 (D) 4

Ans.(B) 2

12. The HCF of p and q which are relatively primes is:

(A)1 (B) p (C) q (D) p q

Ans. (A) 1

13. The LCM of p and q which are relatively primes is

(A)1 (B) p (C) q (D) p q

Ans. (D) p q

14. 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) 2^2 x 3 x 13

15. 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) x^2 -2

16. A polynomial of degree 2 is called a:

(A)Linear polynomial

(B) quadratic polynomial

(C) cubic polynomial

(D) biquadratic polynomial

Ans. (B) quadratics polynomial

17. A quadratic polynomial can have at most:

(A)1 zero (B) 2 zeroes

(C) 3 zeroes (D) 4 zeroes

Ans. (B) 2 zeroes

18. The degree of a constant polynomial is:

(A)2 (B) 1 (C) -1

(D) 0

Ans. (D) 0

19. The degree of a zero polynomial is:

(A) Always zero (B) never zero

(C) negative (D) undefined

Ans. (D) undefined

20. Sum of zeroes of the polynomial p(x) = x^2 – 3x + 2 is:

(A)2 (B) 3

(C) -2 (D) -3

Ans. (B) 3

Hint: sum of zeroes of p(x) = - $\frac{co-effcient\ of\ x}{co-efficient\ of\ x2}$

21. Product of zeroes of the polynomial p(x) = x^2 – 3 is:

(A)– 3 (B) 3 (C) √3 (D) - √3

Ans. (A) – 3

Hint: product of zeroes of p(x)= $\frac{constant\ term}{co-efficient\ of\ x2}$

22. 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

23. If the graph of y = p(x), where p(x) is a polynomial, does not intersect the x- axis then the number of zero is:

(A)1 (B) 2 (C) 3

(D) none of the above

Ans. (D) none of the above

24. 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 zero is:

(A)1 (B) 2 (C) 3 (D) 4

Ans. (A) 1

25. If the sum of zeroes of polynomial $p(x) = 2x^2 - k\sqrt{2}x + 1$ is $\sqrt{2}$, then the value of k is:

(A) $\sqrt{2}$ (B) $2\sqrt{2}$ (C) 2 (D) ½

Ans.(C) 2

26. At most how many zeroes a linear polynomial can have?

(A)0 (B) 1 (C) 2 (D) 3

Ans.(B) 1

27. If the graph 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

28. 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) one solution

29. 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) intersecting at (a, b)

30. 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) infinite solutions

31. If x = a and y = b is the solution of the equations $x - y = 2$ and $x + y = 4$, then the vales 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

32. 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) $\frac{b^2}{4a}$ (D) $-\frac{b^2}{4a}$

Ans. (C) $\frac{b^2}{4a}$

33. The roots of the equation $ax^2 + bx + c = 0$ are not-real if:

(A) $b^2 - 4ac = 0$ (B) $b^2 - 4ac > 0$

(C) $b^2 - 4ac < 0$ (D) $b = 0$

Ans. (C) $b^2 - 4ac < 0$

34. The sum of a number and its reciprocal is $\frac{10}{3}$ then the number is:

(A) 1 (B) 2 (C) 3 (D) 4

Ans. (C) 3

35. If x = 1 is the common root of $ax^2 + bx + 2 = 0$ and $x^2 + x + b = 0$, then ab equals:

(A) 1 (B) 0 (C) 3 (D) 4

Ans. (B) 0

36. A quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ will have equaled roots if:

(A) $b^2 - 4ac = 0$ (B) $b^2 - 4ac > 0$

(C) $b^2 - 4ac < 0$ (D) $b = 0$

Ans. (A) $b^2 - 4ac = 0$

37. The roots of the quadratic equation $x^2 + 4x + 4 = 0$ is:
(A) (2, 0) (B) (2, 2) (C) (-2, - 2)
(D) (2, -2)
Ans. (C) (-2, -2)

38. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2 y + c_2 = 0$ 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) $a_1/a_2 = b_1/b_2 = c_1/c_2$

39. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2 y + c_2 = 0$ 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) $a_1/a_2 \neq b_1/b_2$

40. The system of equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2 y + c_2 = 0$ 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) $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

41. In an AP, if d= 2, n = 4, a_n = 13 then a, is:
(A) 6 (B) 7 (C) 20 (D) 28
Ans. (B) 7

42. In an AP, if a= 3, d = 2, n = 10 then $a_{n,}$ is:
(A) 21 (B) 23 (C) 54 (D) 100
Ans. (A) 21

43. Which of the following series form an AP?
(A) 2, 4, 8, 16, ……
(B) 0, -4, -8, -12,……
(C) 1, 3, 9, 27, ……..
(D) 0.2, 0.22, 0.222, 0.2222,…..
Ans. (B) 0, -4, -8, -12,…… *forms an AP (as d = -4 – 0 = -4; - 8 –(-4) = -4; -12 –(-8) = -4)*

44. The first three terms of an AP when the first term, a= 5 and common difference, d = 5 are:
(A) 5, 10, 15 (B) 10, 20, 30
(C) 10, - 10, - 20 (D) 10, 5, 0
Ans. (A) 5, 10, 15

45. If common difference of an AP is 5, then $a_{16} – a_{15}$ is:
(A) 1 (B) 31 (C) 5 (D) 15
Ans. (C) 5

46. Sum of first 20 natural numbers is:
(A) 210 (B) 120 (C) 55 (D) 15
Ans. (A) 210

47. Which term in the AP: 68, 64, 60, …… is -8?
(A) 50^{th} (B) 45^{th} (C) 30^{th}
(D) 20^{th}
Ans. (C) 20^{th}

48. 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) 18, 8

49. If k, 2k – 1, k + 1 are three consecutive terms of an AP, then the value of k is:
(A) – 2 (B) 3/2 (C) – 3/2
(D) 6
Ans. (B) 3/2

50. If the 5n + 3 is the nth term of an AP, then the common difference is:
(A) 15 (B) 12 (C) 5 (D) 1
Ans. (C) 5

51. 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) 7, 9, 11

52. 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) $n(n + 1)/2$

53. Two geometrical figures are said to be similar if:
(A) They have same shape and size
(B) they have same shape but different sizes
(C) They have same size but different shapes
(D) they have same shape
Ans. (A) They have same shape and size

54. All geometrical congruent figures are:
(A) Not similar (B) similar
(C) unequal (D) none of the above
Ans. (B) similar

55. The ratio of any two corresponding sides in two equiangular triangles is always:
(A) The same (B) different (C) equal
(D) none of the above
Ans. (A) the same

56. 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 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
Ans. (A) AA Similarity Criterion for two triangles

57. The perimeter of a circle is called the:
(A) Area (B) diameter (C) radius
(D) circumference
Ans. (D) circumference

58. The distance of any point P (x, y) from Origin is:
(A) $\sqrt{-}\, x^2 - y^2$ (B) $\sqrt{-}\, x^2 + y^2$ (C) $\sqrt{x^2 + y^2}$
(D) $\sqrt{x^2 - y^2}$
Ans. (C) $\sqrt{x^2 + y^2}$

59. In which quadrant does the point (-3 , 5) lie?
(A) first quadrant (B) second quadrant
(C) third quadrant (D) fourth quadrant
Ans. (B) second quadrant

60. The distance of the point P (3, 4) from the origin is:
(A) 1 unit (B) 3 units (C) 5 units
(D) 7 units
Ans. (C) 5 units

61. 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) (- 4, 2)

62. 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) (a/2, b/2)

63. The value of $1 + \tan^2 45^0$ is:
(A) - 1 (B) 0 (C) 1 (D) 2
Ans. (D) 2

64. If $\cos\theta = 1$, then the value of θ is:
(A) 0^0 (B) 30^0 (C) 60^0 (D) 90^0
Ans. (D) 90^0

65. The value of $3 \cot^2 A - 3 \text{Cosec}^2 A$ is equal to:
(A) - 3 (B) 0 (C) 3 (D) 1
Ans. (A) – 3

66. In ΔABC right angled 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) 5/13

67. The value of $9 \sec^2\theta - 9 \tan^2\theta$ is:
(A) 0 (B) 1 (C) 9 (D) 10
Ans. (C) 9

68. The value of $\text{cosec}^2 (90^0 - \theta) - \tan^2\theta$ is:
(A) 0 (B) 1 (C) 2 (D) 3
Ans. (B) 1

69. 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) 0^0

70. 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) 50^0

71. From a point Q, the length of the tangent to a circle is 4 cm and the distance of Q from 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) 3 cm

72. The tangent drawn at the end points of a diameter of a circle C are:
(A) Equal (B) parallel (C) perpendicular
(D) intersecting
Ans. (B) parallel

73. 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) 16 cm

74. 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) segment of a circle

75. 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) sector of a circle

76. 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) 14π cm

77. In a circle of radius 21cm, an arc subtends an angle of 60^0 at the centre. The length of an arc is: (Take $\pi = 22/7$)
(A) 22 cm (B) 44 cm (C) 132 cm
(D) 231 cm
Ans. (A) 21 cm

78. 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) 4 units

79. 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) four times

80. The total surface area of a hemispherical object of radius r, 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
Ans. (C) $3\pi r^2$ sq. units

81. The length of a diagonal of a cube of side 'a' is:
(A) a $\sqrt{3}$ units (B) 3 $\sqrt{a}$ units (C) $\sqrt{3}a$ units
(D) $a/\sqrt{3}$ units
Ans. (C) a $\sqrt{3}$ units

82. The area of square is the same as the area of circle. Their perimeters are in the ratio:
(A) 1:1 (B) $2:\pi$ (C) $\pi: 2$ (D) $2: \sqrt{\pi}$
Ans. (D) $2:\sqrt{\pi}$

83. A Bicycle wheel makes 1000 revolutions in moving 88000 m. the diameter of a wheel is:
(A) 14 m (B) 24 m (C) 28 m (D) 40 m
Ans. (C) 28 m

84. 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) 10

85. Area of a sector angle p^0 of a circle with radius R units is:
(A) $p/180 \times 2\pi R$ (B) $p/180 \times \pi R^2$
(C) $p/360 \times 2\pi R$ (D) $p/360 \times \pi R^2$
Ans. (D) $p/360 \times \pi R^2$

86. The volume of a sphere of radius R is:
(A) $2/3\ \pi R^3$ (B) $4/3\pi R^3$ (C) $3\pi R^3$ (D) $4\pi R^3$
Ans. (B) $4/3\pi R^3$

87. The surface area of a sphere is $616cm^2$, its diameter is:
(A) 56 cm (B) 28 cm (C) 14 cm
(D) 7 cm
Ans. (C) 14 cm

88. 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) be doubled
Ans. (C) remain unaltered

89. 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) 27 times

90. The 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) 64:27

91. A 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) 12 cm

92. If volumes of two spheres are in the ratio 64:27, then the ratio of their surface areas is:
(A) 3:4 (B) 16:9 (C) 9:16 (D) 4:3
Ans. (B) 16:9

93. 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) Mode = 3 Median – 2 Mean

94. Mode is:

(A) Least frequent value (B) middle most value

(C) Most frequent value (D) none of the above

Ans. (C) most frequent value

95. The cumulative frequency table is useful in determining the:

(A) Mean (B) Median (C) Mode

(D) All of the above

Ans. (B) Median

96. 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) 15

97. Which of the following cannot be the probability of an event?

(A) 2/3 (B) – 1.5 (C) 0.15 (D) 0.7

Ans. (B) – 1.5

98. 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) 1/3

99. 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

100. The probability of a sure Event is:

(A) 0 (B) 1/2 (C) 1 (D) non-existent

Ans. (C) 1

101. The probability of an impossible Event is:

(A) 0 (B) 1/2 (C) 1 (D) non-existent

Ans. (A) 0

102. If P(E) = 0.05, then P(E') equals:

(A) - 0.05 (B) 0.5 (C) 0.9 (D) 0.95

Ans. (D) 0.95

103. 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) 6/14

Ans. (C) 3/14

104. 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) mean

105. 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) modal class

106. Two coins are tossed. The probability of getting atmost one head is:

(A) 1 (B) 3/4 (C) 1/2 (D) ¼

Ans. (B) 3/4

107. The perimeter of a circle of radius 7 units is: (take $\pi = 22/7$)

(A) 7 units (B) 22 units (C) π units

(D) 44 units

Ans. (D) 44 units

108. 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) 360^0

109. The circumference of a circle of diameter d units is:
(A) π d (B) 2πd (C) $4\pi/2$ (D) π d/2
Ans. (A) π d

110. 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

111. 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) $ac = b^2/4$

112. 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) $1/\sqrt{2}$

113. For some data $x_1, x_2, \ldots\ldots x_n$ wth respective frequencies $f_1, f_2, \ldots\ldots f_n$, the value of $\sum f_i (x_i - x')$is equal to:
(A) nx' (B) 1 (C) $\sum f_i$ (D) 0
Ans. (D) 0

114. The middlemost observation of every data arranged in order is called:
(A) Mode (B) median (C) mean (D) deviation
Ans. (B) median

115. Every composite number can be expressed as product of primes and this factorisation is unique, apart from the order in which the prime factors occur. This is known as:
(A) Pythagoras theorem (b Euclid's Division algorithm
(C) Fundamental Theorem of Arithmetic
(D) Thales's theorem
Ans. (C) Fundamental Theorem of Arithmetic

116. A number which cannot 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. (B) An irrational number

117. 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) A Rational number

118. 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) An odd natural number

119. 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) prime number

120. 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) a composite number

121. 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

122. 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

123. 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

124. 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) 3

125. The Discriminant of the quadratic equation $x^2 + 8x + 16 = 0$ is:
(A) 3 (B) 2 (C) 1 (D) 0
Ans. (D) 0

126. The solution of $(x – 4)(x + 2) = 0$ is:
(A) 4, - 2 (B) – 4, 2 (C) 2, - 2 (D) 4, 2
Ans. (A) 4, - 2

127. The value of sec 60^0 is:
(A) $\sqrt{3}/2$ (B) 1/2 (C) 2 (D) 1
Ans. (C) 2

128. The area of an equilateral triangle of side 'a' is:
(A) $3a^2$ (B) $2\sqrt{3}/a$ (C) $\sqrt{3}/4\ a$ (D) $\sqrt{3}/4\ a^2$
Ans. (D) $\sqrt{3}/4\ a^2$

129. The length of the altitude of an equilateral triangle of side 2 cm is:
(A) 3 (B) $\sqrt{3}$ (C) $\sqrt{3}/2$ (D) $2\sqrt{3}$
Ans. (B) $\sqrt{3}$

130. If $\Delta ABC \sim \Delta DEF$ 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) 50^0

131. 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) isosceles

132. 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) Equilateral

133. 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) $\frac{1}{2} |x_1 (y_2 – y_3) + x_2 (y_3 – y_1) + x_3 (y_1 – y_2)|$
(B) $\frac{1}{2} |x_2 (y_3 – y_1) + x_3 (y_1 – y_2) + x_3 (y_1 – y_2)|$
(C) $\frac{1}{2} |x_3 (y_2 – y_1) + x_2 (y_3 – y_1) + x_1 (y_3 – y_2)|$
(D) $\frac{1}{2} |x_1 (y_2 – y_1) + x_2 (y_3 – y_2) + x_3 (y_1 – y_3)|$
Ans. (A) $\frac{1}{2} |x_1 (y_2 – y_3) + x_2 (y_3 – y_1) + x_3 (y_1 – y_2)|$

134. Three points in a plane are collinear if the area of a triangle is:
(A) 1 (B) 1/2 (C) -1 (D) 0
Ans. (D) 0

135. Which one of the following is the Hero's Formula for 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) $\sqrt{s(s-a)(s – b)(s - c)}$, where a , b, c are the sides of a triangle and s = a + b + c/2

(D) None of the above

Ans. (C) $\sqrt{s(s-a)(s – b)(s - c)}$, where a , b, c are the sides of a triangle and s = a + b + c/2

136. The relation between sinθ, cosθ and tanθ is:

(A) cosθ/sinθ = tanθ

(B) sinθ/cosθ = tanθ

(C) tanθ/sinθ = cosθ

(D) tanθ/cosθ = sinθ

Ans. (B) sinθ/cosθ = tanθ

137. The relation between sinθ, cosθ and cotθ is:

(A) cosθ/sinθ = tanθ

(B) sinθ/cosθ = tanθ

(C) tanθ/sinθ = cosθ (D) tanθ/cosθ = sinθ

Ans. (A) cosθ/sinθ = cotθ

138. If $\theta = 30^0$ then the value of $\cos^2\theta – \sin^2\theta$ is:

(A) 1 (B) 1/2 (C) -1 (D) 0

Ans. (B) 1/2

139. 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) semicircle

140. A wire is bent in the form of a circle of radius 28 cm, and then its length is:

(A) 176 cm (B) 188 cm

(C) 228 cm (D) 236 cm

Ans. (A) 176 cm

141. In a circle of radius 21 cm, an arc subtends an angle of 60^0 at the centre. Then the length of the arc is:

(A) 20cm (B) 21 cm (C) 22 cm

(D) 121 cm

Ans. (C) 22 cm

142. 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 units (B) $\pi r^2 h$ units

(C) $\pi r (\sqrt{r^2 + h^2})$ units (D) $\pi r h^2$ units

Ans. (C) $\pi r (\sqrt{r^2 + h^2})$ units

143. The mean of first 10 natural numbers is:

(A) 5.5 (B) 9.5 (C) 10.5 (D) 11.5

Ans. (A) 5.5

144. The mean of first 10 whole numbers is:

(A) 5.5 (B) 4.5 (C) 3.5 (D) 7.5

Ans. (A) 5.5

145. The point (3, - 4) lies in the:

(A) First quadrant (B) second quadrant

(C) third quadrant (D) fourth quadrant

Ans. (D) fourth quadrant

146. 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) 64 cm^3

147. 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) 4 mm

148. 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) range of data

149. A die is thrown once. The probability of getting an even number is:

(A) 1/4 (B) 2/3 (C) 1/2 (D) 1/3

Ans. (C) ½

150. A letter in English alphabets is chosen at random then the probability that the chosen letter is a consonant is:

(A) 21/26 (B) 11/25 (C) 15/26

(D) 21/23

Ans. (A) 21/26

151. A bi-quadratic polynomial is a polynomial of degree:

(A) 1 (B) 2 (C) 3 (D) 4

Ans. (D) 4

152. 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) real and unequal roots

153. 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) - b/2a, -b /2a

154. 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) {a + (n - 1)d}

155. 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) $6a^2$ sq. units

156. The total surface area of a right circular cylinder of radius ‘r’ units ad height ‘h’ units is:

(A) sq. units (B) 2π r h sq. units

(C) 2π r(r - h) sq. units

(D) 3π r (r +h) sq. units

Ans. (A) 2π r (r +h) sq. units

157. The coordinates of the point P (x, y) which divides the line segment joining the points A(x1, y1) and B(x2, y2)in the ratio m:n is (x, y) equals to:

(A) $\left(\frac{mx_2+mx_1}{m+n}, \frac{my_2+my_1}{m+n}\right)$

(B) $\left(\frac{mx_2-mx_1}{m+n}, \frac{my_2-my_1}{m+n}\right)$

(C) $\left(\frac{mx_2-mx_1}{m-n}, \frac{my_2-my_1}{m-n}\right)$

(D) $\left(\frac{mx_2+mx_1}{m-n}, \frac{my_2+my_1}{m-n}\right)$

Ans. (A) $\left(\frac{mx_2+mx_1}{m+n}, \frac{my_2+my_1}{m+n}\right)$

158. If the mean of a frequency distribution is 8.1, and $\sum f_i x_i = 132 + 5h$, $\sum f_i = 20$, then h equals:

(A) 3 (B) 4 (C) 5 (D) 6

Ans. (D) 6

159. 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) 1/6

160. If sin A = 3/5, then the value of tan A is:

(A) 4/3 (B) 3/4 (C) 3/5 (D) 5/4

Ans. (B) ¾

161. if α, β and γ are the zeroes of the cubic polynomial $ax^3 + b x^2 + cx + d$, where a, b, c, d are real numbers ad $a \neq 0$, then the value of $\alpha\beta + \beta\gamma + \gamma\alpha$ is equal to:

(A) - d/a (B) – c/a (C) b/a (D) c/a

Ans. (D) c/a

162. 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) n/2{ 2a + (n - 1) d}

163. If 'a' is the first term, l is the last term of an A P, then its nth sum is:
(A) n/2 {(a + l} (B) n/2 {(2a + l}
(C) n/2 {2a - l} (D) n { a + l}

Ans. (A) n/2{ a + l}

164. 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) common difference

165. 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) median

166. Centroid of a triangle is the point of concurrency of its three:
(A) Angle bisectors (B) medians
(C) altitudes (D) perpendicular bisectors
Ans. (B) medians

167. When the co-ordinate axes intersect each other at a point called Origin, its coordinates are:
(A) (x, y) (B) (- x, - y) (C) (0. 0)
(D) (- x, y
Ans. (C) (0, 0)

168. The reciprocal of cosine θ is:
(A) tan θ (B) sec θ (C) cosec θ (D) sin θ
Ans. (D) sin θ

169. $\tan^2\theta + 1$ is equal to:
(A) $\cot^2\theta$ (B) $\sec^2\theta$ (C) $\operatorname{cosec}^2\theta$
(D) $\cos^2\theta$
Ans. (B) $\sec^2\theta$

170. $1 - \sin^2\theta$ is equal to:
(A) $\cot^2\theta$ (B) $\sec^2\theta$ (C) $\operatorname{cosec}^2\theta$
(D) $\cos^2\theta$
Ans. (D) $\cos^2\theta$

171. The value of $\operatorname{cosec}^2 45^0$ is:
(A) $1/\sqrt{2}$ (B) $1/\sqrt{3}$ (C) 2 (D) $\sqrt{2}$
Ans. (C) 2

172. The coordinates of centroid of a triangle with vertices (x 1, y1), (x 2, y 2) and (x 3, y 3)are:
(A) $\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$
(B) $\left(\frac{x_1-x_2+x_3}{3}, \frac{y_1-y_2+y_3}{3}\right)$
(C) $\left(\frac{x_1+x_2+x_3}{2}, \frac{y_1+y_2+y_3}{2}\right)$
(D) $\left(\frac{x_1+x_2-x_3}{3}, \frac{y_1+y_2-y_3}{3}\right)$
Ans. (A) $\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$

173. The coordinates of a mid- point of the line segment AB with end points A (x 1, y1), B (x 2, y 2) is:
(A) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ (B) $\left(\frac{x_1-x_2}{2}, \frac{y_1+y_2}{2}\right)$
(C) $\left(\frac{x_1-x_2}{2}, \frac{y_1-y_2}{2}\right)$ (D) $\left(\frac{x_1+x_2}{2}, \frac{y_1-y_2}{2}\right)$
Ans. (A) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

174. The perpendicular distance of a point from Y-axis called:
(A) Ordinate (B) abscissa (C) altitude
(D) none of the above
Ans. (B) abscissa

175. The ordinates of all points on a horizontal line are:
(A) Parallel (B) perpendicular (C) equal
(D) coincident

Ans. (C) equal

176. The abscissa of any point on the Y – axis is:
(A) 1 (B) – 1 (C) 0 (D) 2
Ans. (C) 0

177. The distance between the points P (a, 0) and Q (0, b) is:
(A) $\sqrt{a^2 + b^2}$ (B) a + b (C) $\sqrt{a^2 - b^2}$
(D) a – b
Ans. (A) $\sqrt{a^2 + b^2}$

178. The distance between the points (- 8/5, 2) and (2/5, 2) is:
(A) 1unit (B) 2 units (C) 3 units
(D) 4 units
Ans. (B) 2 units

179. 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) ± 4

180. The distance between the points P (0, 5) and Q (- 5, 0) is:
(A) 5 units (B) $5\sqrt{2}$ units (C) $2\sqrt{5}$ units
(D) $\sqrt{10}$ units
Ans. (B) $5\sqrt{2}$ units

181. 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) (2, 3)

182. 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) (- 1, 3)

183. Distance covered by a wheel in one revolution is equal to:
(A) Diameter of a wheel (B) area of a wheel
(C) Circumference of a wheel
(D) none of these
Ans. (C) circumference of a wheel

184. The circumference of a bicycle wheel that makes 5000 revolutions in moving 11 km is:
(A) 500 cm (B)250 cm (C) 220 cm
(D) 150 cm
Ans. (C) 220 cm

185. Angle described by the hour hand of a clock in 12 hours is:
(A) 360^0 (B) 180^0 (C) 270^0 (D) 90^0
Ans. (A) 360^0

186. 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) 42 cm

187. 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

188. 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) 1:8

189. The sum and product of the zeroes of a quadratic polynomial $x^2 – 9x + 14$ are:
(A) 9, 14 (B) – 9, 14 (C) 9, - 14
(D) 14, 9
Ans. (A) 9, 14

190. 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) 1/k, $1/k^2$

191. The zeroes of a quadratic polynomial $x^2 + 9x - 10$ are:
(A) 4, 5 (B) – 1, 10 (C) 9, -1 (D) -10, 1
Ans. (D) – 10, 1

192. 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) $x^2 – 2x – 8$

193. 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) $7x^2 + x$

194. The first three terms of an AP whose first term ‘a’ = 1/3 and common difference d = - 2/3 are:
(A) 1/3, - 1/3, - 1 (B) 1/3, 2/3, 1
(C) 1/3, - 1, - 1/3 (D) 1/3, - 1/3, 2/3
Ans. (A) 1/3, - 1/3, - 1

195. The first three terms of an AP whose first term ‘a’ = 3. 5 and common difference d = 2. 5 are:
(A) 2.5, 6.5, 8.5 (B) 3.5, 6.0, 8.5
(C) 3.5, 5.5, 7.5 (D) 3.5, 6.5, 8.5
Ans. (C) 3.5, 6.0, 8.5

196. If a = - 2, d = 5 then the value of t_{10} is equal to:
(A) 23 (B) 33 (C) 43 (D) 53
Ans. (C) 43

197. The value of t_{15} of an AP: - 3, 5, 13, …… is:
(A) 69 (B) 85 (C) 93 (D) 109
Ans. (D) 109

198. The common difference of the AP: 0, ¼, ½, ¾, …… is:
(A) 1/4 (B) 1/2 (C) 3/4 (D) 0
Ans. (A) 1/4

199. The quadratic formula of the quadratic equation $ax^2 + bx + c$ where a, b, c are real numbers and $a \neq 0$ is given by x equals to:
(A) $b^2 – 4ac$ (B) $\sqrt{b^2 – 4ac}$ (C) $(– b \pm \sqrt{(b^2 – 4ac)})/2$ (D) $-b \pm \sqrt{(b^2 – 4ac)}$
Ans. (C) $(– b \pm \sqrt{(b^2 – 4ac)})/2$

200. If the value of $b^2 – 4ac$, of the quadratic equation $ax^2 + bx + c$ where a, b, c are real numbers and $a \neq 0$ is negative 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

201. If the probability of winning a game is 0.3, then the probability of losing it is:
(A) 1.03 (B) 1.0 (C) 0.9 (D) 0.7
Ans. (D) 0.7

202. 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) 2/11

203. The mode of the following data:
110,120,130,120,110,140, 130, 120, 140, 120 is:
(A) 140 (B) 130 (C) 120 (D) 110
Ans. (C) 120

204. The median of the following data:
7, 5, 12, 9, 24, 8, 4, 7, 10 is:
(A) 24 (B) 9 (C) 12 (D) 8
Ans. (D) 8

(Hint: arranging the data in ascending order as 4, 5, 7, 7, 8, 9, 10, 12, 14 and apply formula for median when n is odd)

205. 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) 16

210. 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) 12

211. If the mean of first n natural numbers is 5n/9, then n is:
(A) 4 (B) 5 (C) 8 (D) 9
Ans. (D) 9

212. 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) 4

213. 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) 6

214. 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) 3/5

215. 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) (4, 0)

216. 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

217. 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) 2/7

Section-B

Very Short Answer Questions (2 Marks)

Chapter 1: Real numbers

1. Using Euclid's division algorithm, find the HCF of 100 and 190

And Given numbers are 100 and 190

$\therefore$ 100) 190 (1
100
90) 100 (1
90
10) 90 (9
90
×

By Euclid's division algorithm, we get

$190 = 100 \times 1 + 90$

$100 = 90 \times 1 + 10$

$90 = 10 \times 9 + 0$

$\because$ Remainder = 0

$\therefore$ HCF (100, 190) = 10

2. Express 2025 as a product of its prime factors

Sol.

3	2025
3	675
3	225
3	75
5	25
	5

$\therefore$ $2025 = 3^4 \times 5^5$

3. HCF of two numbers is 16 and their product is 3072. Find their LCM.

Ans We know,

HCF × LCM = Product of two numbers

$\Rightarrow$ 16 × LCM = 3072

$\Rightarrow$ LCM = 192

4. Find the HCF and LCM of 26 and 91 by prime factorisation method.

Ans

	3	26		7	91
	13			13	

$\therefore$ $26 = 2 \times 13$

$91 = 7 \times 13$

$\therefore$ HCF = 13

$\therefore$ LCM = $13 \times 2 \times 7 = 182$

5. Find the smallest number which when divided by 35, 56 and 91 leaves remainder 7 in each case.

Ans

	5	35		2	56		7	91
7			2	28			13	
			2	14				
				7				

$\therefore$ $35 = 5 \times 7$

$56 = 2^3 \times 7$

$91 = 7 \times 13$

$\therefore$ LCM = $7 \times 5 \times 2^3 \times 13$

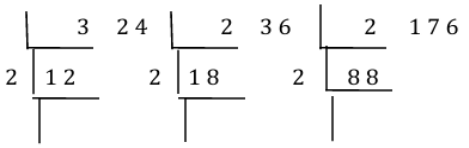
= 3460

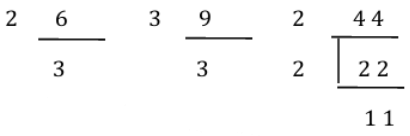
$\therefore$ The smallest number = 3460 + 7

= 3467

6. Find the HCF of 24, 36, 176 by applying the prime factorisation method.

Ans





$24 = 2^3 \times 3$

$36 = 2^2 \times 3^2$

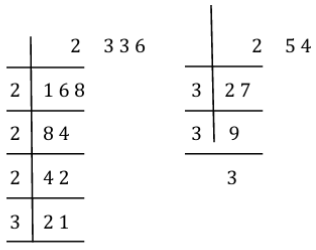
$176 = 2^4 \times 11$

$\therefore$ HCF $= 2^4$

$= 4$

7. Find the HCF and LCM of 336 and 54 by applying the fundamental theorem of Arithmetic.

Ans



$\therefore 336 = 2^4 \times 3 \times 7$

$54 = 2 \times 3^3$

$\therefore$ HCF $= 2 \times 3 = 6$

$LCM = \frac{Product\ of\ two\ numbers}{HCF}$

$= \frac{336 \times 54}{6}$

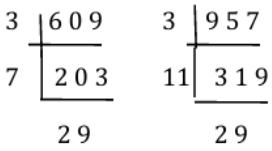
$= 3024$

8. Find the largest positive integer which divides 615 and 963 leaving 6 in each case.

Ans The required largest number

= HCF (615 – 6, 963 – 6)

= HCF (609, 957)



$609 = 3 \times 7 \times 29$

$957 = 3 \times 11 \times 29$

$\therefore$ HCF $= 3 \times 29$

$= 87$

$\therefore$ The largest positive integer which divides 615 and 963 leaving remainder 6 in each case is 87.

9. Using Euclid's division algorithm, state whether 47 and 149 are co-primes or not

And Given numbers are 47 and 149

$\therefore$ 47) 149 (3
141
8) 47 (5

$$\begin{array}{r} 40 \\ 7\overline{)\,8\,(\,1} \\ \underline{7} \\ 1\overline{)\,7\,(\,7} \\ \underline{7} \\ \times \end{array}$$

By Euclid's division algorithm, we get

$149 = 47 \times 3 + 8$

$47 = 8 \times 5 + 7$

$8 = 7 \times 1 + 1$

$7 = 1 \times 7 + 0$

$\because$ Remainder = 0

$\therefore$ HCF (47, 149) = 1

Hence, 47 and 149 are co-primes.

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

$$\begin{array}{r|l} 2 & 24 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline & 3 \end{array} \qquad \begin{array}{r|l} 2 & 20 \\ \hline 2 & 10 \\ \hline & 5 \end{array}$$

$\therefore 24 = 2^3 \times 3$

$20 = 2^2 \times 5$

$\therefore$ LCM $= 2^3 \times 3 \times 5$

$= 120$

$\therefore$ Minimum number of books that can be distributed equally among girls and boys = 120

<u>Chapter 3: Pairs of Linear equation in Two Variables :-</u>

11. Check whether the given pair of linear equations $2x + 5y = 17, 5x + 3y = 14$ has unique, no solution or infinitely many solutions.

Ans $2x + 5y = 17$

$5x + 3y = 14$

Here,

$a_1 = 2, b_1 = 5, c_1 = -17$

$a_2 = 5, b_2 = 3, c_2 = -14$

$\frac{a_1}{a_2} = \frac{2}{5}$

$\frac{b_1}{b_2} = \frac{5}{3}$

$\frac{c_1}{c_2} = \frac{-17}{-14} = \frac{17}{14}$

$\because \frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

$\therefore$ The given pair of linear equations has a unique solution.

12. Determine the value of k for which the given pair of linear equations $2x + 3y - 5 = 0,\ kx - 6y - 8 = 0$ have unique solution.

Ans $2x + 3y - 5 = 0$

$kx - 6y - 8 = 0$

Here,

$a_1 = 2, b_1 = 3, c_1 = -5$

$a_2 = k, b_2 = -6, c_2 = -8$

For unique solution,

$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

$\Rightarrow \quad \frac{2}{k} \neq \frac{\cancel{3}^{1}}{\cancel{-6}_{-2}}$

$\Rightarrow \quad \frac{2}{k} \neq \frac{1}{-2}$

$\Rightarrow \quad k \neq -4$

13. Find the value of k for which the system of linear equations $kx + 2y = 5\ and\ 3x - y = 10$ has no solution.

Ans $kx + 2y = 5$

$3x - 4y = 10$

Here,

$a_1 = k, b_1 = 2, c_1 = -5$

$a_2 = 3, b_2 = -4, c_2 = -10$

For no solutions,

$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$\Rightarrow \quad \frac{k}{3} = \frac{2^1}{-4_2} \neq \frac{\cancel{-5^1}}{\cancel{-10_2}}$

$\Rightarrow \quad \frac{k}{3} = \frac{1}{-2} \neq \frac{1}{2}$

From the first two, $k = \frac{-3}{2}$

From the last two, $k \neq \frac{3}{2}$

$\therefore \quad k = \frac{-3}{2}$

14. Find the value of k, for the following system of equations will represent the coincident lines?

$x + 2y + 7 = 0, \qquad 2x + ky + 14 = 0$

Ans $x + 2y + 7 = 0$

$2x + ky + 14 = 0$

Here,

$a_1 = 1, b_1 = 2, c_1 = 7$

$a_2 = 2, b_2 = k, c_2 = 14$

For coincident lines,

$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

$\Rightarrow \quad \frac{1}{2} = \frac{2}{2} \neq \frac{\cancel{7^1}}{\cancel{14_2}}$

From the first two, $\frac{1}{2} = \frac{2}{k}$

$\Rightarrow \quad k = 4$

15. Solve the following system of linear equations:

$2x + 3y = 0$

$3x + 4y = 5$

Ans $2x + 3y = 0 \Rightarrow 2x = -3y \Rightarrow x = -\frac{3y}{2}$ ------(i)

$3x + 4y = 5$

$\Rightarrow 3\left(-\frac{3y}{2}\right) + 4y =$ 5 [Substituting the value of x from (i)]

$\Rightarrow \quad \frac{-3y}{2} + 4y = 5$

$\Rightarrow \quad \frac{-9y+8y}{2} = 5$

$\Rightarrow \quad \frac{-y}{2} = 5$

$\Rightarrow \quad -y = 10$

$\Rightarrow \quad y = -10$

Putting the value of y in eqn (i), we get

$x = -\frac{3y}{2}$

$= \frac{-3 \times (\cancel{-10})^5}{\cancel{2_1}}$

$= 15$

$\therefore x = 15$

$y = -10$

16. Sum of two numbers is 35 and their difference is 13. Find the numbers.

Ans Let one number be x

$\therefore$ The other number $= 35 - x$

According to the question

$x - (35 - x) = 13$

$\Rightarrow x - 35 + x = 13$

$\Rightarrow x + x = 13 + 35$

$\Rightarrow 2x = 48$

$\Rightarrow x = \frac{48^{24}}{2_1}$

$\Rightarrow x = 24$

$\therefore$ One number $= x = 24$

Other number $= 35 - x$

$= 35 - 24$

$= 11$

17. If 2 is added to the numerator of a fraction, it reduces to $\frac{1}{2}$ and if 1 is subtracted from the denominator, it reduces to $\frac{1}{3}$. Find the fraction.

Ans Let the fraction be $\frac{x}{y}$

According to the question,

$\frac{x+2}{y} = \frac{1}{2}$

$\Rightarrow y = 2(x + 2)$

$\Rightarrow y = 2x + 4$ ----------(i)

Again,

$\frac{x}{y-1} = \frac{1}{3}$

$\Rightarrow 3x = y - 1$

$\Rightarrow 3x = 2x + 4 - 1$ [using eqn (i)]

$\Rightarrow 3x - 2x = 4 - 1$

$\Rightarrow x = 3$

Putting $x = 3$ in eqn (i), we get

$y = 2x + 4$

$\Rightarrow y = 2 \times 3 + 4$

$\Rightarrow y = 6 + 4$

$\Rightarrow y = 10$

$\therefore$ The required fraction $= \frac{x}{y} = \frac{3}{10}$

18. 10 students of class 10 took part in Mathematics quiz. If the number of girls is 4 more than the number of boys, represent this situation algebraically.

Ans Let the number of boys by x and the number of girls be y

$\because$ The total number of students is 10

$\therefore x + y = 10$

Also, the number of girls is 4 more than the number of boys

$\therefore y = 4 + x$

19. A father is three times as old as his son. In 12 years time, he will be twice as old as his son. Find the present ages of father and the son.

Ans Let the present age of the son be x years

$\therefore$ The present age of the father be $3x$ years

After 12 years,

Son's age will be $(x + 12)$ yrs

Father's age will be $(3x + 12)$ yrs

According to the question

$3x + 12 = 2(x + 12)$

$\Rightarrow 3x + 12 = 2x + 24$

$\Rightarrow 3x - 2x = 24 - 12$

$\Rightarrow x = 12$

$\therefore$ Son's Present age $= x$ yrs $= 12$

Father's present age $= 3x$ yrs $= (3 \times 12)$ yrs $=$ 36 yrs

20. Check whether the system of equations $6x + 4y = 2,\ 3x + 2y = 1$ is consistent.

Ans $6x + 4y = 2$

$3x + 2y = 1$

Here,

$a_1 = 6, b_1 = 4, c_1 = -2$
$a_2 = 3, b_2 = 2, c_2 = -1$
$\frac{a_1}{a_2} = \frac{6}{3} = 2$
$\frac{b_1}{b_2} = \frac{4}{2} = 2$
$\frac{c_1}{c_2} = \frac{-2}{-1} = 2$

$\because \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

$\therefore$ The given system of linear equations is consistent.

<u>Chapter 4: Quadratic Equations:</u>

21. Check whether $x = \frac{5}{3}$ is a solution of $3x^2 + 10 = 11x$ or not

Ans LHS $= 3x^2 + 10$

$= 3 \times \left(\frac{5}{3}\right)^2 + 10 \quad \left[\text{Putting } x = \frac{5}{3}\right]$

$= 3^1 \times \frac{25}{9_3} + 10$

$= \frac{25}{3} + 10$

$= \frac{25 + 30}{3}$

$= \frac{55}{3}$

RHS $= 11x = 11 \times \frac{5}{3} = \frac{55}{3}$

$\because$ LHS = RHS

$\therefore\ x = \frac{5}{3}$ is a solution of the given equation

22. Determine the value of k if $x = -\frac{5}{3}$ is a solution of the equation $3x^2 + kx + 5 = 0$.

Ans $3x^2 + kx + 5 = 0$

$\Rightarrow 3 \times \left(\frac{-5}{3}\right)^2 + k \times \left(\frac{-5}{3}\right) + 5 = 0$

$\Rightarrow 3^1 \times \frac{25}{9_3} - \frac{5k}{3} + 5 = 0$

$\Rightarrow \frac{25}{3} - \frac{5k}{3} + 5 = 0$

$\Rightarrow \frac{25 - 5k + 15}{3} = 0$

$\Rightarrow 40 - 5k = 0$

$\Rightarrow 5k = 40$

$\Rightarrow k = 8$

23. The product of two consecutive positive integers is 240. Formulate the quadratic equation whose roots are these integers.

Ans Let the first positive integer be x

$\therefore$ The consecutive positive integer $= (x + 1)$

$\therefore$ According to the question,

$x(x + 1) = 240$

$\Rightarrow x^2 + x = 240$

$\Rightarrow x^2 + x - 240 = 0$

24. Solve the quadratic equation $x^2 + 3x - 18 = 0$ by factorisation.

Ans $x^2 + 3x - 18 = 0$

$\Rightarrow x^2 + 6x - 3x - 18 = 0$

$\Rightarrow x(x + 6) - 3(x + 6) = 0$

$\Rightarrow (x + 6)(x - 3) = 0$

$\therefore$ Either, or,

$x + 6 = 0$ $x - 3 = 0$

$\Rightarrow x = -6$ $\Rightarrow x = 3$

$\therefore\ x = -6, 3$

25. Write the discriminant of $3x^2 - 2x + 8 = 0$.

Ans

The given equation is $3x^2 - 2x + 8 = 0$

Here,

$a = 3, b = -2, c = 8$

$\therefore$ Discriminant $= b^2 - 4ac$

$= (-2)^2 - 4 \times 3 \times 8$

$= 4 - 96$

$= -92$

26. Determine the nature of roots of the quadratic equation $6x^2 + 7x - 10 = 0$

Ans

The given equation is $6x^2 + 7x - 10 = 0$

Here,

$a = 6, b = 7, c = -10$

Discriminant $(D) = b^2 - 4ac$

$= (7)^2 - 4 \times 6 \times (-10)$

$= 49 + 240$

$= 289$

$\because D > 0$

$\therefore$ The given equation has real and unequal roots.

27. The product of Amit's (in years) 3 years ago and his age (in years) 7 years later is 56. Formulate a quadratic equation to find his present age.

Ans Let Amit's present age be x yrs

3 years ago, Amit's age was $(x - 3)$ yrs

7 years later, Amit's age will be $(x + 7)$ yrs

According to the question,

$(x - 3)(x + 7) = 56$

$\Rightarrow x(x + 7) - 3(x + 7) = 56$

$\Rightarrow x^2 + 7x - 3x - 21 - 56 = 0$

$\Rightarrow x^2 + 4x - 77 = 0$

28. Does the equation $9x^2 - 12x + 4 = 0$ have both roots equal.

Ans

The given equation is $9x^2 - 12x + 4 = 0$

Here,

$a = 9, b = -12, c = 4$

$\therefore$ Discriminant $(D) = b^2 - 4ac$

$= (-12)^2 - 4 \times 9 \times 4$

$= 144 - 144$

$= 0$

$\because D = 0$

$\therefore$ The given equation has both roots equal.

29. Find the value of k for which the equation $3x^2 - 5x + 2k = 0$ has real and equal roots.

Ans

The given equation is $3x^2 - 5x + 2k = 0$

Here,

$a = 3, b = -5, c = 2k$

The given equation will have real and equal roots if

Discriminant =

$\Rightarrow b^2 - 4ac = 0$

$\Rightarrow (-5)^2 - 4 \times 3 \times 2k = 0$

$\Rightarrow 25 - 24k = 0$

$\Rightarrow -24k = -25$

$\Rightarrow k = \frac{25}{24}$

30. State the nature of the roots of a quadratic equation if its
    (i) discriminant is greater than zero
    (ii) discriminant is equal to zero

Ans (i) If discriminant is greater than zero, then the roots are real and unequal (distinct)

(ii) If the discriminant is equal to zero, then the roots are real and equal (repeated)

Chapter 6: Triangles

31. When are two triangles said to be similar?

Ans Two triangles are said to be similar if their,

i) Corresponding angles are equal

ii) Corresponding sides in the same ratio (or proportional)

32. $D\ and\ E$ are points on the sides $AB\ and\ AC$ respectively of a ΔABC. Determine whether $DE \parallel BC$ or not where $AD = 5.7\ cm, DB = 9.5\ cm, AE = 4.8\ cm\ and\ EC = 8\ cm.$

Ans $\frac{AD}{DB} = \frac{5.7\ cm}{9.5\ cm}$

$= \frac{3}{5}$

$\frac{AE}{EC} = \frac{4.8\ cm}{8\ cm}$

$= \frac{3}{5}$

$\because \frac{AD}{DB} = \frac{AE}{EC}$

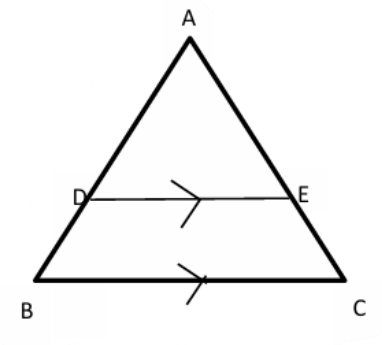
$\therefore$ By the converse of Thales' Theorem (or Basic Proportionality Theorem)

$DE \parallel BC$

33. In a $\Delta ABC, D\ and\ E$ are points on the sides AB and AC respectively such that $DE \parallel BC$. If $AD = 2\ cm, AB = 6\ cm, AE = 3\ cm,$ find AC.

Ans In ΔABC,

$\because DE \parallel BC$



$\therefore$ By Basic Proportionality Theorem,

$\frac{AD}{AB} = \frac{AE}{AC}$

$\Rightarrow \frac{2}{6} = \frac{3\ cm}{AC}$

$\Rightarrow 2 \times AC = 6 \times 3\ cm$

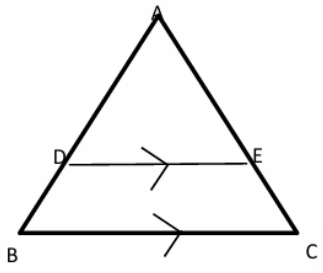
$\Rightarrow AC = 9\ cm.$

34. In a $\Delta ABC, D\ and\ E$ 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 In ΔABC

$\because DE \parallel BC$

$\therefore$ By Basic Proportionality Theorem,



$\frac{AD}{DB} = \frac{AE}{EC}$

$\Rightarrow \frac{2}{3} = \frac{7.2\ cm}{EC}$

$\Rightarrow\ EC = 10.8\ cm$

$\therefore\ AC = AE + EC$

$= 7.2\ cm + 10.8\ cm$

$= 18\ cm$

35. The perimeter of two similar triangles are 25 cm and 15 cm respectively. If one side of first triangle is 9 cm, what is the corresponding side of the other triangle.

Ans

Let the corresponding side of the other Δ be x

$\because$ the two Δs are similar

$\therefore\ \frac{One\ side\ of\ one\ \Delta}{Corresponding\ side\ of\ other\ \Delta} = \frac{Perimeter\ of\ one\ \Delta}{Perimeter\ of\ the\ other\ \Delta}$

$\Rightarrow \frac{9\ cm}{x} = \frac{25}{15}$

$\Rightarrow x \times 25 = 15 \times 9\ cm$

$\Rightarrow\ x = \frac{27}{5}$

$\Rightarrow\ x = 5.4\ cm$

$\therefore$ The corresponding side of the other Δ is $5.4\ cm$

36. Triangles ABC and DEF are similar. If $ar(\Delta ABC) = 9\ cm^2,\ ar(\Delta DEF) = 64\ cm^2$ $and\ DE = 5.1\ cm$, find AB.

Ans $\because\ \Delta ABC \sim \Delta DEF$

$\therefore\ \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AB^2}{DE^2}$ $\left[\because \text{the ratio of two similar } \Delta s \text{ is equal to the ratio of their corresponding sides}\right]$

$= \sqrt{\frac{9}{64}} = \sqrt{\frac{AB^2}{(5.1cm)^2}}$ [Taking square root of both sides]

$\Rightarrow \frac{3}{8} = \frac{AB}{5.1\ cm}$

$\Rightarrow\ 8\ \times AB = 3 \times 5.1\ cm$

$\Rightarrow\ AB = \frac{15.3}{8}\ cm$

$\Rightarrow\ AB = 1.91\ cm$

37. The side of a certain triangle are given as $a = 3\ cm, b = 4\ cm\ and\ c = 7\ cm.$ Determine whether it is a right angled triangle or not.

Ans Here,

$a = 3\ cm, b =$ $4\ cm\ and\ c = 7\ cm$

$\therefore\ a^2 = (3\ cm)^2 = 9\ cm^2$

$b^2 = (4\ cm)^2 = 16\ cm^2$

$c^2 = (7\ cm)^2 = 49\ cm^2$

$\therefore\ a^2 + b^2 = 9\ cm^2 + 16\ cm^2$

$= 25\ cm^2$

$\neq\ c^2$

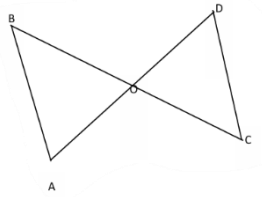
$\therefore$ Hence, the triangle is not a right angled triangle.

38. In the adjoining figure, $\Delta OAB \sim \Delta OCD$. When $AB = 8cm, BO = 6.4cm, OC =$ $3.5cm\ and\ CD = 5cm$, find $OA\ and\ DO$.

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, $\frac{8}{5} = \frac{OA}{3.5\ cm}$

$\Rightarrow\ 5 \times OA = 8 \times 3.5\ cm$

$\Rightarrow\ OA = 5.6\ cm$

Taking, $\frac{8}{5} = \frac{6.4\ cm}{OD}$

$\Rightarrow\ 8 \times OD = 5 \times 6.4\ cm$

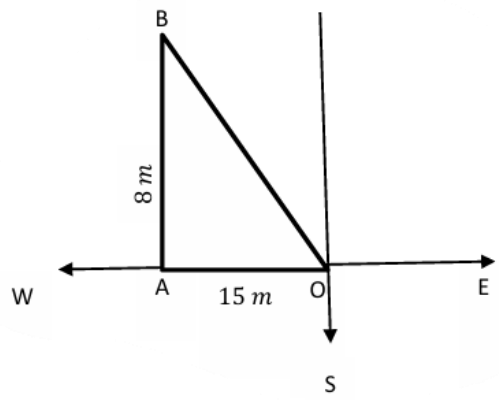
$\Rightarrow\ OD = 4\ cm$

39. A man goes 15 m due west and then 8 m due north. How far is he from the starting point?

Ans Let O be the starting point

$OA = 15m \; and \; AB = 8m$

In right ΔOAB



$OB^2 = OA^2 + AB^2$ $[By\ Pythagoras\ Theorem]$

$\Rightarrow OB^2 = (15m)^2 + (8m)^2$

$\Rightarrow OB^2 = 225m^2 + 64m^2$

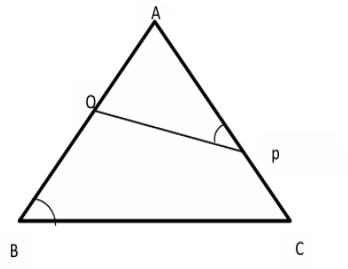
$\Rightarrow OB^2 = 289m^2$

$\Rightarrow \text{OB} = \sqrt{289m^2}$

$\Rightarrow \text{OB} = 17m$

$\therefore$ The distance of the man from starting point is 17m

40. In the adjoining figure, $\angle APQ = \angle B$. Prove that $\Delta APQ \sim \Delta ABC$. If $AP = 3.8cm, AQ = 3.6cm, BQ = 2.1cm \; and \; BC = 4.2cm \; find \; PQ$.



Ans In $\Delta APQ \; and \; \Delta ABC$,

$\angle A = \angle A \quad (Common\ angle)$

$\angle APQ = \angle B \quad (Given)$

$\therefore \Delta APQ \sim \Delta ABC \quad (AA\ Similarity)$

$\therefore \; \frac{AP}{AB} = \frac{PQ}{BC}$

$\Rightarrow \frac{3.8}{3.6 + 2.1} = \frac{PQ}{4.2}$

$\Rightarrow \frac{3.8}{5.7} = \frac{PQ}{4.2}$

$\Rightarrow 5.7 \times PQ = 3.8 \times 4.2 \; cm$

$\Rightarrow \frac{57}{10} \times PQ = \frac{38}{10} \times \frac{42}{10}$ cm

$\Rightarrow PQ = \frac{14}{5}$ cm

$\Rightarrow PQ = 2.8 \; cm$

Chapter 8: Introduction to Trigonometry

41. If $Cos\theta = \frac{3}{5}$, find the value of $sin\theta \; and \; cot\theta$.

Ans ABC is a right angled Δ, right angled at B

We have $Cos\theta = \frac{Base}{Hypotenuse}$

$= \frac{AB}{AC}$

$= \frac{3}{5}$

By Pythagoras Theorem in ΔABC, we get

$AC^2 = AB^2 + BC^2$

$\Rightarrow (5k)^2 = (3k)^2 + (BC)^2$

$\Rightarrow 25k^2 = 9k^2 + BC^2$

$\Rightarrow BC^2 = 25k^2 - 9k^2$

$\Rightarrow BC^2 = 16k^2$

$\Rightarrow AC^2 = \sqrt{16k^2}$

$\Rightarrow AC = 4k$

$\therefore \ sin\theta = \frac{Perpendicular}{Hypotenuse}$

$= \frac{BC}{AC}$

$= \frac{4k}{5k}$

$= \frac{4}{5}$

$cot\theta = \frac{Base}{Perpendicular}$

$= \frac{AB}{BC}$

$= \frac{3k}{4k}$

$= \frac{3}{4}$

42. Find the value of $Sin60^0Cos30^0 + Cos60^0Sin30^0$

Ans $Sin60^0Cos30^0 + Cos60^0Sin30^0$

$= \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{2}$

$= \frac{3}{4} + \frac{1}{4}$

$= \frac{3+1}{4}$

$= \frac{4}{4}$

$= 1$

43. If $A = 30^0$, verify that $sin2A = 2sinA\ cosA$

Ans L H S $= sin2A$

$= sin2 \times 30^0$

$= sin60^0$

$= \frac{\sqrt{3}}{2}$

R H S $= 2sinA\ cosA$

$= 2sin30^0 \times cos30^0$

$= 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2}$

$= \frac{\sqrt{3}}{2}$

$\therefore$ L H S = R H S

Hence Verified

44. If $\sin(A+B) = 1\ and\ \cos(A-B) = 1, 0^0 < A+B \leq 90^0, A >$, find $A\ and\ B$.

Ans $\sin(A+B) = 1$

$\Rightarrow \sin(A+B) = sin90^0$

$\Rightarrow A + B = 90^0$

$\Rightarrow A = 90^0 - B$ ----------(i)

$\cos(A-B) = 1$

$\Rightarrow \cos(A-B) = cos0^0$

$\Rightarrow A - B = 0^0$

$\Rightarrow 90^0 - B - B = 0^0 \quad [using\ eqn\ (i)]$

$\Rightarrow -2B = -90^0$

$\Rightarrow$ B $= \frac{90^0}{2}$

$\Rightarrow$ B $= 45^0$

Putting B $= 45^0$ in eqn (i), we get

A $= 90^0 - B$

$= 90^0 - 45^0$

$\therefore$ A $= 45^0$

B $= 45^0$

45. Evaluate: $\left(\frac{\sin 25^0}{\cos 65^0}\right)^2 - \left(\frac{\cos 61^0}{\sin 29^0}\right)^2$

Ans $\left(\frac{\sin 25^0}{\cos 65^0}\right)^2 - \left(\frac{\cos 61^0}{\sin 29^0}\right)^2$

$= \left\{\frac{\sin 25^0}{\sin(90^0-65^0)}\right\}^2 - \left\{\frac{\cos 25^0}{\cos(90^0-29^0)}\right\}^2$

$= \left\{\frac{\sin 25^0}{\sin 25^0}\right\}^2 - \left\{\frac{\cos 25^0}{\cos 25^0}\right\}^2$

$= 1^2 - 1^2$

$= 1 - 1$

$= 0$

46. Prove that $\frac{\sin 10^0}{\cos 80^0} + \cos 57^0\ cosec\ 33^0 = 1$

Ans L H S $= \frac{\sin 10^0}{\cos 80^0} + \cos 57^0\ cosec\ 33^0$

$= \frac{\cos(90^0 - 10^0)}{\cos 80^0} + \sin(90^0 - 57^0)\ cosec\ 33^0$

$= \frac{\cos 80^0}{\cos 80^0} + \sin 33^0\ cosec\ 33^0$

$= 1 + \sin 33^0 \times \frac{1}{\sin 33^0}$

$= 1 + 1$

$= 2$

= R H S

Hence Proved

47. Prove that $(1 - Sin^2\theta)Sec^2\theta = 1$

Ans L H S $= (1 - Sin^2\theta)Sec^2\theta$

$= Cos^2\theta \times Sec^2\theta$

$= Cos^2\theta \times \frac{1}{Cos^2\theta}$

$= 1$

= R H S

Hence Proved

48. Prove that $\frac{cos\theta}{1-sin\theta} = \frac{1+sin\theta}{cos\theta}$

Ans LHS $= \frac{cos\theta}{1-sin\theta}$

$= \frac{cos\theta\ (1+sin\theta)}{(1-sin\theta)(1+sin\theta)}$

$= \frac{cos\theta\ (1+sin\theta)}{1^2-sin^2\theta}$

$= \frac{cos\theta\ (1+sin\theta)}{1-sin^2\theta}$

$= \frac{cos\theta\ (1+sin\theta)}{cos^2\theta}$

$= \frac{1 + sin\theta}{cos\theta}$

= RHS

Hence Proved

49. If $x\ cosec\theta = a\ and\ y\ cot\theta = b$ prove that $\frac{a^2}{x^2} - \frac{b^2}{y^2} = 1$

Ans L H S $= \frac{a^2}{x^2} - \frac{b^2}{y^2}$

$= \frac{(x\ cosec\theta)^2}{x^2} - \frac{(y\ cot\theta)^2}{y^2}$

$= \frac{x^2 cosec^2\theta}{x^2} - \frac{y^2\ cot^2\theta}{y^2}$

$= cosec^2\theta - cot^2\theta$

$= 1$

= R H S

Hence Proved

50. Prove that $(Sec^2A - 1)(Cosec^2A - 1) = 1$

Ans

L H S $= (Sec^2A - 1)(Cosec^2A - 1)$

$= tan^2A \times cot^2A$

$= tan^2A \times \frac{1}{tan^2A}$

$= 1$

= R H S

Hence Proved

Chapter 14: Probability

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 6 red balls, 8 white balls, 5 green balls and 3 black balls. One ball is drawn at random from the bag. Find the probability that the ball drawn is red or black.

Ans

Total number of balls in the bag = 6 + 8 + 5 + 3

= 22

$\therefore$ Total number of possible outcomes = 22

Number of favourable outcomes = 6 + 3 = 9

$\therefore$ P (red or black) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{9}{22}$

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) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{8}{20}$

$= \frac{2}{5}$

54. One card is drawn at random from a well shuffled deck of 52 cards. Find the probability that the card drawn is
    (i) A black card
    (ii) A spade

Ans

Total number of possible outcomes = 52

(i) Number of black cards = 26

$\therefore$ Number of favourable outcomes = 26

$\therefore$ P (a black card) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$= \frac{26}{52}$

$= \frac{1}{2}$

(ii) Number of spade = 13

$\therefore$ Number of favourable outcomes = 13

$\therefore$ P (a spade) $= \frac{13}{52}$

$= \frac{1}{4}$

55. 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) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{0}{x}$$

$$= 0$$

56. Cards marked with numbers 13, 14, 15, . . ., 60 are placed in a box and mixed thoroughly. One card is drawn at random from the box. Find the probability that the number on the drawn card is divisible by 5.

Ans Number are 13, 14, 15, . . ., 60

$\therefore$ Total number of possible outcomes = 60 – 12 = 48

Numbers divisible by 5 between 13 to 60 are

15, 20, 25, 30, 35, 40, 45, 50, 55, 60

$\therefore$ Number of favourable outcomes = 10

$\therefore$ P (divisible by 5) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{10}{48}$$

$$= \frac{5}{24}$$

57. Cards bearing numbers 1, 3, 5, . . ., 35 are kept in a bag. A card is drawn at random from the bag. Find the probability of getting a card bearing a prime number less than 15.

Ans

Total number of possible outcomes $= \frac{35+1}{2} = \frac{36}{2} = 18$

Cards bearing a prime number less than 15 are 3, 5, 7, 11, 13

$\therefore$ Number of favourable outcomes = 5

$\therefore$ P (a prime number less than 15) $= \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$

$$= \frac{5}{18}$$

58. A bag contains 6 red balls and some blue balls. If the probability of drawing a blue ball is twice that of the red ball, find the number of blue balls in the bag.

Ans Number of red balls = 6

Let the number of blue balls be x

$\therefore$ The number of balls $= 6 + x$

$\therefore$ The number of possible outcomes $= 6 + x$

Given,

P (blue ball) = 2 × P (red ball)

$$\Rightarrow \frac{x}{6+x} = 2 \times \frac{6}{6+x}$$

$$\Rightarrow x(6 + x) = 12(6 + x)$$

$$\Rightarrow x = \frac{12\ (6+x)}{6+x}$$

$$\Rightarrow\ x = 12$$

$\therefore$ Number of blue balls is 12

59. There are 30 cards of the same size, in a bag on which numbers 1 to 30 are written. One card is drawn out of the bag at random. Find the probability that the number on the selected card is not divisible by 3.

Ans

Total number of possible outcomes = 30

Numbers divisible by 3 are 3, 6, 9, 12, 15, 18, 24, 27, 30

$= \frac{13}{24}$

∴ Numbers of favourable outcomes of divisible by 3 is 10

ii) Number of keys = 3

∴ Number of favourable outcomes = 3

$$\therefore \text{P (not divisible by3)} = 1 - P(divisible\ by\ 3)$$

$$= 1 - \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$$

$$= 1 - \frac{10}{30}$$

$$= 1 - \frac{1}{3}$$

$$= \frac{3-1}{3}$$

$$= \frac{2}{3}$$

∴ P (king) $= \frac{3}{48}$

$= \frac{1}{16}$

60. The king, queen, jack and 10, all of spades are lost from the pack of 52 playing cards. A card is drawn from the remaining well-shuffled pack. Find the probability of getting a
    i) Red card
    ii) King

Ans

Total number of possible outcomes = 52 – 4 = 48

i) Number of red cards = 26

∴ Number of favourable outcomes = 26

$$\therefore \text{P (red card)} = \frac{number\ of\ favourable\ outcomes}{total\ number\ of\ possible\ outcomes}$$

$$= \frac{26}{48}$$

Section-C
Short Answer Questions (3 Marks)
[Chapter-2: Polynomials]

1. Find the zeroes of the quadratic polynomial $2x^2 + x - 10$ and verify the relationship between the zeroes and the coefficients.

Soln.:

Let $p(x) = 2x^2 + x - 10$

$= 2x^2 + 5x - 4x - 10$

$= x(2x + 5) - 2(2x + 5)$

$= (2x + 5)(x - 2)$

Now, $p(x) = 0$

$\Rightarrow (2x + 5)(x - 2) = 0$

Either, $2x + 5 = 0$ *or*, $x - 2 = 0$

$\Rightarrow x = -\frac{5}{2}$ *or*, $x = 2$

Hence, the zeroes of $p(x)$ are $-\frac{5}{2}$ *and* 2.

Verification:

Sum of the zeroes $= -\frac{5}{2} + 2$

$= \frac{-5+4}{2}$

$= -\frac{1}{2}$

$= -\frac{coefficient\ of\ x}{coefficient\ of x^2}$

Product of zeroes $= -\frac{5}{2} \times 2$

$= -\frac{10}{2}$

$= \frac{constant\ term}{coefficient\ of\ x^2}$

Hence, verified.

2. Find a quadratic polynomial whose zeroes are $3 + \sqrt{5}$ and $3 - \sqrt{5}$.

Soln.:

Sum of the zeroes $= 3 + \sqrt{5} + 3 - \sqrt{5}$

$= 6$

Product of zeroes $= (3 + \sqrt{5})(3 - \sqrt{5})$

$= (3)^2 - (\sqrt{5})^2$

$= 9 - 5$

$= 4$

Therefore, the required quadratic polynomial

$= x^2 - (sum\ of\ zeroes)x + Product\ of\ zeros$

$= x^2 - 6x + 4$. (Ans)

3. Check whether $x^2 + 3x + 1$ is a factor of $3x^4 + 5x^3 - 7x^2 + 2x + 2$ by using division algorithm.

Soln.: We have,

$$
\begin{array}{l}
x^2 + 3x + 1 \overline{)\, 3x^4 + 5x^3 - 7x^2 + 2x + 2 \,(3x^2 - 4x + 2} \\
\quad 3x^2 + 9x^3 + 3x^2 \\
\quad (-)\ \ (-)\ \ (-) \\
\hline
\quad\quad -4x^3 - 10x^2 + 2x + 2 \\
\quad\quad -4x^3 - 12x^2 - 4x \\
\quad\quad (+)\ \ (+)\ \ (+) \\
\hline
\quad\quad\quad\ 2x^2 + 6x + 2 \\
\quad\quad\quad\ \mathbf{2x^2 + 6x + 2} \\
\quad\quad\quad\ (-)\ \ (-)\ \ (-) \\
\hline
\quad\quad\quad\quad\ \mathbf{0}
\end{array}
$$

Since, the remainder is $\mathbf{0}$.

Therefore, $\boldsymbol{x^2 + 3x + 1}$ is a factor of $\boldsymbol{x^4 + 5x^3 - 7x^2 + 2x + 2}$. (Ans)

4. If one zero of the polynomial $\boldsymbol{(a^2 + 9)x^2 + 15x + 6a}$ is a reciprocal of the other, then find the value of $\boldsymbol{a}$.

Soln.:

Given polynomial is $\boldsymbol{(a^2 + 9)x^2 + 15x + 6a}$

Let the other zero be $\boldsymbol{y}$

$\therefore$ One zero $= \boldsymbol{\frac{1}{y}}$

Now,

Product of the zeroes $= \boldsymbol{\frac{Constant\ term}{Coefficient\ of\ x^2}}$

$\Rightarrow \boldsymbol{y \times \frac{1}{y} = \frac{6a}{a^2+9}}$

$\Rightarrow \boldsymbol{1 = \frac{6a}{a^2+9}}$

$\Rightarrow \boldsymbol{a^2 + 9 = 6a}$

$\Rightarrow \boldsymbol{a^2 - 6a + 9 = 0}$

$\Rightarrow \boldsymbol{a^2 - (3 + 3)a + 9 = 0}$

$\Rightarrow \boldsymbol{a^2 - 3a - 3a + 9 = 0}$

$\Rightarrow \boldsymbol{a(a - 3) - 3(a - 3) = 0}$

$\Rightarrow \boldsymbol{(a - 3)(a - 3) = 0}$

Either, $\boldsymbol{a - 3 = 0}$ $\boldsymbol{or}$, $\boldsymbol{a - 3 = 0}$

$\Rightarrow \boldsymbol{a = 3}$ $\boldsymbol{or}$, $\boldsymbol{a = 3}$

Hence, the value of $\boldsymbol{a}$ is $\boldsymbol{3}$. (Ans)

5. If α and β are the zeroes of $x^2 - 3x + 1$, then find a polynomial whose zeroes are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$.

Soln.:

Let $p(x) = x^2 - 3x + 1$

Since, α and β are the zeroes of $p(x)$.

$\therefore$Sum of the zeroes $= -\frac{coefficient\ of\ x}{coefficient\ of\ x^2}$

$\Rightarrow \alpha + \beta = -\frac{-3}{1}$

$\Rightarrow \alpha + \beta = 3$

& Product of the zeroes $= \frac{constant\ term}{coefficient\ of\ x^2}$

$\Rightarrow \alpha\beta = \frac{1}{1}$

$\Rightarrow \alpha\beta = 1$

Now, a quadratic polynomial whose zeroes are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$

$= x^2 - (Sum\ of\ the\ zeroes)x + Product\ of\ the\ zeroes$

$= x^2 - \left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)x + \frac{\alpha}{\beta} \times \frac{\beta}{\alpha}$

$= x^2 - \left(\frac{\alpha^2+\beta^2}{\alpha\beta}\right)x + 1$

$= x^2 - \left\{\frac{(\alpha+\beta)^2-2\alpha\beta}{\alpha\beta}\right\}x + 1$

$= x^2 - \left\{\frac{(3)^2-2\times1}{1}\right\}x + 1$

$= x^2 - 7x + 1$ (Ans)

6. If two zeroes of the polynomial $f(x) = x^3 - 4x^2 - 3x + 12$ are $\sqrt{3}$ and $-\sqrt{3}$, then find its third zero.

Soln.:

Given: $f(x) = x^3 - 4x^2 - 3x + 12$

$= x^3 - 3x - 4x^2 + 12$

$= x(x^2 - 3) - 4(x^2 - 3)$

$= (x^2 - 3)(x - 4)$

To find the zeroes of the polynomial, we put

$f(x) = 0$

$\Rightarrow (x^2 - 3)(x - 4) = 0$

Either, $(x^2 - 3) = 0$ or, $(x - 4) = 0$

$\Rightarrow x = \pm\sqrt{3}$ or, $x = 4$

$\Rightarrow x = \sqrt{3}, -\sqrt{3}$

Hence, the third zero is 4. (Ans)

7. If one zero of the polynomial $3x^2 - 8x + 2k + 1$ is seven times the other, find the value of k.

Soln.:

Let one zero of $p(x) = 3x^2 - 8x + 2k + 1$ be y.

$\therefore$ The other zero $= 7y$.

So,

Sum of the zeroes $= -\frac{coefficient\ of\ x}{coefficient\ of\ x^2}$

$\Rightarrow y + 7y = -\frac{(-8)}{3}$

$\Rightarrow 8y = \frac{8}{3}$

$\Rightarrow y = \frac{1}{3}$ ----------(i)

And,

Product of the zeroes $= \frac{constant\ term}{coefficient\ of\ x^2}$

$\Rightarrow y \times 7y = \frac{2k+1}{3}$

$\Rightarrow 7y^2 = \frac{2k+1}{3}$

$\Rightarrow 7\left(\frac{1}{3}\right)^2 = \frac{2k+1}{3}$ [from (i)]

$\Rightarrow \frac{7}{9} = \frac{2k+1}{3}$

$\Rightarrow 9(2k + 1) = 7 \times 3$

$\Rightarrow 18k + 9 = 21$

$\Rightarrow 18k = 21 - 9$

$\Rightarrow k = \frac{12}{18}$

$\Rightarrow k = \frac{2}{3}$ (Ans)

8. On dividing $3x^3+x^2 + 2x + 5$ by a polynomial $g(x)$, the quotient and remainder are $(3x - 5)$ and $(9x + 10)$ respectively. Find $g(x)$.

Soln.:

Here, Dividend $= 3x^3+x^2 + 2x + 5$

Quotient $= 3x - 5$

And Remainder $= 9x + 10$

Divisor $= g(x)$

By Division algorithm,

$Dividend = Divisor \times Quotient + Remainder$

$\Rightarrow 3x^3+x^2 + 2x + 5 = g(x) \times (3x - 5) + (9x + 10)$

$\Rightarrow 3x^3+x^2 + 2x + 5 - 9x - 10 = g(x) \times (3x - 5)$

⇨ $3x^3 + x^2 - 7x - 5 = g(x) \times (3x - 5)$

⇨ $g(x) = \frac{3x^3+x^2-7x-5}{3x-5}$ ----------(i)

So, Dividing $3x^3 + x^2 - 7x - 5$ *by* $3x - 5$, *we get*

$$3x-5)3x^3+x^2-7x-5(x^2+2x+1$$
$$3x^3-5x^2$$
$$(-)\quad(+)$$
$$6x^2-7x$$
$$6x^2-10x$$
$$(-)\quad(+)$$
$$3x-5$$
$$3x-5$$
$$(-)\quad(+)$$
$$0$$

∴ From (i), we have

$$g(x) = \frac{3x^3+x^2-7x-5}{3x-5}$$
$$= \frac{(3x-5)(x^2+2x+1)}{(3x-5)}$$
$$= x^2 + 2x + 1$$

Hence, $g(x) = x^2 + 2x + 1$. (Ans)

9. If α *and* β are the zeroes of the polynomial $p(x) = 3x^2 - 2x - 6$, then find $\alpha^3 + \beta^3$.

Soln.:

Given : $p(x) = 3x^2 - 2x - 6$

Sum of the zeroes$= -\frac{coefficient\ of\ x}{coefficient\ of\ x^2}$

⇨ $\alpha + \beta = \frac{-(-2)}{3}$

⇨ $\alpha + \beta = \frac{2}{3}$

Product of the zeroes $= \frac{constant\ term}{coefficient\ of\ x^2}$

⇨ $\alpha \times \beta = \frac{-6}{3}$

⇨ $\alpha \times \beta = -2$

Now,

$$\alpha^3 + \beta^3 = (\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$$
$$= \left(\frac{2}{3}\right)^3 - 3(-2)\left(\frac{2}{3}\right)$$
$$= \frac{8}{27} + 4$$
$$= \frac{8+108}{27}$$
$$= \frac{116}{27} \quad \text{(Ans)}$$

10. Divide $6x^3 + 11x^2 - 39x - 65$ by $x^2 + x - 1$ and hence verify division algorithm for the polynomials.

Soln.:

Dividend $= 6x^3 + 11x^2 - 39x - 65$

Divisor $= x^2 + x - 1$

So,

$$x^2+x-1\ )6x^3+11x^2-39x-65\ (6x+5$$
$$6x^3+6x^2-6x$$
$$(-)\quad(-)\quad(+)$$
$$5x^2-33x-65$$
$$5x^2+5x-5$$
$$(-)\quad(-)\quad(+)$$
$$-38x-60$$

∴ Quotient $= 6x + 5$

Remainder $= -38x - 60$

Verification:

$Divisor \times Quotient + Remainder$

$= (x^2 + x - 1) \times (6x + 5) + (-38x - 60)$

$= 6x^3 + 6x^2 - 6x + 5x^2 + 5x - 5 - 38x$

$= 6x^3 + 11x^2 - 39x - 65$

$= Dividend$

Hence, Verified.

CHAPTER – 4
QUADRATIC EQUATIONS

11. Solve the equation $10x - \frac{1}{x} = 3$ by factorisation.

Soln.: $10x - \frac{1}{x} = 3$

⇨ $\frac{10x^2-1}{x} = 3$

⇨ $10x^2 - 1 = 3x$

⇨ $10x^2 - 3x - 1 = 0$

⇨ $10x^2 - (5 - 2)x - 1 = 0$

⇨ $10x^2 - 5x + 2x - 1 = 0$

⇨ $5x(2x - 1) + 1(2x - 1) = 0$

⇨ $(2x - 1)(5x + 1) = 0$

Either, $2x-1=0$ or, $5x+1=0$

$\Rightarrow x=\frac{1}{2}$ or, $x=-\frac{1}{5}$

Hence, $x=\frac{1}{2}$ and $x=-\frac{1}{5}$ are the roots of the given equation. (Ans)

12. Solve the quadratic equation $\sqrt{2}x^2-3x-2\sqrt{2}=0$ by completing the squares.

Soln.:

The given equation is –

$\sqrt{2}x^2-3x-2\sqrt{2}=0$

$\Rightarrow \frac{\sqrt{2}x^2}{\sqrt{2}}-\frac{3}{\sqrt{2}}x-\frac{2\sqrt{2}}{\sqrt{2}}=0$ [Dividing throughout by $\sqrt{2}$]

$\Rightarrow x^2-\frac{3}{\sqrt{2}}x-2=0$

$\Rightarrow x^2-\frac{3}{\sqrt{2}}x=2$

$\Rightarrow x^2-2\times x\times\frac{3}{2\sqrt{2}}+\left(\frac{3}{2\sqrt{2}}\right)^2=2+\left(\frac{3}{2\sqrt{2}}\right)^2$

$\Rightarrow \left(x-\frac{3}{2\sqrt{2}}\right)^2=2+\frac{9}{8}$

$\Rightarrow \left(x-\frac{3}{2\sqrt{2}}\right)^2=\frac{16+9}{8}$

$\Rightarrow x-\frac{3}{2\sqrt{2}}=\pm\sqrt{\frac{25}{8}}$

$\Rightarrow x-\frac{3}{2\sqrt{2}}=\pm\frac{5}{2\sqrt{2}}$

$\Rightarrow x=\frac{3}{2\sqrt{2}}\pm\frac{5}{2\sqrt{2}}$

$\Rightarrow x=\frac{3\pm5}{2\sqrt{2}}$

$\Rightarrow x=\frac{3+5}{2\sqrt{2}}$, $\frac{3-5}{2\sqrt{2}}$

$\Rightarrow x=\frac{8}{2\sqrt{2}}$, $\frac{-2}{2\sqrt{2}}$

$\Rightarrow x=\frac{4}{\sqrt{2}}$, $-\frac{1}{\sqrt{2}}$

$\Rightarrow x=2\sqrt{2}$, $-\frac{\sqrt{2}}{2}$

Hence, $x=2\sqrt{2}$ and $x=\frac{-\sqrt{2}}{2}$ are the roots of the given equation. (Ans)

13. Examine whether the quadratic equation $2x^2+x-6=0$ have real roots. If so, find the roots.

Soln.: Quadratic equation is $2x^2+x-6=0$.

Comparing it with $ax^2+bx+c=0$, we have

$a=2,\quad b=1,\quad c=-6$

Now,

Discriminant, D $=b^2-4ac$

$=(1)^2-4\times2\times(-6)$

$=1+48$

$=49$

Since, $D>0$

∴ The given equation has real roots given by –

$x=\frac{-b\pm\sqrt{D}}{2a}$

$\Rightarrow x=\frac{-1\pm\sqrt{49}}{2\times2}$

$\Rightarrow x=\frac{-1\pm7}{4}$

$\Rightarrow x=\frac{-1+7}{4}$, $\frac{-1-7}{4}$

$\Rightarrow x=\frac{6}{4}$, $-\frac{8}{4}$

$\Rightarrow x=\frac{3}{2}$, -2.

Hence, $\frac{3}{2}$ and -2 are the roots of the given equation. (Ans)

14. Find the value of k for which the quadratic equation $2kx^2-40x+25=0$ have real and equal roots. Also, find the roots.

Soln.:

The given equation is –

$2kx^2-40x+25=0$ ----------(i)

Comparing it with $ax^2+bx+c=0$, we have

$a=2k,\ b=-40,\ c=25$

So, Discriminant, D$=b^2-4ac$

$=(-40)^2-4\times2k\times25$

$=1600-200k$

For real and equal roots,

Discriminant, D $=0$

$\Rightarrow 1600-200k=0$

$\Rightarrow 1600=200k$

$\Rightarrow k=\frac{1600}{200}$

$\Rightarrow k=8$.

Putting $k=8$ in eqn. (i), we get

$$2kx^2 - 40x + 25 = 0$$

⇨ $2 \times 8 \times x^2 - 40x + 25 = 0$

⇨ $16x^2 - 40x + 25 = 0$

⇨ $(4x)^2 - 2 \times 4x \times 5 + (5)^2 = 0$

⇨ $(4x - 5)^2 = 0$

⇨ $(4x - 5)(4x - 5) = 0$

⇨ $x = \frac{5}{4}, \frac{5}{4}$

Hence, the real and equal roots of the given quadratic equation are $\frac{5}{4}$. (Ans)

15. The sum of two numbers is 18. The sum of their reciprocals is $\frac{1}{4}$. Find the numbers.

Soln.: Given, sum of two numbers is 18.

Let the required numbers be x *and* $(18 - x)$.

Then, By the question, we have

$$\frac{1}{x} + \frac{1}{18-x} = \frac{1}{4}$$

⇨ $\frac{18-x+x}{x(18-x)} = \frac{1}{4}$

⇨ $\frac{18}{18x-x^2} = \frac{1}{4}$

⇨ $72 = 18x - x^2$

⇨ $x^2 - 18x + 72 = 0$

⇨ $x^2 - 12x - 6x + 72 = 0$

⇨ $x(x - 12) - 6(x - 12) = 0$

⇨ $(x - 12)(x - 6) = 0$

Either, $x - 12 = 0$ *or*, $x - 6 = 0$

⇨ $x = 12$ *or*, $x = 6$.

Hence, the two numbers are 6 *and* 12. (Ans)

16. Divide 16m into two parts such that twice the square of the greater part exceeds the square of the smaller part by 164.

Soln.: Let the greater part be x.

∴ Smaller part will be $(16 - x)$.

Now,

According to the question, we have

$$2x^2 = (16 - x)^2 + 164$$

⇨ $2x^2 = (16)^2 - 2 \times 16x + x^2 + 164$

⇨ $2x^2 = 256 - 32x + x^2 + 164$

⇨ $2x^2 - x^2 + 32x - 256 - 164 = 0$

⇨ $x^2 + 32x - 420 = 0$

⇨ $x^2 + 42x - 10x - 420 = 0$

⇨ $x(x + 42) - 10(x + 42) = 0$

⇨ $(x + 42)(x - 10) = 0$

Either, $x + 42 = 0$ *or*, $x - 10 = 0$

⇨ $x = -42$ *or*, $x = 10$

But, $x = -42$ is rejected as distance cannot be negative.

Hence, two parts are $10\,m$ *and* $(16 - 10) = 6\,m$. (Ans)

17. The sum of the squares of two consecutive natural numbers is 421. Find the numbers.

Soln.: Let the two consecutive natural numbers be x *and* $(x + 1)$.

Now, According to the question, we have

$$x^2 + (x + 1)^2 = 421$$

⇨ $x^2 + x^2 + 2.x.1 + 1^2 = 421$

⇨ $2x^2 + 2x + 1 - 421 = 0$

⇨ $2x^2 + 2x - 420 = 0$

⇨ $2(x^2 + x - 210) = 0$

⇨ $x^2 + x - 210 = 0$ *or*, $2 \neq 0$

⇨ $x^2 + 15x - 14x - 210 = 0$

⇨ $x(x + 15) - 14(x + 15) = 0$

⇨ $(x + 15)(x - 14) = 0$

Either, $x + 15 = 0$ *or*, $x - 14 = 0$

⇨ $x = -15$ *or*, $x = 14$

As -15 is not a natural number, so it is rejected.

Hence, the required two consecutive natural numbers are 14 *and* $(14 + 1) = 15$. (Ans)

18. Solve: $\frac{3}{x+1} - \frac{1}{2} = \frac{2}{3x-1}$, where $x \neq -1, \frac{1}{3}$.

Soln.: $$\frac{3}{x+1} - \frac{1}{2} = \frac{2}{3x-1}$$

⇨ $\frac{6-1(x+1)}{2(x+1)} = \frac{2}{3x-1}$

⇨ $\frac{6-x-1}{2x+2} = \frac{2}{3x-1}$

⇨ $\frac{5-x}{2x+2} = \frac{2}{3x-1}$

⇨ $2(2x + 2) = (5 - x)(3x - 1)$

⇨ $4x + 4 = 15x - 5 - 3x^2 + 1x$

⇨ $3x^2 + 4x - 16x + 4 + 5 = 0$

⇨ $3x^2 - 12x + 9 = 0$

⇨ $3(x^2 - 4x + 3) = 0$

⇨ $x^2 - 4x + 3 = 0 \ or, \ 3 \neq 0$

⇨ $x^2 - 3x - x + 3 = 0$

⇨ $x(x - 3) - 1(x - 3) = 0$

⇨ $(x - 3)(x - 1) = 0$

Either, $x - 3 = 0 \quad or, \quad x - 1 = 0$

⇨ $x = 3 \quad or, \quad x = 1$

Hence, $x = 1, \ 3$. (Ans)

19. A girl is twice as old as her sister. Four years hence the product of their ages (in years) will be 160. Find their present ages.

Soln.:

Let the sister's present age be x years.

∴ Girls present age $= 2x$ years.

Four years hence, Sister's age $= (x + 4)$ years

Girl's age $= (2x + 4)$ years

Now, According to the question, we have

$(x + 4)(2x + 4) = 160$

⇨ $2x^2 + 8x + 4x + 16 = 160$

⇨ $2x^2 + 12x + 16 - 160 = 0$

⇨ $2x^2 + 12x - 144 = 0$

⇨ $2(x^2 + 6x - 72) = 0$

⇨ $x^2 + 6x - 72 = 0 \ or, \ 2 \neq 0$

⇨ $x^2 + 12x - 6x - 72 = 0$

⇨ $x(x + 12) - 6(x + 12) = 0$

⇨ $(x + 12)(x - 6) = 0$

Either, $x + 12 = 0 \quad or, \quad x - 6 = 0$

⇨ $x = -12 \quad or, \quad x = 6$

Here, $x = -12$ is rejected as age cannot be negative.

∴ $x = 6$ years

Hence, the present age of sister $= 6$ years.

& The present age of a girl $= 2 \times 6 = 12$ years. (Ans)

20. Find the value of k for which the equation $x^2 - 4x + k = 0$ has distinct real roots.

Soln.:

The given equation is $x^2 - 4x + k = 0$

Comparing it with $ax^2 + bx + c = 0$, we have

$a = 1, \ b = -4, \ c = k$

For distinct real roots, we have

Discriminant > 0

⇨ $b^2 - 4ac > 0$

⇨ $(-4)^2 - 4 \times 1 \times k > 0$

⇨ $16 - 4k > 0$

⇨ $16 > 4k$

⇨ $4k < 16$

⇨ $k < \frac{16}{4}$

⇨ $k < 4$ (Ans)

CHAPTER – 7
COORDINATE GEOMETRY

21. Find the values of a when the distance between

$P(a, -1) \ and \ Q(5, 3) \ is \ 5 \ units$.

Soln.: We have,

$PQ = 5$

⇨ $PQ^2 = 5^2$ [Squaring both sides]

⇨ $(5 - a)^2 + (3 + 1)^2 = 5^2$

⇨ $(5 - a)^2 + (4)^2 = 25$

⇨ $(5 - a)^2 + 16 = 25$

⇨ $(5 - a)^2 = 25 - 16$

⇨ $(5 - a)^2 = 9$

⇨ $5 - a = \pm\sqrt{9}$

⇨ $5 - a = \pm 3$

⇨ $5 - a = 3 \quad or, \quad 5 - a = -3$

⇨ $a = 5 - 3 \quad or, \quad a = 5 + 3$

⇨ $a = 2 \quad or, \quad a = 8$

Hence, the values of a are $2 \ and \ 8$. (Ans)

22. If the points $(2, 1) \ and \ (1, -2)$ are equidistant from the point (x, y), prove that $x + 3y = 0$.

Soln.:

Since the point $P(x, y)$ is equidistant from the points $A(2, 1)$ & $B(1, -2)$.

$\therefore AP = PB$

⇨ $AP^2 = PB^2$ [*Squaring both sides*]

⇨ $(x-2)^2 + (y-1)^2 = (x-1)^2 + (y+2)^2$

⇨ $x^2 - 4x + 4 + y^2 - 2y + 1 = x^2 - 2x + 1 + y^2 + 4y + 4$

⇨ $-4x - 2y = -2x + 4y$

⇨ $-4x + 2x = 4y + 2y$

⇨ $-2x = 6y$

⇨ $-x = 3y$

⇨ $0 = x + 3y$

⇨ $x + 3y = 0$

Hence, $x + 3y = 0$. (Proved)

23. Find the coordinates of the point, which divides the join of $A(-1,7)$ *and* $B(4,-3)$ in the ratio $2:3$.

Soln.:

Let the coordinates of the point be $P(x,y)$

Here, $x_1 = -1$, $y_1 = 7$

$x_2 = 4$, $y_2 = -3$

$m = 2$, $n = 3$

Now, Using Section Formula, we have

$$(x,y) = \left(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n}\right)$$
$$= \left(\frac{2\times4+3(-1)}{2+3}, \frac{2(-3)+3\times7}{2+3}\right)$$
$$= \left(\frac{8-3}{5}, \frac{-6+21}{5}\right)$$
$$= \left(\frac{5}{5}, \frac{15}{5}\right)$$
$$= (1,3)$$

∴ The coordinates of the required point is $P(1,3)$. (Ans)

24. Find the area of the triangle whose vertices are $(5,-7)$, $(-4,-5)$ *and* $(4,5)$.

Soln.:

Let the given vertices be $A(5,-7)$, $B(-4,-5)$ *and* $C(4,5)$

Here, $x_1 = 5$, $y_1 = -7$

$x_2 = -4$, $y_2 = -5$

$x_3 = 4$, $y_3 = 5$

$\therefore$ *Area of* $\Delta ABC = \frac{1}{2}|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$

$= \frac{1}{2}|5(-5-5) + (-4)\{5-(-7)\} + 4\{-7-(-5)\}|$

$= \frac{1}{2}|5(-10) + (-4)(5+7) + 4(-7+5)|$

$= \frac{1}{2}|-50 + (-4)(12) + 4(-2)|$

$= \frac{1}{2}|-50 - 48 - 8|$

$= \frac{1}{2}|-106|$

$= \frac{1}{2}\times 106$

$= 53\ Sq.units$. (Ans)

25. Find the third vertex of a triangle ABC, if two of its vertices are $B(-3,1)$ and $C(0,-2)$ and its centroid is at the origin.

Soln.: Let the third vertex of a triangle be $A(x_3,y_3)$ and its centroid is $(0,0)$ at the origin.

Here, $x_1 = -3$, $y_1 = 1$

$x_2 = 0$, $y_2 = -2$

$x = 0$, $y = 0$

Now, Using the centroid formula, we have

$$(x,y) = \left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$$

⇨ $(0,0) = \left(\frac{-3+0+x_3}{3}, \frac{1+(-2)+y_3}{3}\right)$

⇨ $(0,0) = \left(\frac{-3+x_3}{3}, \frac{-1+y_3}{3}\right)$

Then,

$$0 = \frac{-3+x_3}{3}$$

⇨ $-3 + x_3 = 0$

⇨ $x_3 = 3$

And,

$$0 = \frac{-1+y_3}{3}$$

⇨ $-1 + y_3 = 0$

⇨ $y_3 = 1$.

Hence, the required third vertex is $(3,1)$. (Ans)

26. Find the ratio in which the point $P(m,6)$ divides the line segment joining the points $A(-1,3)$ *and* $B(2,8)$. Also, find the value of m.

Soln.: Let $P(m,6)$ divides the line segment joining $A(-1,3)$ *and* $B(2,8)$ in the ratio $k:1$.

Here, $x_1 = -1$, $y_1 = 3$

$x_2 = 2$, $y_2 = 8$

$m = k$, $n = 1$

Now, Using Section Formula, we have coordinates of P

$= \left(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n}\right)$

⇨ $(m, 6) = \left(\frac{k\times2+1(-1)}{k+1}, \frac{k\times8+1\times3}{k+1}\right)$

⇨ $(m, 6) = \left(\frac{2k-1}{k+1}, \frac{8k+3}{k+1}\right)$

Now, $6 = \frac{8k+3}{k+1}$

⇨ $6k + 6 = 8k + 3$

⇨ $6k - 8k = 3 - 6$

⇨ $-2k = -3$

⇨ $k = \frac{3}{2}$

⇨ $k: 1 = 3: 2$

And, $m = \frac{2k-1}{k+1}$

⇨ $m = \frac{2\times\frac{3}{2}-1}{\frac{3}{2}+1}$

⇨ $m = \frac{3-1}{\frac{5}{2}}$

⇨ $m = \frac{4}{5}$

Hence, the required ratio is $3: 2$ and $m = \frac{4}{5}$. (Ans)

27. Find the value of p for which the points $A(-1, 3)$, $B(2, p)$ and $C(5, -1)$ are collinear.

Soln.: Here, $x_1 = -1$, $y_1 = 3$

$x_2 = 2$, $y_2 = p$

$x_3 = 5$, $y_3 = -1$

Since, the given points are collinear

$\therefore Area\ of\ \Delta ABC = 0$

⇨ $\frac{1}{2}|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)| = 0$

⇨ $\frac{1}{2}|(-1)\{p - (-1)\} + 2(-1 - 3) + 5(3 - p)| =$

⇨ $\frac{1}{2}|(-1)(p + 1) + 2(-4) + 15 - 5p| = 0$

⇨ $\frac{1}{2}|-p - 1 - 8 + 15 - 5p| = 0$

⇨ $\frac{1}{2}|-6p + 6| = 0$

⇨ $-6p + 6 = 0$

⇨ $-6p = -6$

⇨ $p = 1$ (Ans)

28. If the point $P(-1, 2)$ divides the line segment joining $A(2, 5)$ and B in the ratio $3: 4$, find the coordinates of B.

Soln.:

Let $P(-1, 2)$ divide the line segment AB in the ratio $3: 4$.

By Section Formula, the coordinates of P are -

$\left(\frac{3x+4(2)}{3+4}, \frac{3y+4(5)}{3+4}\right)$

$= \left(\frac{3x+8}{7}, \frac{3y+20}{7}\right)$

But, $P\ is\ (-1, 2)$

$\therefore \frac{3x+8}{7} = -1$ and $\frac{3y+20}{7} = 2$

⇨ $3x + 8 = -7$ and $3y + 20 = 14$

⇨ $3x = -7 - 8$ and $3y = 14 - 20$

⇨ $x = -\frac{15}{3}$ and $y = -\frac{6}{3}$

⇨ $x = -5$ and $y = -2$

Hence, the coordinates of $B\ are\ (-5, -2)$. (Ans)

29. Prove that the points $(3, 0)$, $(6, 4)$ and $(-1, 3)$ are the vertices of a right-angled isosceles triangle.

Soln.:

Let the given points be $A(3, 0)$, $B(6, 4)$ and $C(-1, 3)$.

Then, By Distance Formula, we have

$AB = \sqrt{(6-3)^2 + (4-0)^2} = \sqrt{9 + 16} = \sqrt{25} = 5\ units$

$BC = \sqrt{(-1-6)^2 + (3-4)^2} = \sqrt{49 + 1} = \sqrt{50}$

$= 5\sqrt{2}\ units$

$AC = \sqrt{(-1-3)^2 + (3-0)^2} = \sqrt{16 + 9} = \sqrt{25} = 5\ units$

Thus, $AB = AC$ [$5\ units\ each$]

⇨ ΔABC is an isosceles triangle.

Also,

$BC^2 = 50 = 25 + 25 = AB^2 + AC^2$

⇨ $\angle A = 90°$ [$Pythagoras\ Theorem$]

⇨ ΔABC is right angled at A.

Hence, the given points are the vertices of a right-angled isosceles triangle.
Proved.

30. Find a point on the $y-axis$ which is equidistant from the points $A(2,3)$ and $B(-4,1)$.

Soln.: We know that a point on the $y-axis$ is of the form $(0,y)$.

So, Let the point $P(0,y)$ be equidistant from the points $A(2,3)$ and $B(-4,1)$.

Then,

$PA = PB$

$\Rightarrow PA^2 = PB^2$ [Squaring both sides]

$\Rightarrow (2-0)^2 + (3-y)^2 = (-4-0)^2 + (1-y)^2$

$\Rightarrow (2)^2 + (3)^2 - 2(3)y + y^2 = (-4)^2 + (1)^2 - 2(1)y + y^2$

$\Rightarrow 4 + 9 - 6y + y^2 = 16 + 1 - 2y + y^2$

$\Rightarrow 13 - 6y = 17 - 2y$

$\Rightarrow -6y + 2y = 17 - 13$

$\Rightarrow -4y = 4$

$\Rightarrow y = \frac{4}{-4}$

$\Rightarrow y = -1$

Hence, the required point on the $y-axis$ is $(0,-1)$. (Ans)

CHAPTER – 10
CIRCLES

31. If the tangent at a point P to a circle with centre O cuts a line through O at Q such that $PQ = 24cm \text{ and } OQ = 25cm$. Find the radius of the circle.

Soln.:

Tangent $PQ = 24\ cm \text{ and } OQ = 25\ cm$

Radius OP is joined.

Since, the tangent at any point of a circle is perpendicular to the radius through the point of contact.

$\therefore OP \perp PQ \Rightarrow \angle OPQ = 90°$

Now, in rt. ΔOPQ,

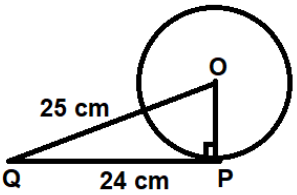
By Pythagoras Theorem, we have

$OQ^2 = OP^2 + PQ^2$

$\Rightarrow (25)^2 = OP^2 + (24)^2$

$\Rightarrow 625 = OP^2 + 576$

$\Rightarrow OP^2 = 625 - 576$



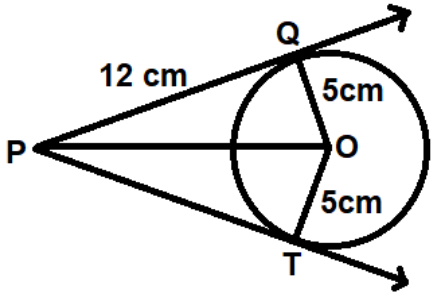
$\Rightarrow OP^2 = 49$

$\Rightarrow OP = \sqrt{49}$

$\Rightarrow OP = 7\ cm$

Hence, the radius of the circle is $7\ cm$. (Ans)

32. PQ and PT are tangents to a circle with centre O and radius $5\ cm$. If $PQ = 12\ cm$, then prove that the perimeter of the quadrilateral is $34\ cm$.



Soln.: Radius $= OQ = OT = 5\ cm$

Tangent, $PQ = 12\ cm$

Since, the lengths of two tangents drawn from an external point to a circle are equal.

$\therefore PT = PQ = 12\ cm$

Now,

Perimeter of quadrilateral $PQOT$

$= PQ + OQ + OT + TP$

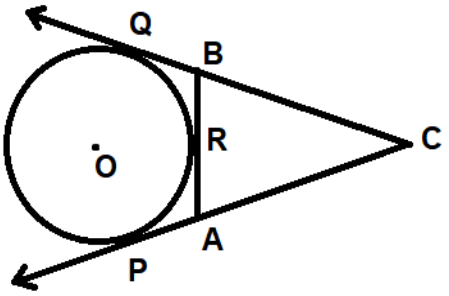
$= 12 + 5 + 5 + 12$

$34\ cm$. Hence, Proved.

33. In the figure, $CP \text{ and } CQ$ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If $CP = 11\ cm \text{ and } BC = 7\ cm$, then find the length of BR.

Soln.:

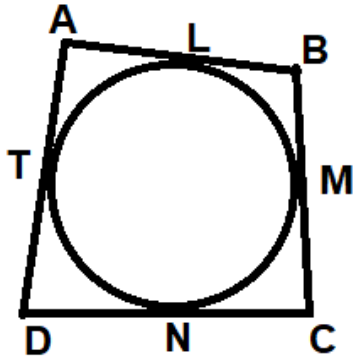
Given: $\boldsymbol{CP = 11\ cm\ \ and\ \ BC = 7\ cm}$.
Since, the lengths of two tangents drawn from an external point to a circle are equal.



$\therefore \boldsymbol{CP = CQ = 11\ cm}$ ----------(i)
& $\boldsymbol{BQ = BR}$ ----------(ii)
But, $\boldsymbol{CQ = BQ + BC}$
⇨ $\boldsymbol{11 = BR + 7}$ [from (i) & (ii)]
⇨ $\boldsymbol{11 - 7 = BR}$
⇨ $\boldsymbol{4 = BR}$
⇨ $\boldsymbol{BR = 4\ cm}$
Hence, the length of $\boldsymbol{BR\ \ is\ \ 4\ cm}$. (Ans)

34. In the figure, quadrilateral $\boldsymbol{ABCD}$ is circumscribed. Find the perimeter of a quadrilateral $\boldsymbol{ABCD}$, if $\boldsymbol{AL = 6\ cm}$, $\boldsymbol{BL = 5\ cm}$, $\boldsymbol{CM = 3\ cm\ \ and\ \ DN = 4\ cm}$.

Soln.:
Since, the lengths of two tangents drawn from an external point to a circle are equal.
$\therefore \boldsymbol{AL = AT = 6\ cm}$ ($\boldsymbol{Tangents\ from\ A}$) -----(i)
$\boldsymbol{BL = BM = 5\ cm}$ ($\boldsymbol{Tangents\ from\ B}$) -----(ii)
$\boldsymbol{CM = CN = 3\ cm}$ ($\boldsymbol{Tangents\ from\ C}$) -----(iii)
$\boldsymbol{DN = DT = 4\ cm}$ ($\boldsymbol{Tangents\ from\ D}$) ----(iv)

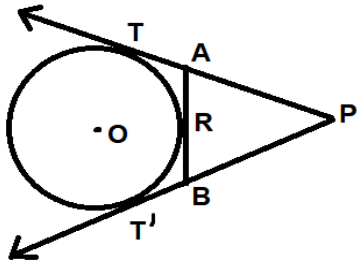


Now, Perimeter of a quadrilateral $\boldsymbol{ABCD}$
$= \boldsymbol{AB + BC + CD + DA}$
$= (\boldsymbol{AL + BL}) + (\boldsymbol{BM + CM}) + (\boldsymbol{DN + CN}) + (\boldsymbol{AT + DT})$

$[\boldsymbol{from\ (i), (ii), (iii)}\ \&\ \boldsymbol{(iv)}]$
$= \boldsymbol{(6 + 5) + (5 + 3) + (4 + 3) + (6 + 4)}$
$= \boldsymbol{11 + 8 + 7 + 10}$
$= \boldsymbol{36\ cm}$. (Ans)

35. In the figure, $\boldsymbol{PT\ \ and\ \ PT'}$ are tangents from $\boldsymbol{P}$ to the circle with centre $\boldsymbol{O}$. $\boldsymbol{R}$ is a point on the circle. Prove that $\boldsymbol{PA + AR = PB + BR}$.

Soln.:
Since, the lengths of two tangents drawn from an external point to a circle are equal.
Then, $\boldsymbol{PT = PT'}$ ($\boldsymbol{Tangents\ from\ P}$)-----(i)
$\boldsymbol{AT = AR}$ ($\boldsymbol{Tangents\ from\ A}$) -----(ii)
& $\boldsymbol{BT' = BR}$ ($\boldsymbol{Tangents\ from\ B}$) -----(iii)



From equation (i), we have
$\boldsymbol{PT = PT'}$
⇨ $\boldsymbol{PA + AT = PB + BT'}$
⇨ $\boldsymbol{PA + AR = PB + BR}$ [Using (ii) & (iii)]. Hence, Proved

36. In the figure, $\boldsymbol{O}$ is the centre of the circle, $\boldsymbol{PT}$ is the tangent and $\boldsymbol{PLM}$ is the secant passing through the centre $\boldsymbol{O}$. If $\boldsymbol{PT = 8\ cm\ \ and\ \ PL = 4\ cm}$, then find the radius of the circle.

Soln.:
Given: Tangent $\boldsymbol{PT = 8\ cm}$
$\boldsymbol{PL = 4\ cm\ \ and\ \ OT\ is\ joined}$.
Let, Radius $= \boldsymbol{OT = OL = r}$
Since, the tangent at any point of a circle is perpendicular to the radius through the point of contact.
$\therefore \boldsymbol{OT \perp PT \Rightarrow \angle OTP = 90°}$
Now, in rt. $\Delta\ \boldsymbol{OTP}$,
By Pythagoras Theorem, we have

$$OP^2 = OT^2 + PT^2$$

⇨ $(OL + PL)^2 = r^2 + (8)^2$

⇨ $(r + 4)^2 = r^2 + 64$

⇨ $r^2 + 8r + 16 = r^2 + 64$

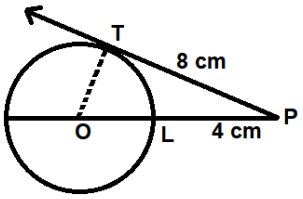
⇨ $8r + 16 = 64$

⇨ $8r = 64 - 16$

⇨ $8r = 48$

⇨ $r = \frac{48}{8}$

⇨ $r = 6\ cm$

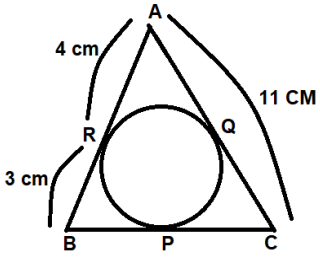


Hence, the radius of the circle is $6\ cm$. (Ans)

37. In the figure, ΔABC is circumscribing a circle. Find the length of BC.

Soln.:

Since, the lengths of two tangents drawn from an external point to a circle are equal.



$\therefore\ AR = AQ = 4\ cm$

$BR = BP = 3\ cm$

& $PC = QC$

⇨ $PC = AC - AQ$

⇨ $PC = 11 - 4$

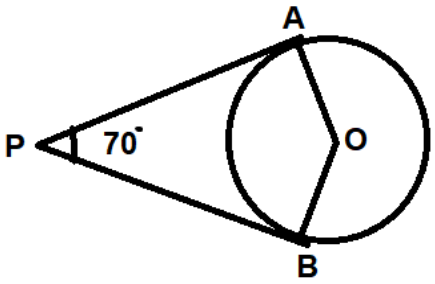
⇨ $PC = 7\ cm$.

Hence, the length of $BC = (BP + PC) = 3 + 7 = 10\ cm$. (Ans)

38. The two tangents drawn from an external point P to a circle with centre O are PA and PB. If $\angle APB = 70°$, what is the value of $\angle AOB$?

Soln.:

Since, the tangent at any point of a circle is perpendicular to the radius through the point of contact.



$\therefore\ AO \perp AP \Rightarrow \angle PAO = 90°$

$OB \perp PB \Rightarrow \angle PBO = 90°$

Now, in quadrilateral $PAOB$, we have

$\angle PAO + \angle AOB + \angle PBO + \angle APB = 360°$

⇨ $90° + \angle AOB + 90° + 70° = 360°$

⇨ $\angle AOB + 250° = 360°$

⇨ $\angle AOB = 360° - 250°$

⇨ $\angle AOB = 110°$ (Ans)

39. In the figure, AB is a common tangent to the given circles, which touch externally at P. If $AP = 3.2\ cm$, find the length of AB.

Soln.:

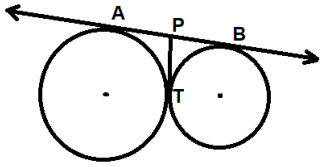
Given: $AP = 3.2\ cm$

Since, the lengths of two tangents drawn from an external point to a circle are equal.

$\therefore\ PT = PA = 3.2\ cm$

& $PT = PB$

$\therefore\ PA = PB = 3.2\ cm$



Now,

$$\begin{aligned} AB &= PA + PB \\ &= 3.2 + 3.2 \\ &= 6.4\ cm \end{aligned}$$

Hence, the length of AB is $6.4\ cm$. (Ans)

40. A circle touches the side BC of a ΔABC at a point P and touches AB and AC when produced at Q and R respectively. Show that $AQ = \frac{1}{2}(Perimeter\ of\ \Delta ABC)$.

Soln.:

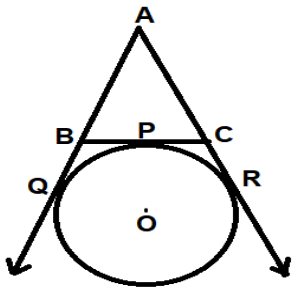
Since, the lengths of two tangents drawn from

an external point to a circle are equal.

$\therefore$ $\boldsymbol{BP = BQ}$ --------(i)

$\boldsymbol{CP = CR}$ --------(ii)

& $\boldsymbol{AQ = AR}$ --------(iii)



Now,

Perimeter of $\Delta\, \boldsymbol{ABC} = \boldsymbol{AB + BC + CA}$

$= \boldsymbol{AB} + (\boldsymbol{BP} + \boldsymbol{PC}) + \boldsymbol{CA}$

$= (\boldsymbol{AB} + \boldsymbol{BP}) + (\boldsymbol{PC} + \boldsymbol{CA})$

$= (\boldsymbol{AB} + \boldsymbol{BQ}) + (\boldsymbol{CR} + \boldsymbol{CA})[\boldsymbol{from}\ (\boldsymbol{i})\&(\boldsymbol{ii})]$

$= \boldsymbol{AQ} + \boldsymbol{AR}$

$= \boldsymbol{AQ} + \boldsymbol{AQ}\ [\boldsymbol{from}\ (\boldsymbol{iii})]$

$= \boldsymbol{2AQ}$

Hence, $\boldsymbol{AQ} = \frac{1}{2}(\boldsymbol{Perimeter\ of}\ \Delta\, \boldsymbol{ABC})$. (Shown)

CHAPTER – 12

AREAS RELATED TO CIRCLES

41. The difference between the circumference and the radius of a circle is $\boldsymbol{37\ cm}$. Find the area of the circle.$\left(\boldsymbol{Use}\ \boldsymbol{\pi} = \frac{22}{7}\right)$

Soln.: Let the radius of the circle be '$\boldsymbol{r}$' cm.

Now, According to the question, we have

Circumference – Radius $= \boldsymbol{37\ cm}$

$\Rightarrow\ \boldsymbol{2\pi r - r = 37}$

$\Rightarrow\ \boldsymbol{r(2\pi - 1) = 37}$

$\Rightarrow\ \boldsymbol{r\left(2 \times \frac{22}{7} - 1\right) = 37}$

$\Rightarrow\ \boldsymbol{r\left(\frac{44-7}{7}\right) = 37}$

$\Rightarrow\ \boldsymbol{r \times \frac{37}{7} = 37}$

$\Rightarrow\ \boldsymbol{r = 37 \times \frac{7}{37}}$

$\Rightarrow\ \boldsymbol{r = 7\ cm}$

Hence, Area of the circle$= \boldsymbol{\pi r^2}$

$= \frac{22}{7} \times 7^2$

$= \frac{22}{7} \times 49$

$= 22 \times 7$

$= \boldsymbol{154\ cm^2}$ (Ans)

42. Find the angle subtended at the centre of a circle of radius $\boldsymbol{5\ cm}$ by an arc of length $\frac{5\pi}{3}\ \boldsymbol{cm}$.

Soln.:

Given: Radius, $\boldsymbol{r = 5\ cm}$

Length of arc, $\boldsymbol{l} = \frac{5\pi}{3}\boldsymbol{cm}$

Now, Length of an arc $= \frac{5\pi}{3}$

$\Rightarrow\ \frac{\pi r\theta}{180^\circ} = \frac{5\pi}{3}$

$\Rightarrow\ \boldsymbol{\theta} = \frac{5\pi \times 180^\circ}{3 \times \pi \times 5}$

$\Rightarrow\ \boldsymbol{\theta = 60^\circ}$

Hence, the required angle is $\boldsymbol{60^\circ}$. (Ans)

43. A race track is in the form of a ring whose inner circumference is $\boldsymbol{352\ m}$ and the outer circumference is $\boldsymbol{396\ m}$. Find the width of the track.

Soln.: Let the inner radius be $'\boldsymbol{r}'$

& the outer radius be $'\boldsymbol{R}'$

Given:

Inner Circumference $= \boldsymbol{352\ m}$

$\Rightarrow\ \boldsymbol{2\pi r = 352}$

$\Rightarrow\ \boldsymbol{2 \times \frac{22}{7} \times r = 352}$

$\Rightarrow\ \boldsymbol{r = \frac{352 \times 7}{2 \times 22}}$

$\Rightarrow\ \boldsymbol{r = 56\ m}$

Also,

Outer Circumference $= \boldsymbol{396\ m}$

$\Rightarrow\ \boldsymbol{2\pi R = 396}$

$\Rightarrow\ \boldsymbol{2 \times \frac{22}{7} \times R = 396}$

$\Rightarrow\ \boldsymbol{R = \frac{396 \times 7}{2 \times 22}}$

$\Rightarrow\ \boldsymbol{R = 63\ m}$

$\therefore$ The width of the track$= \boldsymbol{R - r}$

$= \boldsymbol{63 - 56}$

$= \boldsymbol{7\ m}$ (Ans)

44. Find the area of the minor sector of a circle of radius $\mathbf{4}\ \boldsymbol{cm}$ and of angle $\mathbf{30°}$. $(\boldsymbol{Use}\ \boldsymbol{\pi} = \mathbf{3.14})$

Soln.:

Given: Radius of the sector, $\boldsymbol{r} = \mathbf{4}\ \boldsymbol{cm}$

& Sector angle , $\boldsymbol{\theta} = \mathbf{30°}$

Now,

Area of the minor sector $= \frac{\boldsymbol{\pi r^2 \theta}}{\mathbf{360°}}$

$= \frac{\mathbf{3.14 \times (4)^2 \times 30}}{\mathbf{360}}$

$= \frac{\mathbf{3.14 \times 16 \times 30}}{\mathbf{360}}$

$= \frac{\mathbf{3.14 \times 16}}{\mathbf{12}}$

$= \frac{\mathbf{3.14 \times 4}}{\mathbf{3}}$

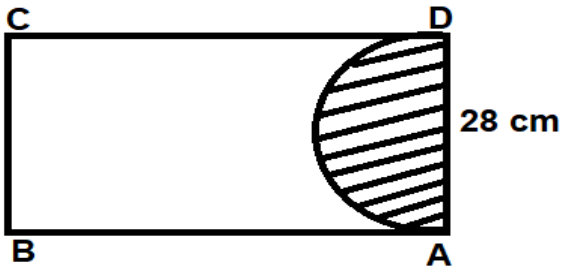
$= \frac{\mathbf{12.56}}{\mathbf{3}}$

$= \mathbf{4.186}\ \boldsymbol{cm^2}$

$= 4.\mathbf{19}\ \boldsymbol{cm^2}$ (Ans)

45. A sheet of paper is in the form of a rectangle $\boldsymbol{ABCD}$ in which $\boldsymbol{AB} = \mathbf{40}\ \boldsymbol{cm}$ and $\boldsymbol{AD} = \mathbf{28}\ \boldsymbol{cm}$ as shown in the adjoining figure. A semi-circular portion with $\boldsymbol{AD}$ as a diameter is cut off. Find the area of the remaining paper. $\left(\boldsymbol{Use}\ \boldsymbol{\pi} = \frac{\mathbf{22}}{\mathbf{7}}\right)$

Soln.:



Radius, $\boldsymbol{r} = \frac{\boldsymbol{Diameter}}{\mathbf{2}} = \frac{\mathbf{28}}{\mathbf{2}} = \mathbf{14}\ \boldsymbol{cm}$

Now,

Area of the remaining paper

$= \boldsymbol{Area\ of\ the\ rectangle - Area\ of\ the\ semi\ circle}$

$= \boldsymbol{AB} \times \boldsymbol{AD} - \frac{\mathbf{1}}{\mathbf{2}}\boldsymbol{\pi r^2}$

$= \mathbf{40} \times \mathbf{28} - \frac{\mathbf{1}}{\mathbf{2}} \times \frac{\mathbf{22}}{\mathbf{7}} \times \mathbf{(14)^2}$

$= \mathbf{1120} - \frac{\mathbf{1}}{\mathbf{2}} \times \frac{\mathbf{22}}{\mathbf{7}} \times \mathbf{14} \times \mathbf{14}$

$= \mathbf{1120 - 11 \times 2 \times 14}$

$= \mathbf{1120 - 308}$

$= \mathbf{812}\ \boldsymbol{cm^2}$ (Ans)

46. What is the perimeter of a sector of angle $\mathbf{45°}$ of a circle with radius $\mathbf{7}\ \boldsymbol{cm}$. $\left(\boldsymbol{Use}\ \boldsymbol{\pi} = \frac{\mathbf{22}}{\mathbf{7}}\right)$

Soln.:

Given: Radius $(\boldsymbol{r}) = \mathbf{7}\ \boldsymbol{cm}$

Central angle $(\boldsymbol{\theta}) = \mathbf{45°}$

Now,

Perimeter of the sector $= \mathbf{2}\boldsymbol{r} + \frac{\boldsymbol{\pi r \theta}}{\mathbf{180°}}$

$= \mathbf{2} \times \mathbf{7} + \frac{\mathbf{22 \times 7 \times 45°}}{\mathbf{7 \times 180°}}$

$= \mathbf{14} + \frac{\mathbf{11}}{\mathbf{2}}$

$= \mathbf{14 + 5.5}$

$= \mathbf{19.5}\ \boldsymbol{cm}$ (Ans)

47. A circular park, $\mathbf{42}\ \boldsymbol{m}$ in diameter, has a path $\mathbf{3.5}\ \boldsymbol{m}$ wide running around it on the outside. Find the cost of gravelling the path at Rs $\mathbf{20}$ per sq.m. $\left(\boldsymbol{Use}\ \boldsymbol{\pi} = \frac{\mathbf{22}}{\mathbf{7}}\right)$

Soln.:

Inner diameter $(\boldsymbol{d}) = \mathbf{42}\ \boldsymbol{m}$

$\therefore$ Inner Radius $(\boldsymbol{r}) = \frac{\boldsymbol{d}}{\mathbf{2}} = \frac{\mathbf{42}}{\mathbf{2}} = \mathbf{21}\ \boldsymbol{m}$

So, Radius of outer circle $(\boldsymbol{R}) = \mathbf{21}\ \boldsymbol{m} + \mathbf{3.5}\ \boldsymbol{m} = \mathbf{24.5}\ \boldsymbol{m}$

Now,

Area of the path $= \boldsymbol{\pi R^2} - \boldsymbol{\pi r^2}$

$= \boldsymbol{\pi}(\boldsymbol{R^2} - \boldsymbol{r^2})$

$= \boldsymbol{\pi}(\boldsymbol{R} + \boldsymbol{r})(\boldsymbol{R} - \boldsymbol{r})$

$= \frac{\mathbf{22}}{\mathbf{7}}\mathbf{(24.5 + 21)(24.5 - 21)}$

$= \frac{\mathbf{22}}{\mathbf{7}} \times \mathbf{45.5 \times 3.5}$

$= \frac{\mathbf{22 \times 455 \times 35}}{\mathbf{7 \times 10 \times 10}}$

$= \mathbf{500.5}\ \boldsymbol{m^2}$

$\therefore$ The cost of graveling the path $= \boldsymbol{Rs}\ \mathbf{20} \times \mathbf{500.5} = \boldsymbol{Rs}\ \mathbf{10010}$. (Ans)

48. A chord of a circle of radius $\mathbf{14}\ \boldsymbol{cm}$ subtends an angle $\mathbf{60°}$ at the centre. Find the area of the major sector. $\left(\boldsymbol{Use}\ \boldsymbol{\pi} = \frac{\mathbf{22}}{\mathbf{7}}\right)$

Soln.:

Given: Radius $(\boldsymbol{r}) = \mathbf{14}\ \boldsymbol{cm}$

Sector angle $(\boldsymbol{\theta}) = \mathbf{60°}$

Now,

Area of the major sector $= \pi r^2 - \frac{\pi r^2 \theta}{360^\circ}$

$= \pi r^2 \left(1 - \frac{\theta}{360^\circ}\right)$

$= \frac{22}{7} \times (14)^2 \times \left(1 - \frac{60^\circ}{360^\circ}\right)$

$= \frac{22}{7} \times 14 \times 14 \times \left(1 - \frac{1}{6}\right)$

$= 22 \times 2 \times 14 \times \left(\frac{5}{6}\right)$

$= \frac{3080}{6}$

$= 513.33\ cm^2$ (Ans)

49. A steel wire when bent in the form of a square encloses an area of $121\ cm^2$. If the same wire is bent in the form of a circle, find the area of the circle. $\left(Use\ \pi = \frac{22}{7}\right)$

Soln.: Let the radius of a circle be $'r'$.

Given:

Area of the square $= 121\ cm^2$

$\Rightarrow (Side)^2 = 121$

$\Rightarrow Side = \sqrt{121}$

$\Rightarrow Side = 11\ cm$

$\therefore$ Perimeter of the square $= 4 \times Side = 4 \times 11 = 44\ cm$

Since, the same wire is bent in the form of a circle.

$\therefore$ Circumference of a circle = Perimeter of a square

$\Rightarrow 2\pi r = 44$

$\Rightarrow 2 \times \frac{22}{7} \times r = 44$

$\Rightarrow r = \frac{44 \times 7}{2 \times 22}$

$\Rightarrow r = 7\ cm$

Hence, Area of the circle $= \pi r^2$

$= \frac{22}{7} \times (7)^2$

$= \frac{22}{7} \times 7 \times 7$

$= 22 \times 7$

$= 154\ cm^2$ (Ans)

50. A pendulum moving through an angle of 30° and describing an arc $4.4\ cm$ in length. Find the length of the pendulum. $\left(Use\ \pi = \frac{22}{7}\right)$

Soln.: Given: Sector angle $(\theta) = 30^\circ$

Length of an arc $(l) = 4.4\ cm$

Let the length of the pendulum be $'r'$.

Now,

Length of an arc $= 4.4\ cm$

$\Rightarrow \frac{\pi r \theta}{180^\circ} = 4.4$

$\Rightarrow \frac{22 \times r \times 30^\circ}{7 \times 180^\circ} = \frac{44}{10}$

$\Rightarrow \frac{22 \times r}{7 \times 6} = \frac{44}{10}$

$\Rightarrow r = \frac{44 \times 7 \times 6}{10 \times 22}$

$\Rightarrow r = 8.4\ cm$

Hence, the length of the pendulum is $8.4\ cm$ (Ans)

CHAPTER – 14
STATISTICS

51. Find the mean of the following data:

Class Interval	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	12	16	6	7	9

Soln.:

Class Interval	Frequency (f_i)	Class Mark (x_i)	$f_i x_i$
0 – 10	12	5	60
10 – 20	16	15	240
20 – 30	6	25	150
30 – 40	7	35	245
40 – 50	9	45	405
	$\sum f_i = 50$		$\sum f_i x_i = 1100$

By Using Direct Method, we have

$Mean, \bar{x} = \frac{\sum f_i x_i}{\sum f_i}$

$= \frac{1100}{50}$

$= 22$. (Ans)

52. Find the mode of the following distribution:

Class Interval	0 – 20	20 – 40	40 – 60	60 – 80
Frequency	15	6	18	10

Soln.:

Here, the class $40 - 60$ has the maximum frequency 18.

So, the modal class is $40 - 60$.

Therefore,

Lower limit $(\boldsymbol{l})$ of the modal class $= \mathbf{40}$
Class size $(\boldsymbol{h}) = \mathbf{20}$
Frequency $(\boldsymbol{f_1})$ of the modal class $= \mathbf{18}$
Frequency $(\boldsymbol{f_0})$ of the class preceding the modal class $= \mathbf{6}$
Frequency $(\boldsymbol{f_2})$ of the class succeeding the modal class $= \mathbf{10}$

Now, Using the formula, we have

$$\text{Mode} = \boldsymbol{l} + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times \boldsymbol{h}$$
$$= \mathbf{40} + \left(\frac{\mathbf{18-6}}{\mathbf{2\times 18-6-10}}\right) \times \mathbf{20}$$
$$= \mathbf{40} + \left(\frac{\mathbf{12}}{\mathbf{36-16}}\right) \times \mathbf{20}$$
$$= \mathbf{40} + \frac{\mathbf{12}}{\mathbf{20}} \times \mathbf{20}$$
$$= \mathbf{40 + 12}$$
$$= \mathbf{52} \quad \text{(Ans)}$$

53. Find the median of the following frequency distribution:

Class Interval	$\mathbf{0-100}$	$\mathbf{100-200}$	$\mathbf{200-300}$	$\mathbf{300-400}$	$\mathbf{400-500}$
Frequency	**40**	**32**	**48**	**22**	**8**

Soln.:

Class Interval	Frequency	Cumulative Frequency
$\mathbf{0-100}$	**40**	**40**
$\mathbf{100-200}$	**32**	$\mathbf{40+32=72}$
$\mathbf{200-300}$	**48**	$\mathbf{72+48=120}$
$\mathbf{300-400}$	**22**	$\mathbf{120+22=142}$
$\mathbf{400-500}$	**8**	$\mathbf{142+8=150}$
Total	$\boldsymbol{N} = \mathbf{150}$	

Here, $\boldsymbol{N} = \mathbf{150}$

Now, $\frac{\boldsymbol{N}}{\mathbf{2}} = \frac{\mathbf{150}}{\mathbf{2}} = \mathbf{75}$

The cumulative frequency just greater than $\mathbf{75}$ is $\mathbf{120}$ which corresponds to the class $\mathbf{200-300}$.

$\therefore$ The median class is $\mathbf{200-300}$

Here, $\boldsymbol{l}$ = Lower limit of the median class $= \mathbf{200}$

$\boldsymbol{N}$ = number of observation$= \mathbf{150}$

$\boldsymbol{C}$ = cumulative frequency of the class preceding the median class $= \mathbf{72}$

$\boldsymbol{f}$ = frequency of the median class $= \mathbf{48}$

$\boldsymbol{h}$ = class size $= \mathbf{100}$

Now, Using the formula, we have

$$\text{Median} = \boldsymbol{l} + \left(\frac{\frac{N}{2} - C}{f}\right) \times \boldsymbol{h}$$
$$= \mathbf{200} + \left(\frac{\mathbf{75-72}}{\mathbf{48}}\right) \times \mathbf{100}$$
$$= \mathbf{200} + \left(\frac{\mathbf{3}}{\mathbf{48}}\right) \times \mathbf{100}$$
$$= \mathbf{200} + \frac{\mathbf{1}}{\mathbf{16}} \times \mathbf{100}$$
$$= \mathbf{200} + \frac{\mathbf{25}}{\mathbf{4}}$$
$$= \mathbf{200 + 6.25}$$
$$= \mathbf{206.25} \quad \text{(Ans)}$$

54. Find the median, if

$\boldsymbol{l}$ = Lower limit of the median class $= \mathbf{15}$

$\boldsymbol{N}$ = Total observation$= \mathbf{49}$

$\boldsymbol{C}$ = cumulative frequency of the class preceding the median class $= \mathbf{11}$

$\boldsymbol{f}$ = frequency of the median class $= \mathbf{15}$

$\boldsymbol{h}$ = size of the class interval $= \mathbf{5}$

Soln.: Using the formula, we have

$$\boldsymbol{Median} = \boldsymbol{l} + \left(\frac{\frac{N}{2} - C}{f}\right) \times \boldsymbol{h}$$
$$= \mathbf{15} + \left(\frac{\frac{\mathbf{49}}{\mathbf{2}} - \mathbf{11}}{\mathbf{15}}\right) \times \mathbf{5}$$
$$= \mathbf{15} + \left(\frac{\mathbf{24.5-11}}{\mathbf{15}}\right) \times \mathbf{5}$$
$$= \mathbf{15} + \left(\frac{\mathbf{13.5}}{\mathbf{15}}\right) \times \mathbf{5}$$
$$= \mathbf{15} + \frac{\mathbf{13.5}}{\mathbf{3}}$$
$$= \mathbf{15 + 4.5}$$
$$= \mathbf{19.5} \quad \text{(Ans)}$$

55. Find the mode, if

$\boldsymbol{l}$ = Lower limit of the modal class $= \mathbf{15}$

$\boldsymbol{h}$ = size of the class interval $= \mathbf{5}$

$\boldsymbol{f_1}$ = Frequency of the modal class $= \mathbf{24}$

$\boldsymbol{f_0}$ = Frequency of the class preceding the modal class $= \mathbf{18}$

$\boldsymbol{f_2}$ = Frequency of the class succeeding the modal class $= \mathbf{17}$

Soln.: Using the formula, we have

$$\boldsymbol{Mode} = \boldsymbol{l} + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times \boldsymbol{h}$$
$$= \mathbf{15} + \left(\frac{\mathbf{24-18}}{\mathbf{2\times 24-18-17}}\right) \times \mathbf{5}$$
$$= \mathbf{15} + \left(\frac{\mathbf{6}}{\mathbf{48-35}}\right) \times \mathbf{5}$$
$$= \mathbf{15} + \left(\frac{\mathbf{6}}{\mathbf{13}}\right) \times \mathbf{5}$$

$= 15 + \frac{30}{13}$

$= 15 + 2.3$

$= 17.3$ (Ans)

56. What is the difference of median and mean, if the difference of mode and median is 42 ?

Soln.:

Given:

$Mode - Median = 42$

⇨ $Mode = 42 + Median$ -------(i)

Now, Relation among mean, median and mode is –

$Mode = 3Median - 2Mean$ ----(ii)

From equation (i) and (ii), we get

$3\,Median - 2\,Mean = 42 + Median$

⇨ $3\,Median - Median - 2\,Mean = 42$

⇨ $2\,Median - 2\,Mean = 42$

⇨ $2(Median - Mean) = 42$

⇨ $Median - Mean = \frac{42}{2}$

⇨ $Median - Mean = 21$. (Ans)

57. For the following distribution:

Marks	Number of students
$Below\ 10$	5
$Below\ 20$	7
$Below\ 30$	8
$Below\ 40$	12
$Below\ 50$	28
$Below\ 60$	30

Find the modal class.

Soln.:

Marks	Number of students	Cumulative Frequency (cf)
$Below\ 10$	5	5
$10 - 20$	$(7-5) = 2$	7
$20 - 30$	$(8-7) = 1$	8
$30 - 40$	$(12-8) = 4$	12
$40 - 50$	$(28-12) = 16$	28
$50 - 60$	$(30-28) = 2$	30

So, we see that the highest frequency is 16, which lies in the class interval $40 - 50$.

∴ The modal class is $40 - 50$. (Ans)

58. The following frequency distribution gives the weights of 30 students of a class:

Weight (in Kg)	Number of students
$40 - 45$	2
$45 - 50$	3
$50 - 55$	8
$55 - 60$	6
$60 - 65$	6
$65 - 70$	3
$70 - 75$	2

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.:

Weight (in Kg)	Number of students (f_i)	Cumulative Frequency (cf)
$40 - 45$	2	2
$45 - 50$	3	$2 + 3 = 5$
$50 - 55$	8	$5 + 8 = 13$
$55 - 60$	6	$13 + 6 = 19$
$60 - 65$	6	$19 + 6 = 25$
$65 - 70$	3	$25 + 3 = 28$
$70 - 75$	2	$28 + 2 = 30$
Total	$N = 30$	

Here, $N = 30$

⇨ $\frac{N}{2} = \frac{30}{2} = 15$ which is just greater than the cumulative frequency 13 and thus lies in the class $55 - 60$.

(i) So, the median class of the given data is $55 - 60$.

(ii) The class mark of the median class $55 - 60$ is

$= \frac{Lower\ class\ limit + Upper\ class\ limit}{2}$

$= \frac{55 + 60}{2}$

$= \frac{115}{2}$

$= 57.5$ (Ans)

59. For the following distribution:

Class	$0-10$	$10-20$	$20-30$	$30-40$	$40-50$	$50-60$
Frequency	**3**	**6**	**8**	**15**	**10**	**8**

Find the sum of lower limit of the median class and the lower limit of the modal class.

Soln.:

Class Interval	Frequency	Cumulative Frequency (cf)
$0-10$	3	3
$10-20$	6	$3+6=9$
$20-30$	8	$9+8=17$
$30-40$	15	$17+15=32$
$40-50$	10	$32+10=42$
$50-60$	8	$42+8=50$

Here, $N = 50$

$\Rightarrow \frac{N}{2} = \frac{50}{2} = 25$,

which is just greater than the cumulative frequency 17 and thus lies in the class interval $30-40$.

So, Median class is $30-40$

$\therefore$ Lower limit of the median class is 30

Also, the highest frequency is 15, which lies in the class interval $30-40$.

So, Modal Class is $30-40$

$\therefore$ Lower limit of the modal class is 30

Hence, Required sum $= 30+30 = 60$. (Ans)

60. 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, $\bar{x} = \frac{\sum f_i x_i}{\sum f_i} = \frac{504}{28} = 18$. (Ans)

Section-D

Long Answer Questions (5 Marks)

Arithmetic Progression

1. Which term of the arithmetic progression 3, 10, 17,…….. will be 84 more than the 13^{th} term?

   Solution: Given AP is 3, 10, 13….

   First term $a_1 = 3$

   Common difference, d = 10-3

   = 7

   Let the n^{th} term be 84 more than 13^{th} term

   $\therefore \quad a_n - a_{13} = 84$

   $\Rightarrow a_1 + (n-1)d - \{a_1 + 12d\} = 84$

   $\Rightarrow a_1 + (n-1)d - a_1 - 12d = 84$

   $\Rightarrow (n-1) \times 7 - 12 \times 7 = 84$

   $\Rightarrow 7n - 7 - 84 = 84$

   $\Rightarrow 7n - 91 = 84$

   $\Rightarrow 7n = 84 + 91$

   $\Rightarrow 7n = 175$

   $\Rightarrow n = \frac{175}{7}$

   $\Rightarrow n = 25$

   Therefore, the 25^{th} is the required term.

2. Find the sum of the two -digit odd number.

   Solution: The first two-digit odd number is 11

   And the last two-digit odd number is 99.

   $\therefore$ The arithmetic series is 11 + 13 + 15 + …….+99

   Now: First term, $a_1 = 11$, second term $a_2 = 13$, $a_3 = 15$, … , $a_n = 99$

   Common difference, $d = a_2 - a_1 = 13 - 11 = 2$

   Let n be the numbers of the two-digit odd numbers

   I, e, $a_n = 99$

   $\Rightarrow a_1 + (n-1)d = 99$

   $\Rightarrow 11 + (n-1) \times 2 = 99$

   $\Rightarrow (n-1) \times 2 = 99 - 11$

   $\Rightarrow (n-1) \times 2 = 88$

   $\Rightarrow (n-1) = \frac{88}{2}$

   $\Rightarrow (n-1) = 44$

   $\Rightarrow n = 44 + 1$

   $\Rightarrow n = 45$

   Using the formula,

   $S_n = \frac{n}{2}(a_1 + a_n)$

   $\Rightarrow S_{45} = \frac{45}{2}(11 + 99)$

   $\Rightarrow S_{45} = \frac{45}{2} \times 110$

   $\Rightarrow S_{45} = 45 \times 55$

   $\Rightarrow S_{45} = 2475.$

   $\therefore$ the sum of the two digit odd numbers is 2475.

3. If the $10^{th}$of an A.P is 52 and the 17^{th} term is 20 more than the 13^{th} term, find the A.P.

   Solution: let a_1 be the first term and ‘d’ the common difference.

   Given: $a_{10} = 52$

   $\Rightarrow a_1 + 9d = 52 \quad (i)$

   And, $a_{17} - a_{13} = 20$

   $\Rightarrow (a_1 + 16d) - (a_1 + 12d) = 20$

   $\Rightarrow a_1 + 16d - a_1 - 12d = 20$

   $\Rightarrow 4d = 20$

   $\Rightarrow d = \frac{20}{4}$

   $\Rightarrow d = 5$

   putting d=5 in (i), we get,

   $\Rightarrow a_1 + 9 \times 5 = 52$

   $\Rightarrow a_1 + 45 = 52$

   $\Rightarrow a_1 = 52 - 45$

   $\Rightarrow a_1 = 7$

   Hence the A.P is 7,7+5,7+2x5,7+3x5,…

   i.e 7,12,17,22,…

   Thus, the A.P is 7,12,17,22,…

4. The sum of the 5^{th} term and the 9^{th} term of an AP is 30. If its 25^{th} term is three times its 8^{th} term, find the AP.

   Solution: Let a_1 be the first term and d be the common difference

   Given: $a_5 + a_9 = 30$

   $\Rightarrow a_1 + 4d + a_1 + 8d = 30$

   $\Rightarrow 2a_1 + 12d = 30$

   $\Rightarrow 2(a_1 + 6d) = 30$

   $\Rightarrow a_1 + 6d = 15 \quad (i)$

And, $a_{25} = 3 \times a_8$

⇨ $a_1 + 24d = 3(a_1 + 7d)$

⇨ $a_1 + 24d = 3a_1 + 21d$

⇨ $a_1 - 3a_1 + 24d - 21d = 0$

⇨ $-2a_1 + 3d = 0$ (ii)

Multiplying equation (i) by 2 and equation (ii) by 1 we get

$2a_1 + 12d = 30$

$-2a_1 + 3d = 0$

By adding $15d = 30$

$d = \frac{30}{15} = 2$

Putting d = 2 in equation (i) we get

$a_1 + 6 \times 2 = 15$

⇨ $a_1 + 12 = 15$

⇨ $a_1 = 15 - 12$

⇨ $a_1 = 3$

Thus the AP is 3, 3+2, 3+2×2, 3 + 2×3,…..

I.e., 3, 5, 7, 9,……

Thus the AP is 3, 5, 7, 9,……

5. The 2nd, 31st and the last term of an AP are $\mathbf{7\frac{3}{4}}$, $\frac{1}{2}$ and $\mathbf{-6\frac{1}{2}}$ respectively. Find the first term and the number of terms.

Solution: Let a_1 be the first term and d be the common difference and n be the number of terms of the AP.

Given:

$a_2 = 7\frac{3}{4}$, $a_{31} = \frac{1}{2}$ and $a_n = -6\frac{1}{2}$ or $-\frac{13}{2}$

⇨ $a_2 = \frac{34}{4}$

⇨ $a_1 + d = \frac{31}{4}$

⇨ $4a_1 + 4d = 31$ (i)

⇨ $a_{31} = \frac{1}{2}$

⇨ $a_1 + 30d = \frac{1}{2}$

⇨ $2a_1 + 60d = 1$ (i)

Multiplying equation (i) by 2 and equation (ii) by -4 we get.

$8a_1 + 8d = 62$

$- \quad 8a_1 - 240d = -4$

By subtracting $-232d = 85$

$d = \frac{58}{-232}$

$d = -\frac{1}{4}$

Putting $d = -\frac{1}{4}$ in equation (i) we get

$4a_1 + 4 \times (\frac{-1}{4}) = 31$

$4a_1 - 1 = 31$

$4a_1 = 31 + 1$

$4a_1 = 32$

$a_1 = \frac{32}{4}$

$a_1 = 8$

But, $a_n = \frac{-13}{2}$

$a_1 + (n-1)\, d = \frac{-13}{2}$

⇨ $8 + (n-1) \times (\frac{-1}{4}) = \frac{-13}{2}$

⇨ $(n-1) \times (\frac{-1}{4}) = \frac{-13}{4} - 8$

⇨ $(n-1) \times (\frac{-1}{4}) = \frac{-13-16}{4}$

⇨ $(n-1) \times (\frac{-1}{4}) = \frac{-29}{2}$

⇨ $(n-1) = \frac{-29}{2} \times (-4)$

⇨ $n-1 = 58$

⇨ $n = 58+1$

⇨ $n = 59$

Hence, the first term is 8 and the last term is 59.

6. Find the middle term of the AP 6, 13, 20, …. 216.

Solution: the given AP is 6, 13, 20, …. 216.

Here the first term, $a_1 = 6$

And the common difference, d = 7

Let there be n terms in the given AP

Then,

$a_n = 216$

⇨ $a_1 + (n-1)\, d = 216$

⇨ $6 + (n-1)\, d = 216$

⇨ $(n-1) \times 7 = 216 - 6$

⇨ $(n-1) \times 7 = 210$

⇨ $n - 1 = \frac{210}{7}$

⇨ $n - 1 = 30$

⇨ $n = 30 + 1$

⇨ $n = 31$, which is odd.

∴ The middle term is $(\frac{n+1}{2})^{th}$.

i.e., $(\frac{31+1}{2})^{th} = (\frac{32}{2})^{th}$ or, 16^{th}.

Hence the middle term is a_{16} given by:

$a_{16} = a_1 + 15d$

$= 6 + 15 \times 7$

$= 6 + 105$

$= 111$

∴ The middle term of the AP is 111.

7. Find the sum of the following series:
   72+70+68+…..+40
   Solution:
   Here $a_1 = 72$, $a_2 = 70$, $a_3 = 68$ and $a_n = 40$
   ∴ $a_3 - a_2 = 68-70 = -2$
   $a_2 - a_1 = 70-72 = -2$
   Since, $a_3 - a_2 = a_2 - a_1 = -2$

Therefore, the given series is an arithmetic series with first term $a_1 = 72$ and common difference, d = -2

Now,

$a_n = 40$

⇨ $a_1 + (n-1)\, d = 40$

⇨ $72 + (n-1)(-2) = 40$

⇨ $(n-1) \times (-2) = 40 - 72$

⇨ $(n-1) \times (-2) = -32$

⇨ $(n - 1) = \frac{-32}{-2}$

⇨ $(n-1) = 16$

⇨ $n = 16 + 1$

⇨ $n = 17$

Using the formula:

$S_n = \frac{n}{2}(a_1 + a_n)$

⇨ $S_{17} = \frac{17}{2}(72 + 40)$

⇨ $S_{17} = \frac{17}{2} \times 112$

⇨ $S_1 = 17 \times 56$

⇨ $S_{17} = 952$

∴ The sum of the series 72+70+68+…..+40 is 952.

8. How many terms of the sequence 18, 16, 14,…..should be taken so that the series is 0?
   Solution: Given sequence is 18, 16, 14,…..
   Here $a_1 = 18$, $a_2 = 16$, $a_3 = 14$
   Then $a_3 - a_2 = 14 - 16 = -2$ and $a_2 - a_1 = 16 - 18 = -2$
   Since $a_3 - a_2 = a_2 - a_1 = -2$
   The given sequence is arithmetic progression.
   With first term, $a_1 = 18$ and common difference, d = -2
   Let there be n numbers of terms that make the sum 0.

$S_n = 0$

⇨ $\frac{n}{2}(a_1 + a_n) = 0$

⇨ $\frac{n}{2}\{a_1 + a_1 + (n-1)\, d\} = 0$

⇨ $\frac{n}{2}\{2a_1 + (n-1)\, d\} = 0$

⇨ $\frac{n}{2}\{2 \times 18 + (n-1)(-2)\} = 0$

⇨ $n(36 - 2n + 2) = 2 \times 0$

⇨ $n(38 - 2n) = 0$

⇨ $n(38 - 2n) = 0$

⇨ $2n(19 - n) = 0$

Either, $2n = 0$

⇨ $n = \frac{0}{2}$

⇨ n = 0, is rejected as the number of terms cannot be zero

or, $19 - n = 0$

⇨ $-n = -19$

⇨ $n = 19$

Thus, there are 19^{th} terms in the sequence that make the sum equal to zero.

9. (i) Find the sum of the first n natural numbers.
(ii) Find the sum of the first 110 natural numbers.
Solution: The given series is
1+2+3+4+…….+ n is an arithmetic series with

First term, $a_1 = 1$

And common difference, d = 1

Let there be n numbers of terms in the given series

$\therefore \quad a_n = n$

$\Rightarrow$ nth term = n

Using the formula,

$$S_n = \frac{n}{2}(a_1 + a_n)$$

$$S_n = \frac{n}{2}(1 + n)$$

Hence the sum of the first n natural numbers is $\frac{n}{2}(1 + n)$

(ii) Here, n = 100

Sum of the first n natural numbers = $\frac{n(1+n)}{2}$

$\therefore$ Sum first 100 natural numbers = $\frac{100(1+100)}{2}$

$= 50 \times 101$

$= 5050.$

10. If the sum of n terms of an AP is $(pn + qn^2)$ where p and q are constants, find the common difference.
Solution: Given sum of n terms of an AP is $(pn + qn^2)$

$\Rightarrow \quad S_n = (pn + qn^2)$

Let a_1, a_2 be the first and second term of an AP and d be the common difference.

Now, $S_n = (pn + qn^2)$

$\Rightarrow \quad S_1 = p + q$ (when n= 1)

$\Rightarrow \quad a_1 = p + q$ ….(i) [When n is 1 $S_1 = a_1$]

And, $S_2 = p \times 2 + q \times 2^2$

$\Rightarrow \quad a_1 + a_2 = 2p + 4q$ [$\because S_2$ is the sum of the first and the 2^{nd} term]

$\Rightarrow \quad (p + q) + a_2 = 2p + 4q$ [using (i)}

$\Rightarrow \quad a_2 = 2p + 4q – (p + q)$

$\Rightarrow \quad a_2 = p + 3q$

But, Common difference, $d = a_2 – a_1$

$= p + 3q – (p + q)$

$= p + 3q – p \quad – q$

$\Rightarrow \quad d = 2q$

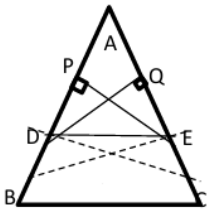
Hence, the common difference of the AP is 2q.

11. State and prove basic proportionality theorem.

Statement: If a line is drawn parallel to one side of a triangle intersecting the other two sides, in distinct point, then the other two sides are divided in the same ratio.

Given: ΔABC in which DE//BC

To prove: $\frac{AD}{BD} = \frac{AE}{EC}$



Construction: Join BE and CD

Draw EP⊥AB and DQ ⊥ AC

Proof: In ΔADE and BDE

$$\frac{ar\,(\Delta ADE)}{ar(\Delta BDE)} = \frac{\frac{1}{2}\times AD\times PE}{\frac{1}{2}\times BD\times PE}$$

[∵ ar right Δ = $\frac{1}{2}$ × b × h]

$$\frac{ar\,(\Delta ADE)}{ar(\Delta BDE)} = \frac{AD}{BD} \quad \text{(i)}$$

Similarly, $\frac{ar\,(\Delta ADE)}{ar(\Delta CDE)} = \frac{\frac{1}{2}\times AE\times DQ}{\frac{1}{2}\times EC\times DQ}$

$$\Rightarrow \quad \frac{ar\,(\Delta ADE)}{ar(\Delta CDE)} = \frac{AE}{EC} \quad \text{(ii)}$$

But Δ BDE and ΔCDE are on the same base DE and between the same parallels DE and BC

$$\therefore ar(\Delta BDE) = ar\,(\Delta CDE) \quad \text{(iii)}$$

From equation (i), (ii) and (iii), we have

$$\frac{AD}{BD} = \frac{AE}{EC}$$

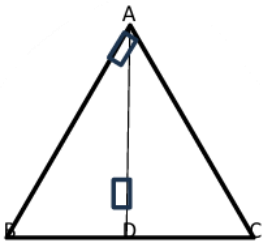
Hence, Proved.

12. Prove that in a right-angled Triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

Given: A right triangle ABC, right angled at B

To prove: $AC^2 = AB^2 + BC^2$

Construction: BD⊥AC is drawn



Proof: In ΔABD and ΔABC

∠ADB = ∠ABC (each 90^0)

∠A = ∠A (Common angles)

∴ Δ ADB ~ Δ ABC (AA Similarity)

A

⇨ $\frac{AD}{AB} = \frac{AB}{AC}$ [Sides are proportional]

⇨ $AB^2 = AD \times AC$ ……. (i)

Again, in ΔBDC and ΔABC

∠BDC = ∠ABC (each 90^0)

∠C = ∠C (Common angles)

ΔBDC ~ Δ ABC

⇨ $\frac{BC}{AC} = \frac{DC}{BC}$ (Sides are proportional)

⇨ $BC^2 = DC \times AC$ …… (ii)

Adding (i) and (ii) we get

$AB^2 + BC^2 = AD \times AC + DC \times AC$

$= AC \times (AD + DC)$

$= AC \times AC = AC^2$

Hence, $AC^2 = AB^2 + BC^2$

13. Show that the ratio of the perimeters of the two similar triangles is the same as the ratio of their corresponding sides.

(i) The perimeter of two similar triangles is 25cm and 15cm respectively. If one side of first triangle is 9cm, what is the corresponding side of the triangles?

Let ΔABC and ΔDEF be similar

Let BC = a, CA = b, AB = c

And EF = d, FD = e, DE = f

∵ Δ ABC ~ ΔDEF

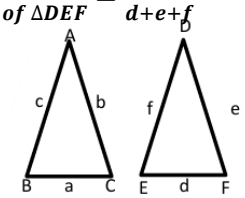
⇨ $\frac{BC}{EF} = \frac{CA}{FD} = \frac{AB}{DE}$ (Sides are proportion)

⇨ $\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$=k (say) (i)

⇨ $a = dk, b = ek, c = f$

⇨ ∴ $\frac{perimeter\ of \Delta ABC}{perimeter\ of\ \Delta DEF} = \frac{a+b+c}{d+e+f}$

$=\frac{dk+ek+fk}{d+e+f}$



$=\frac{k(d+e+f)}{d+e+f}$

$=k$

∴ $\frac{perimeter\ \Delta ABC}{perimeter\ of\ \Delta DEF} = \frac{a}{d} = \frac{b}{e} = \frac{c}{f}$

$=\frac{BC}{EF} = \frac{CA}{FD} = \frac{AB}{DE}$

(ii) Let Δ ABC ~ ΔDEF such that BC = 9cm

perimeter of ΔABC = 25cm

Perimeter of ΔDEF = 15cm

∵ ΔABC ~ ΔDEF

∴ $\frac{Perimeter\ of\ \Delta ABC}{Perimeter\ of\ \Delta DEF} = \frac{BC}{EF}$

⇨ $\frac{25}{15} = \frac{9}{EF}$

⇨ EF = $\frac{9\times15}{25}$

⇨ EF = $\frac{27}{5}$

⇨ EF = 5.4 cm

14. In the figure, if DE//BC, AD = 4x – 3, AE = 8x -7, BD = 3x – 1 and CE = 5x – 3. Find the value of x

Solution: In ΔABC, DE//BC

∴ $\frac{AD}{BD} = \frac{AE}{EC}$ [Basic proportionality theorem]

⇨ $\frac{4x-3}{3x-1} = \frac{8x-7}{5x-3}$

⇨ (4x – 3) (5x – 3) = (8x – 7) (3x -1)

⇨ 4x (5x – 3) -3(5x – 3) = 8x (3x -1) - 7(3x -1)

⇨ $20x^2 – 12x – 15x + 9 = 24x^2 -8x – 21x + 7$

⇨ $20x^2 -27x + 9 = 24x^2 – 29x + 7$

⇨ $20x^2 – 24x^2 – 27x + 29x + 9 – 7 =0$

⇨ $-4x^2 + 2x^2 + 2x + 2 = 0$

$-2 (2x^2 – x – 1) =0$

⇨ $2x^2 – x -1 = \frac{0}{-2}$

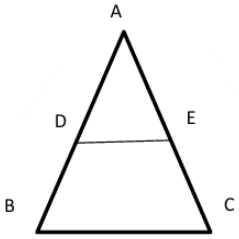
⇨ $2x^2 – x – 1= 0$

⇨ $2x^2 – 2x +x -1 =0$

⇨ 2x (x -1) + 1(x -1) = 0

⇨ (x -1) (2x + 1) = 0

Either, x -1 =0 => x = 1



Or, 2x + 1 = 0 => x = - ½

x = - $\frac{1}{2}$, is rejected as the length cannot be negative.

Hence x = 1 unit

15. In the fig, ∠APQ = ∠B, Prove that ΔAPQ ~ ΔABC. If AP = 3.8cm, AQ = 3.6cm, BQ=2.1cm and BC = 4.2cm, Find PQ.

Solution: In ΔAPQ and ΔABC

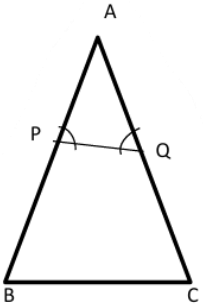
∠APQ = ∠B (Given)

∠A= ∠A (Common angles)

∴ Δ APQ ~ Δ ABC (AA similarity)

⇨ $\frac{AP}{AB} = \frac{PQ}{BC}$ (sides are proportional)

⇨ $\frac{AP}{AQ+BQ} = \frac{PQ}{BC}$ (∵ AB = AQ + BQ)



⇨ $\frac{3.8}{3.6+2.1} = \frac{PQ}{BC}$

⇨ $\frac{3.8}{5.7} = \frac{PQ}{BC}$

⇨ PQ = $\frac{3.8\times4.2}{5.7}$

⇨ PQ = 2 × 1.4

⇨ PQ = 2.8

Hence, PQ = 2.8cm

16. Prove that the ratio of two similar triangles is equal to the ratio of the squares of their corresponding sides.

Given: Two triangles ABC and DEF, such that ΔABC ~ ΔDEF

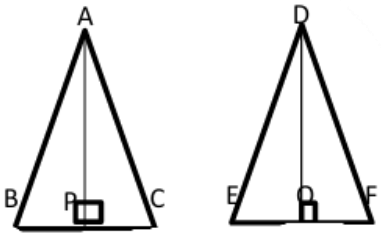
To Prove: $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$

Construction: Draw AP⊥BC and PQ⊥EF

Proof: ∵ ΔABC ~ ΔDEF

∴ $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ (i) (sides are proportional)

⇨ $\frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$ (ii) (by squaring)



Now, $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{\frac{1}{2}\times BC\times AP}{\frac{1}{2}\times EF\times DQ}$

$= \frac{BC}{EF} \times \frac{AP}{DQ}$ (iii)

Also, $\frac{Ap}{DQ} = \frac{BC}{EF}$ (iv) [∵ in similar triangles ratio of corresponding sides is the same as ratio of corresponding altitudes]

From (iii) and (iv) we get

$\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{BC}{EF} \times \frac{BC}{EF}$

$= \frac{BC^2}{EF^2}$

$= \frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$

[using equation (ii)]

Hence, $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AB^2}{DE^2} = \frac{BC^2}{EF^2} = \frac{AC^2}{DF^2}$

17. In a triangle, if the square of one side is equal to the sum of the square of the remaining two sides, prove that the triangle is a right-angled triangle.

Using the above result, do the following

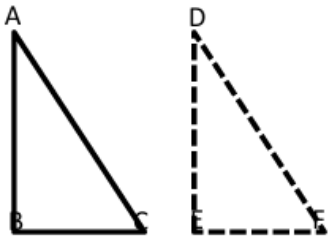
Determine whether a triangle having sides a = 5cm, b = 12cm and c = 13cm is a right-angled triangle or not.

Given: A triangle ABC such that $AB^2 + BC^2 = AC^2$

To prove: ∠ABC = 90^0

Construction: Construct a right-angled triangle DEF, right angled at E, such that DE = AB and EF = BC

Proof: in rt ΔDEF



$DE^2 + EF^2 = DF^2$ [Pythagoras theorem]

⇨ $AB^2 + BC^2 = DF^2$ [∵ DE = AB and B EF = BC]

⇨ $AC^2 = DF^2$ [∵ $AB^2 + BC^2 = DF^2$]

⇨ AC = DF

In ΔABC and ΔDEF

AB = DE (given)

BC = EF (given)

AC = DF (proved above)

∴ ΔABC ≅ ΔDEF [By sss congruence criteria)

⇨ ∠ABC = ∠DEF [c.p.c.t.c]

But, ∠ABC = 90^0

Given: a =5cm, b = 12cm and c = 13cm

⇨ $a^2 = 25$, $b^2 = 144cm2$ and $c^2 = 164cm^2$

Now, $a^2 + b^2 = 25cm^2 + 144cm^2 = 169cm^2 = c^2$

∴ $c^2 = a^2 + b^2$

By the converse of Pythagoras theorem.

Hence, ΔABC is a right-angled triangle.

18. ΔABC is right-angled at A and AD⊥BC. If BC = 13cm and AC = 5cm. Find the ratio of the areas of ΔABC and ΔADC.

Solution: Given ΔABC, ∠A = 90^0, AD⊥BC

Also given BC = 13cm and AC = 5cm

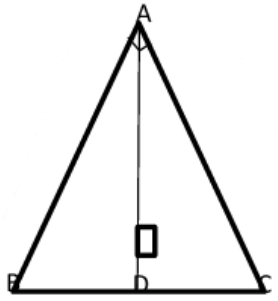
To find: $\frac{ar(\Delta ABC)}{ar(\Delta ADC)}$

Proof: In ΔABC and ΔADC

∠BAC = ∠ADC [Each is 90^0]

∠C = ∠C [common angles]

∴ ΔABC ~ ΔDAC [AA similarity]



⇨ $\frac{ar(\Delta ABC)}{ar(\Delta DAC)} = \frac{BC^2}{AC^2}$ [∵ the ratio of the areas of two similar triangle is equal to the ratio of the squares of their corresponding sides]

⇨ $\frac{ar(\Delta ABC)}{ar(\Delta DAC)} = \frac{13^2}{5^2}$

$= \frac{169}{25}$

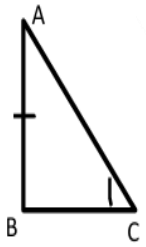
Hence, ar(ΔABC): ar(ΔADC) = 169: 25

19. (i) A man goes 15m due east and then 8m due north. How far is he from the starting point?

Solution (i): Let C be the starting point

Let A be the ending point

In rt ΔABC



$AC^2 = AB^2 + BC^2$ (using Pythagoras theorem)

$= (8m)^2 + (15m)^2$

$= 64m^2 + 225m^2$

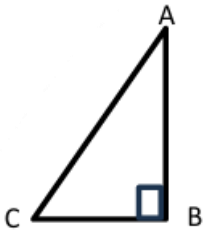
$AC^2 = 289m^2$

$\sqrt{AC^2} = \sqrt{289m^2}$

AC = 17

Hence, AC = 17m.

(iii) ΔABC is an isosceles triangle with AC = BC. If $AB^2 = 2AC^2$,



Prove that ΔABC is a right angled triangled

Solution (ii) Given, AC = BC

And, $AB^2 = 2AC^2$

To prove: ΔABC is right angle Δ

Proof: In ΔABC

$AB^2 = 2\ AC^2$

$AB^2 = AC^2 + AC^2$

$AB^2 = BC^2 + AC^2$ [∵ AC = BC]

By the converse of Pythagoras theorem.

∴ ΔABC is a right-angle triangle.

20. In Rhombus of side 10cm, one of the diagonals is 12cm long. Find the length of second diagonal.

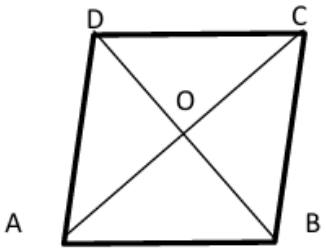
Solution:

Let ABCD be the rhombus where diagonals AC and BD intersect at O.

AB = 10cm and AC = 12cm

Let BD =2x cm

Since diagonals of a rhombus bisect each other at right angle.



$\therefore$ $AO = \frac{1}{2} AC = \frac{1}{2} \times 12 = 6cm$

$OB = \frac{1}{2} BD = \frac{1}{2} \times 2x = xcm$

Also, $\angle AOB = 90^0$

Now, in right angle ΔAOB

$AB^2 = AO^2 + OB^2$ [using Pythagoras theorem]

$\Rightarrow$ $10^2 = 6^2 + x^2$

$\Rightarrow$ $100 = 36 + x^2$

$\Rightarrow$ $100 - 36 = x^2$

$\Rightarrow$ $64 = x^2$

$\Rightarrow$ $\sqrt{64} = x$

$\Rightarrow$ $8 = x$

$\therefore x = 8cm$

$\therefore BD = 2x = 2 \times 8 = 16cm$

Hence the length of another diagonal is 16cm.

21. A kite is flying at a height of 75 metres from the level ground, attached to a string inclined at 60^0 to the horizontal. Find the length of the string. (use $\sqrt{3} = 1.732$)

Solution: Height of a kite from the ground, AB = 75m

Length of the string be AC

Angle of elevation, $\Theta = 60^0$

Now, In right ΔABC

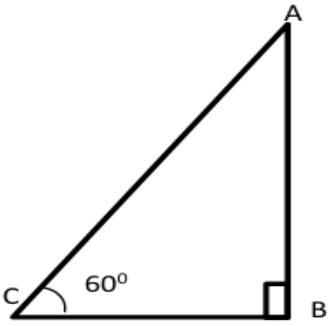
$$\sin\Theta = \frac{AB}{AC}$$

⇨ $\text{Sin}60^0 = \frac{75}{AC}$

⇨ $\frac{\sqrt{3}}{2} = \frac{75}{AC}$

⇨ $\text{AC} = \frac{75\times 2}{\sqrt{3}}$

⇨ $\text{AC} = \frac{150}{\sqrt{3}}$



⇨ $\text{AC} = \frac{150}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

⇨ $\text{AC} = \frac{150\sqrt{3}}{3}$

⇨ $\text{AC} = \frac{150\times 1.732}{3}$

⇨ AC = 86.6

⇨ Hence the length of the string is 86.6m

22. The shadow of a vertical tower is found to be 60m longer on the level ground when the sun's altitude is 30^0 than when it is 45^0. Find the height of the tower. (use $\sqrt{3} = 1.732$)

Solution: Let AB be the height of the tower

AC be the length of the shadow when sun's altitude is 45^0

AD = (AC + 60) m, the length of the shadow when sun's altitude is 30^0

In right ΔBAC, $\angle ACB = 45^0$

$$\frac{AB}{AC} = \tan\angle ACB$$

⇨ $\frac{AB}{AC} = \tan 45^0$

⇨ $\frac{AB}{AC} = 1$

⇨ AB = AC

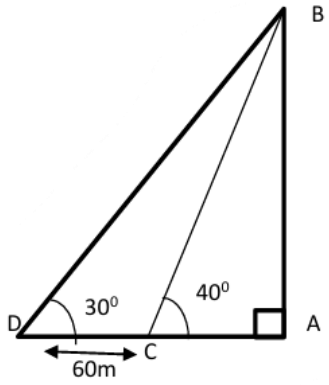
In right ΔBAD, $\angle ADB = 30^0$

$$\frac{AB}{AC} = \tan\angle ADB$$

⇨ $\frac{AB}{AD} = \tan\angle ADB$

⇨ $\frac{AB}{AB+CD} = \tan 30^0$

⇨ $\frac{AB}{AB+60} = \frac{1}{\sqrt{3}}$ [$\because$ AB = AC]



⇨ $\text{AB} \times \sqrt{3} = \text{AB} + 60$

⇨ $\text{AB}\sqrt{3} - \text{AB} = 60$

⇨ $\text{AB}(\sqrt{3} - 1) = 60$

⇨ $\text{AB} = \frac{60}{\sqrt{3}-1}$

⇨ $\text{AB} = \frac{60}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1}$

⇨ $\text{AB} = \frac{60\,(\sqrt{3}+1)}{(\sqrt{3})^2-1^2}$

⇨ $\text{AB} = \frac{60\,(1.732+1)}{3-1}$

⇨ $\text{AB} = \frac{60\times 2.732}{2}$

⇨ $\text{AB} = 30 \times 2.732$

⇨ AB = 81.96m

Hence the height of the tower is 81.96m

23. A vertically straight tree 15m high is broken by the wind in such a way that its top touches the ground and makes an angle 60^0 with the ground. At what height from the ground did the tree break? (use $\sqrt{3} = 1.732$)

Solution: Let AB be the tree, broken at point C such that AC = xm

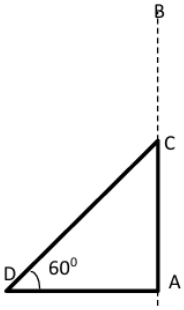
Let CB take the position CD be the broken part of the tree.

Then, CD = CB = (15 – x) m

And $\angle ADC = 60^0$

In right ΔDAC, we have

$\frac{AC}{CD} = \sin 60^0$



$\Rightarrow \frac{x}{15-x} = \frac{\sqrt{3}}{2}$

$\Rightarrow 2x = \sqrt{3}(15 - x)$

$\Rightarrow 2x = 15\sqrt{3} - \sqrt{3}x$

$\Rightarrow 2x + \sqrt{3}x = 15\sqrt{3}$

$\Rightarrow x(2 + \sqrt{3}) = 15\sqrt{3}$

$\Rightarrow x = \frac{15\sqrt{3}}{\sqrt{3}+2}$

$\Rightarrow x = \frac{15\sqrt{3}}{\sqrt{3}+2} \times \frac{\sqrt{3}-2}{\sqrt{3}-2}$

$\Rightarrow x = \frac{15\sqrt{3}(\sqrt{3}-2}{\sqrt{3}^2-2^2}$ [$\because$ (a-b) (a+b) = $a^2 + b^2$]

$\Rightarrow x = \frac{15\times3-30\sqrt{3}}{3-4}$

$\Rightarrow x = \frac{45-30\times1.73}{-1}$

$\Rightarrow x = \frac{-6.9}{-1}$

$\Rightarrow x = 6.9$

Thus, the tree broke at a height of 6.9m from the ground.

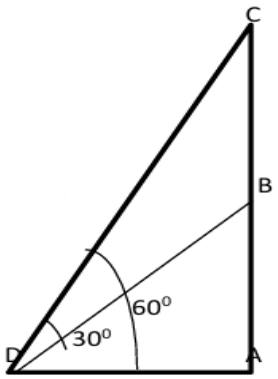
24. A vertically tower on a horizontal plane and is surmounted by a vertical flag-staff of height 5m, from a point on the plane the angles of elevation of the bottom and the top of the flag-staff are 30^0 and 60^0. Find the height of the tower.

Solution: let AB be the height of the tower and BC be the flag-staff

Let 0 be the position of the observer.

Then, $\angle AOB = 30^0$, $\angle AOC = 60^0$ and BC = 5m

In right Δ0AB, we have



$\frac{AB}{OA} = \tan \angle AOB$

$\Rightarrow \frac{AB}{OA} = \tan 30^0$

$\Rightarrow \frac{AB}{0A} = \frac{1}{\sqrt{3}}$

$\Rightarrow OA = AB\sqrt{3}$ (i)

In right ΔOAC, we have

$\frac{AC}{OA} = \tan \angle AOC$

$\Rightarrow \frac{AB+5}{AB\sqrt{3}} = \tan 60^0$

$\Rightarrow \frac{AB+5}{AB\sqrt{3}} = \sqrt{3}$

$\Rightarrow AB + 5 = AB\sqrt{3} \times \sqrt{3}$

$\Rightarrow AB + 5 = 3AB$

$\Rightarrow AB - 3AB = -5$

$\Rightarrow -2AB = -5$

$\Rightarrow AB = \frac{-5}{-2}$

$\Rightarrow AB = 2.5$

Hence, the height of the tower is 2.5m.

25. From the top of the building 15m high, the angle of elevation of the top of a tower is found to be 30^0. From the bottom of the same building, the angle elevation of the top of the tower is found to be 60^0. Find the height of the tower and the distance between the tower and the building. (use $\sqrt{3} = 1.732$)

Solution: Let AB = 15m be the height of the building.

Let CD= h m be the height of the tower

$\therefore$ ED = (h -15) m

$\angle EAD = 30^0$ and $\angle CBD = 60^0$

In right ΔAED, we have

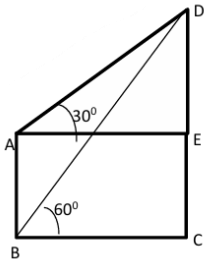
$\frac{ED}{AE}$ = tan ∠EAD

⇨ $\frac{h-15}{AE}$ = tan 30^0

⇨ $\frac{h-15}{AE} = \frac{1}{\sqrt{3}}$

⇨ AE = (h -15) $\sqrt{3}$ (i)

Again, in right ΔBCD, we have



$\frac{CD}{BC}$ = tan ∠CBD

⇨ $\frac{h}{AE}$ = tan 60^0 [∵ BC = AE]

⇨ $\frac{h}{(h-15)\sqrt{3}} = \sqrt{3}$

⇨ h = (h -15) $\sqrt{3} \times \sqrt{3}$

⇨ h = (h -15) × 3

⇨ h = 3h – 45

⇨ h – 3h = -45

⇨ -2h = -45

⇨ h = $\frac{-45}{-2}$

⇨ h = 22.5

∴ The height of the tower is 22.5m

Putting h=22.5 in equation (i) we get

AE = (22.5 -15) $\sqrt{3}$

AE = 7.5 × $\sqrt{3}$

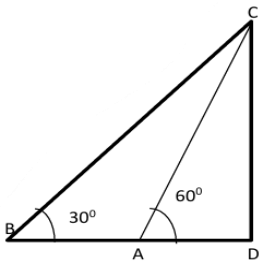
AE = 7.5 × 1.732

AE = 12.99m

Therefore, the distance between the building and the tower is 12.99m

26. The angle of elevation of the top of a tree from a point A on the ground is 60^0. On walking 20m away from the its base, to a point B, the angle of elevation changes to 30^0. Find the height of the tree. (use $\sqrt{3} = 1.732$)

Solution: Let CD be the tree of height h metres and let AD = x metres



Then,

AB = 20m, ∠DAC = 60^0

And ∠ABC = 30^0

Now, in right ΔADC

$\frac{CD}{AD}$ = tan60^0

⇨ $\frac{h}{x} = \sqrt{3}$

⇨ h = x$\sqrt{3}$ (i)

In right ΔBDC

30^0 $\frac{CD}{AD}$ = tan30^0

⇨ $\frac{h}{AB+AD} = \frac{1}{\sqrt{3}}$

⇨ $\frac{h}{20+x} = \frac{1}{\sqrt{3}}$

⇨ h = $\frac{20+x}{\sqrt{3}}$

⇨ x$\sqrt{3}$ = $\frac{20+x}{\sqrt{3}}$ [using equation (i)]

⇨ x$\sqrt{3} \times \sqrt{3}$ = 20 + x

⇨ 3x = 20 + x

⇨ 3x -x = 20

⇨ 2x = 20

⇨ x =$\frac{20}{2}$

⇨ x = 10

Putting x =10 in equation (i) we get

h = 10 × $\sqrt{3}$

h = 10 × 1.732

h = 17.32

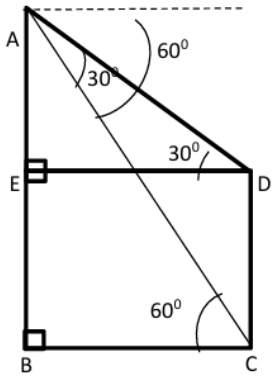
Hence, the height of the tree is 17.32m

27. From the top of the building 60m high, the angle of depression of the top and the bottom of a tower are observed to be 30^0 and 60^0. Find the height of the tower.

Solution: Let AB = 60m be the building

Let CD = hm be the tower

Then, AE = (60 – h)m , BE = CD = 30^0, ∠ACB = 60^0



Now, In right ΔAED, we have

$\frac{AE}{ED} = \tan 30^0$

⇨ $\frac{60-h}{x} = \frac{1}{\sqrt{3}}$

⇨ $x = (60 - h)\sqrt{3}$ (i)

Again, in right ΔABC, we have

$\frac{AB}{BC} = \tan 60^0$

⇨ $\frac{60}{x} = \sqrt{3}$

⇨ $x = \frac{60}{\sqrt{3}}$ (ii)

Substituting (ii) in (i) we get

$\frac{60}{\sqrt{3}} = (60 - h)\sqrt{3} \times \sqrt{3}$

⇨ $60 = (60 - h) \times 3$

⇨ $\frac{60}{3} = 60 - h$

⇨ $20 = 60 - h$

⇨ $20 - 60 = -h$

⇨ $-40 = -h$

⇨ $40 = h$

Or, h = 40

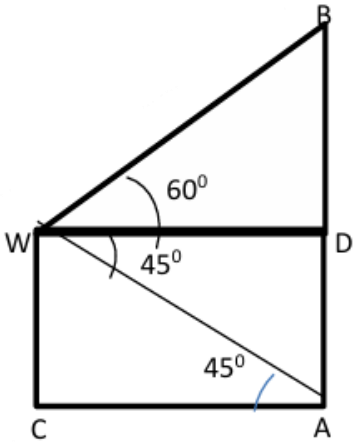
Hence the height of the tower is 40m

28. From a window 60m high above the ground of a house in a street. The Angle of elevation and depression of the top and the foot of another house on the opposite sides of the street are 60^0 and 45^0 respectively. Show that the height of the opposite house is $60(\sqrt{3}+1)$m

Solution: Let AB be one house of height hm

Let w be the window of the other house CW, such that CW = 60m

Then, AD = CW = 60m. ∠BWD = 60^0



∠CAW = ∠AWD = 45^0

Let WD = CA = x m and BD = (h-60)m

Now, in right ΔWCA, we have

$\frac{CW}{AC} = \tan 45^0$

⇨ $\frac{60}{x} = 1$

⇨ x = 60m

⇨ WD = CA =60m

Again, in right ΔBDW, we have

$\frac{BD}{WD} = \tan 60^0$

⇨ $\frac{h-60}{60} = \sqrt{3}$

⇨ $h - 60 = 60\sqrt{3}$

⇨ $h = 60\sqrt{3} + 60$

⇨ $h = 60(\sqrt{3} + 1)$

Hence the height of the opposite house is $60(\sqrt{3}+1)$ m

29. A straight highway leads to the foot of the tower of height 50m. from the top of the tower, the angle 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 AB be the tower of height 50m

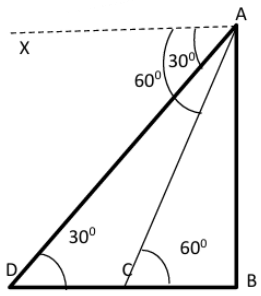
Let point D be the position of first car

Let point C be the position of the second car

Then, CD=xm, distance between the two cars, BD = (x+y) m distance of the first car from the tower

And BC = ym distance of the second car from the tower

Also $\angle XAD = \angle ADB = 30^0$ and $\angle XAC = \angle ACB = 60^0$



Now, in right ΔABC, we have

$$\frac{AB}{BD} = \tan 30^0$$

$$\Rightarrow \quad \frac{50}{x+y} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \quad x + y = 50\sqrt{3}$$

$$\Rightarrow \quad x + y = 50 \times 1.732$$

$$\Rightarrow \quad x + y = 86.5 \qquad \text{(i)}$$

Again, In right ΔABC

$$\frac{AB}{BC} = \tan 60^0$$

$$\Rightarrow \quad \frac{50}{y} = \frac{50}{\sqrt{3}}$$

$$\Rightarrow \quad y = \frac{50}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$$

$$\Rightarrow \quad y = \frac{50\sqrt{3}}{3}$$

$$\Rightarrow \quad y = \frac{50 \times 1.732}{3}$$

$$\Rightarrow \quad y = \frac{86.5}{3}$$

$$\Rightarrow \quad y = 28.83$$

Putting y = 28.83 in equation (i) we get

$$x + 28.83 = 86.5$$

$$\Rightarrow \quad x = 86.5 - 2.83$$

$$\Rightarrow \quad x = 57.67\text{m}$$

Hence the distance between the two cars is x = 57.67m

Distance of first car from the tower is (x + y) = 86.5m

Distance of the second car from the tower is (y) = 28.83m

30. An angle of elevation of the top of a hill from the foot of a tower is 60^0 and the angle of elevation of the top of the top of the tower from the foot of the hill is 30^0. If the tower is 50m high. Find the height of the hill.

Solution: Let AB be the tower of height 50m

Let CD be the hill of height h metres.

Given $\angle CBD = 60^0$ and $\angle ACB = 30^0$

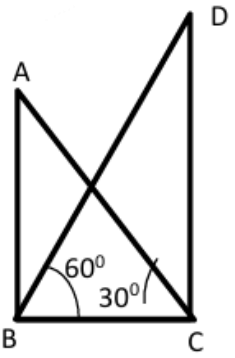
In right ΔABC, we have

$$\frac{AB}{BC} = \tan 30^0$$

$$\Rightarrow \quad \frac{50}{BC} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \quad BC = 50\sqrt{3} \qquad \text{(i)}$$

Again, in right ΔBCD, we have



$$\frac{CD}{BC} = \tan 60^0$$

$$\Rightarrow \quad \frac{h}{50\sqrt{3}} = \sqrt{3} \qquad [\because BC = 50\sqrt{3}]$$

$$\Rightarrow \quad h = 50\sqrt{3} \quad \times \sqrt{3}$$

$$\Rightarrow \quad h = 50 \times 3$$

$$\Rightarrow \quad h = 150$$

Hence, the height of the hill is 150m

MENSURATION

31. A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area of the toy.(use $\boldsymbol{\pi}$ = 22/7)

Solution:

Height of the toy (H) = 15.5cm

Radius of the hemisphere (r) -=3.5 cm

Height of the cone (h)= H – r

=15.5 - 3.5

=12 cm

height of the cone,

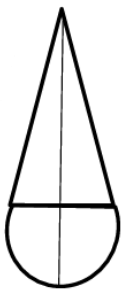
$l = \sqrt{\boldsymbol{r^2 + r^2}}$

$= \sqrt{(\mathbf{12})^2 + (\mathbf{35}^2)}$

$= \sqrt{\mathbf{144 + 12 - 25}}$

$= \sqrt{\mathbf{156.25}}$

=12.5 cm



TSA of the toy = CSA of the cone + CSA of hemisphere

$= \boldsymbol{\pi}rl + 2\pi r^2$

$= \boldsymbol{\pi r}(l+2r)$

$= \frac{\mathbf{22}}{\mathbf{7}} \times 3.5\ (12.5+2\times 2 x 3.5)$

$=22\times 0.5\times(12.5+7)$

$=11\times 19.5$

$=214.5\ cm^2$

Hence, the total surface area of the toy is $214.5cm^2$

32. A military tent of height 8.25m is in the form of a right circular cylinder of base diameter 30m and height 5.5m surrounded by a right circular cone of same base radius. Find the length of canvas used in making the tent, if the breadth of canvas is 1.5m.

Solution:

Radius of the cone = Radius of cylinder = r

So, $r = \frac{\mathbf{1}}{\mathbf{2}} \times 30m$ (∵ radius = ½ x diameter)

=> r = 15m

Height of the cylinder, H = 5.5m

Height of the cone, h = Total - H

= 8.25 – 5.5

= 2.75m

Slant height of the cone, $l = \sqrt{r^2 + h^2}$

$= \sqrt{(15)^2 + (2.75)^2}$

$= \sqrt{225 + 7.5625}$

$l = \sqrt{232.5625}$

l = 15.25 m

Area of the canvas = CSA of the cone + CSA of the cylinder

$= \pi rl + 2\pi rH$

$= \pi r\ (l + 2H)$

$= \frac{22}{7} \times 15 \times (15.25 + 2\ X\ 5.5)$

$= \frac{22}{7} \times 15 \times (15.25 + 11)$

$= \frac{22}{7} \times 15 \times 26.25$

$= \frac{8662.5}{7} m^2$

=> length × breadth = 8662.5/7

=> length × 1.5 = 8662.5/7

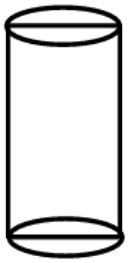
=> length = $\frac{8662.5}{7} \times 1.5$

$= \frac{866.25}{7\times 15} \times \frac{10}{10}$

= 825m

Hence, length of the canvas used in making the tent is 825m

33. A wooden article was made by scooping out a hemisphere from each end of a cylinder, as shown in the figure. If the height of the cylinder is 20cm and its base is of diameter 7cm, find the total surface area of the article.



Solution: Radius of the cylinder=Radius of the hemisphere=r

Hence, $r=\frac{1}{2}\times 7$ [$\because r=\frac{1}{2}\times$diameter]

$r=\frac{7}{2}$ cm

TSA of the article = 2×CSA of scooping hemisphere+ CSA of the

Cylinder

$= 2\times 2\pi r^2 + 2\pi rh$

$= 2\pi r(2r+h)$

$= 2\times\frac{22}{7}\times\frac{7}{2}\times(2\times\frac{7}{2}+20)$

$= 22\times 27$

$= 594cm^2$

Hence TSA of the article is $594cm^2$

34. A 5cm wide cloth is used to make a conical tent of base diameter 14cm and the height 24cm. Find the cost of the cloth used at the rate of Rs25 per meter.

Solution: Radius of the cone, $r = \frac{1}{2}\times 14m=7m$

Height of the cone, h= 24m

Slant height of the cone, $l=\sqrt{r^2+h^2}$

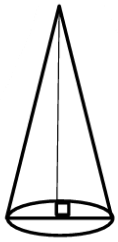
$=\sqrt{(7)^2+(24)^2}$

$=\sqrt{49+576}$

$=\sqrt{625}$

=25m

∴ Area of the cloth = CSA of the cone



$=\pi rl$

$=\frac{22}{7}\times 7\times 25$

$=22\times 25$

$=550m^2$

⇨ length × breadth = $550m^2$

⇨ Length ×5 = 550

⇨ Length $=\frac{550}{5}$

=110m

Hence, the length of the cloth is 110 m

Now, cost of 1m of cloth =Rs 25

Therefore, cost of 110m of cloth=Rs 25×110= Rs 2750.

35. . From a solid cylinder of height 12cm and base diameter 10cm, a conical cavity with the same height and diameter is carved out. Find the volume of the remaining solid (use $\pi=22\div 7$).

Solution: since the conical cavity carved out of the solid cylinder have same height and same diameter.

Therefore, for Conical cavity and solid cylinder, diameter=10cm

Therefore Radius (r) = $\frac{10}{2}$=5cm

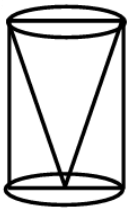
And Height (h) =12cm

Volume of the remaining solid= Volume of the solid cylinder-Volume of the conical cavity

$=\pi r^2h-\frac{1}{3}\pi r^2h$

$=\pi r^2h\,[1-\frac{1}{3}]$

$=\pi r^2h\times\frac{2}{3}$



$=\frac{22}{7}\times5\times5\times12\times\frac{2}{3}$

$=\frac{440}{7}$

$=628.57cm^3$

Hence, the volume of the remaining solid is $628.57cm^3$.

36. If the total surface of a solid hemisphere is $462cm^2$, find its volume (Take $\pi=22\div7$)
Solution: Let 'r' be the radius of the hemisphere
Given:
TSA of a hemisphere $=462cm^2$

$\Rightarrow \quad 3\pi r^2=462$

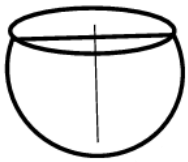
$\Rightarrow \quad 3\times\frac{22}{7}\times r^2=462$

$\Rightarrow \quad r^2=462\times7\div(3\times22)$

$\Rightarrow \quad r^2=7^2$

$\Rightarrow \quad r=7cm$

$\therefore$ Volume of the hemisphere $=\frac{2}{3}\pi r^3$



$=\frac{2}{3}\times\frac{22}{7}\times7\times7\times7$

$=\frac{2156}{3}$

$=718.67cm^3$.

Hence the volume of hemisphere is $718.67\ cm^3$

37. A metal plate, which is 10cm thick, 9cm wide and 81cm long is melted and recast into a cube. Find the difference in the surface areas of the two solids.

Solution: Surface area of metal plate=2(lb+bh+hl)

$=2(81\times9+9\times1+1\times81)$

$=2(729+9+81)$

$=2\times819$

$=1638cm^2$

Volume of the metal plate $=lbh$

$=81\times9\times1$

$=729cm^3$

Let the edge of the cube be 'a'
Since it melted and recast into a cube
$\therefore$ volume of the cube=volume of the metal plate

$a^3=729$

$a=\sqrt[3]{729}$

$a=9cm$

Surface area of the cube$=6a^2$

$=6\times9\times9$

$=486\ cm^2$

Hence, the difference in surface area of the two solids

$=(1638-486)\ cm^2$

$=1152cm^2$.

38. A metallic sphere of radii 6cm, 8cm and 10cm respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.
Solution:
Volume of sphere of radius 6cm $=\frac{4}{3}\pi r^3$

$=\frac{4}{3}\pi(6)^3cm^3$

$=288\pi cm^3$

Volume of sphere of radius 8cm$=\frac{4}{3}\pi(8)^3cm^3$

$=\frac{2048\pi}{3}cm^3$

Volume of sphere of radius 10cm$=\frac{4}{3}\pi\times10\times10\times10cm^3$

$=\frac{4000\pi}{3}cm^3$

$\therefore$ total volume of the three sphere$=(288\pi+\frac{2048\pi}{3}+\frac{4000\pi}{3})\ cm^3$

$=(288\pi+\frac{6048\pi}{3})\ cm^3$

$=2304\pi cm^3$

Let R cm be the radius of the resulting sphere.
Since, the three small sphere is melted to for big sphere

$\therefore \ \frac{4}{3}\pi R^3=2304\pi$

$R^3 = \frac{2304\pi \times 3}{4 \times \pi}$

$R^3 = 1728$

$R = \sqrt[3]{1728} = 12cm$

Hence, Radius of the resulting sphere is 12cm.

39. The difference between the outer and inner curved surface area of a hollow right circular cylinder 14cm long is 88cm². If the volume of the metal used in making the cylinder is 176cm³, find the outer and inner diameters of the cylinder. (Useπ=22÷7)

Solution:

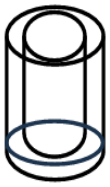
Let r_1 be the radius of the inner cylinder

Let r_2 be the radius of the outer cylinder

Given: height of the cylinder, h=14cm

Also,

Given,



Outer CSA of cylinder- inner CSA of cylinder=88cm²

$2\pi r_2 h - 2\pi r_1 h = 88$

$2\pi h(r_2 - r_1) = 88$

$r_2 - r_1 = \frac{88}{2\pi h}$

$= \frac{44 \times 7}{22 \times 14}$

$r_2 - r_1 = 1$…… (i)

Also,

Volume of outer cylinder-volume of inner cylinder= 176cm³

$\Rightarrow \pi r_2^2 h - \pi r_1^2 h = 176$

$\Rightarrow \pi h(r_2^2 - r_1^2) = 176$

$\Rightarrow (r_2^2 - r_1^2) = \frac{176}{\pi h}$

$\Rightarrow (r_2^2 - r_1^2) = \frac{176 \times 7}{22 \times 14}$

$\Rightarrow (r_2^2 - r_1^2) = 4$

$\Rightarrow (r_2 - r_1)(r_2 + r_1) = 4$ {$\because a^2 - b^2 = (a+b)(a-b)$ }

$\Rightarrow 1 \times (r_2 + r_1) = 4$(using (i)

$\Rightarrow (r_2 + r_1) = 4$ …….. (ii)

Adding (i) and (ii), we get,

$2r_2 = 5$

$\Rightarrow r_2 = \frac{5}{2}$ cm

Putting $r_2 = \frac{5}{2}$ cm in (ii), we get,

$\frac{5}{2} + r_1 = 4$

$\Rightarrow 5 + 2r_1 = 8$

$\Rightarrow 2r_1 = 8 - 5$

$\Rightarrow r_1 = \frac{3}{2}$ cm

Hence, Diameter of the outer cylinder = $2r_2$

$= 2 \times \frac{5}{2}$

$= 5cm$

And, Diameter of the inner cylinder=$2r_1$

$= 2 \times \frac{3}{2}$

$= 3$ cm

40. A metallic sphere of radius 10.5cm is melted and then recast into small cones, each of radius 3.5cm and height 3cm. Find how many cones are obtained.

Solution:

Radius of a sphere, R=10.5cm

Radius of the cone, r =3.5cm

Height of the cone, h = 3cm

Now,

Volume of the sphere=$\frac{4}{3}\pi R^3$

$= \frac{4}{3}\pi \times (10.5)^3$

$= \frac{4}{3}\pi \times 10.5 \times 10.5 \times 10.5 cm^3$

Volume of one cone= $\frac{1}{3}\pi r^2 h$

$= \frac{1}{3}\pi \times 3.5 \times 3.5 \times 3$

$= \pi \times 3.5 \times 3.5 cm^3$

Let x be the number of small cones

Since, a metallic sphere is melted and recast into small cones

∴ Volume of a sphere = number of small cones× volume of one cone

⇨ $\frac{4}{3}\pi\times10.5\times10.5\times10.5 = x \times\pi\times3.5\times3.5$

⇨ $\frac{4\pi\times10.5\times10.5\times10.5}{3\times\pi\times3.5\times3.5} = x$

⇨ $4\times3\times10.5 = x$

⇨ $x = 126$

∴ there are 126 small cones.

Sample Question Paper

(SSLC Examination 2024-25)

Mathematics

(Old Course)

by

Meghalaya Board of School Education (MBOSE)

A. 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**

Sample Question Paper

Mathematics (Old Course)
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 minimum 3 steps.
8. Section-C contains Short Answer Questions. Answer the questions in minimum 5 steps.
9. Section-D contains Long Answer Questions. Answer the questions in minimum 8 steps.
10. 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 HCF of the smallest composite number and the smallest prime number is :

   (A) 1 (B) 2 (C) 4 (D) 8

2. Which of the following is a polynomial?

   (A) $x + 7$ (B) $x^2 - 2\sqrt{x} - 1$

   (C) $x + 1/x$ (D) $x^{-2} + 5x - 11$

3. A polynomial of degree 1 is called a:

   (A) Linear polynomial

   (B) quadratic polynomial

   (C) cubic polynomial

   (D) biquadratic polynomial

4. A quadratic polynomial can have at most:

   (a) 1 zero (B) 2 zeroes

   (C) 3 zeroes (D) 4 zeroes

5. The pair of equations $x = 0$ and $y = 0$ has:

   (A)Infinitely many solutions

   (B) two solutions (C) one solution

   (D) no solution

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 sum of a number and its reciprocal is 10/3 then the number is:

   (A) 5 (B) 2 (C) 6 (D) 3

9. If $x = 3$ is a solution of the quadratic equation $3x^2 + (k - 1)x + 9 = 0$, then k equals to:

   (A) – 1 1 (B) 11 (C) – 13 (D) 13

10. The common difference of the A P: -5, - 1, 3, 7, ... Will be:

    (A) 1 (B) 2 (C) 3 (D) 4

11. All geometrical congruent figures are:

    (A) Not similar (B) similar

    (C) unequal (D) none of the above

12. The corresponding sides of two similar triangles are in the ratio 4:9, then areas of these triangles are in the ratio:

    (A) 2:3 (B) 4:9 (C) 16:81 (D) 9:4

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:

    (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 coordinates of the midpoint of the line segment joining the points A (7, 0) and B (- 5, 4) is:

(A) (1, 2) (B) (4, 2) (C) (4, - 2)

(D) (- 1, - 2)

16. The value of $1 + \tan^2 45^0$ is:

(A) 0 (B) – 1 (C) 1

(D) 2

17. If $\cos \theta = 1$ 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 to a circle with Centre O cuts a line through O at Q such that PQ = 24 cm and OQ = 25 cm then the radius of a circle is:

(A) 12 cm (B) 10 cm (C) 7 cm

(D) 5 cm

20. If two tangents inclined at an angle of 60^0 are drawn to a circle of radius 3 cm, then the length of each tangent is equal to:

(A) ½ $\sqrt{3}$ cm (B) 3 cm (C) 6 cm

(D) $3\sqrt{3}$ cm

21. A garden roller has circumference of 4 m. the number of revolutions t makes in 40 meters is:

(A) 16 (B) 12 (C) 10 (D) 8

22. If the circumference of a circle increases from 2π to 4π then its area is:

(A) four times (B) tripled

(C) doubled (D) halved

23. The outer surface area of a spherical shell 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 bimodal 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 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) 6/14

30. The probability of an impossible event is:

(A) 0 (B) 1/2 (C) 1

(D) non- existent

Section – B

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

31. Solve the following system of linear equations:

2x + y =7 and 4x - 3y + 1 = 0

32. Solve by factorisation: $6x^2 – x – 2 = 0$.

33. The product of two consecutive positive integers is 240. Formulate the quadratic equation whose roots are these integers.

34. Prove that $\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$

35. If sin θ = 3/5, find the value of $\frac{\sin\theta\ \cos\theta)}{2\ \cot\theta}$

36. A ΔABC is an isosceles triangle with AC = BC. If $AB^2 = 2AC^2$, prove that ΔABC is a right angled triangle?

37. A die s thrown once. What is the probability of getting: (i) an even number and (ii) a number less than 5

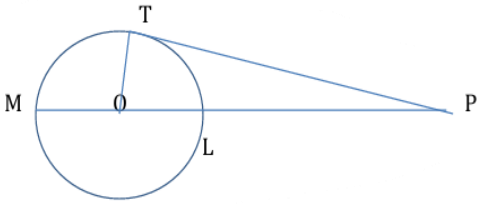
38. given that HCF (306, 657) = 9, find LCM of 306 and 657?

39. Express 16380 as product of prime numbers.

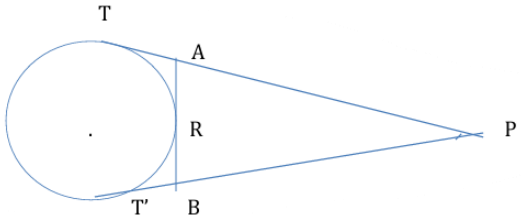
Section – C

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

40. Find the ratio in which the point P (- 6, a) divide the join of A (- 3, - 1) and B (- 8, 9). Also find the value of a.
41. If the point P (x, y) is equidistant from the points A(5, 1) and B (1, 5), prove that x = y.
42. Mary is twice as old as her sister. Four years hence, the product of their ages (in years) will be 160. Find their present ages?
43. In the adjoining figure, O is the canter of the circle, PT s the tangent and PLM is the secant passing through Centre O. If PT = 8cm and PL = 4cm, then find the radius of the circle?



44. In the adjoining figure, PT and PT' are tangents from P to the circle with Centre O. R are a point on the circle where AB is another tangent. Prove that PA + AR = PB + BR.



45. Find the area of the sector of a circle with radius 4 cm and of angle 30^0. Also, find the area of the corresponding major sector? (use π = 22/7)
46. The following table shows the ages of the patients admitted in a hospital during the year:

Ages (in years)	Number of patients
5-15	6
15-25	11
25-35	21
35-45	23
45-55	14
55-65	5

Based on the above information, answer the following:

(i) Write the modal class. (1)

(ii) Find mode of the given data. (2)

47. If α and β are zeroes of the polynomial $P(x) = 3x^2 - 2x - 6$, then find the value of $1/\alpha + 1/\beta$.

48. Examine whether the quadratic equation $\boldsymbol{2x^2 + x - 6 = 0}$ have real roots. If so, find the roots.

Section – D

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

49. A toy is in the form of a hemisphere surmounted by a right circular cone of the same base radius as that of the hemisphere. If the radius of the base of a cone is 21 cm and its volume is 2/3 of the volume of the hemisphere, calculate the height of the cone and surface area of the toy. (Use π = 22/7).

50. The fourth term of an AP is equal to 3 times the first term and seventh term exceeds twice the third tem by 1. Find the first term and the common difference. Also, find the sum of the first 10 terms.

51. The 24^{th} term of an AP is twice its 10^{th} term. Show that its 72^{nd} term is 4 times its 15^{th} term.

52. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

53. In the given 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. The angle of elevation of the top of a tower from a point on the ground is 30^0. On moving a distance of 20 metres towards the foot of the tower to a point B the angle of elevation increases to 60^0. Find the height of the tower and the distance of the tower from the point A. (use $\sqrt{3}$ = 1. 732)

55. State and prove basic proportionality theorem.

* End of Question Paper *

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

Science & Technology

(NCERT Textbook)

Class X
(Old 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)

Section-A
Multiple Choice Questions (MCQs) -1 Mark

[Physics]

1. The curved lines along which iron filling align themselves around a bar magnet are called:
   A Magnetic field lines
   B. mechanical field lines
   C. electromagnetic field lines
   D. none of these.
   Answer: A

2. An electric device which converts electric energy into mechanical energy is called:
   A. dynamo
   B. electric generator
   C. electric motor
   D. transformer
   Answer: C

3. The strength of magnetic field inside a long current carrying straight solenoid is :
   A. more at the end than a centre
   B. minimum in the middle
   C. same at all points
   D. found to increase from end to other
   Answer: C

4. The resistance offered by a conductor is directly proportional to its
   A. areas of cross-section
   B. length
   C. thickness
   D. none of these
   Answer: B

5. Electrical resistivity of a given metallic wire depends upon
   A. its length
   B. its thickness
   C. its shape
   D. nature of material
   Answer: B

6. A cylindrical conductor of length l and uniform area of cross-section A has resistance R. And conductor of length 2l and resistance R of the same material has area of cross-section :
   A. A/2
   B. 3A/2
   C. 2A
   D. 3A
   Answer: C

7. Anammeter is connected in series in an electric circuit because:
   A. it is low resistance instrument
   B. zero resistance instrument
   C. high resistance instrument
   D. none of these.
   Answer: A

8. A current of l A is drawn by a filament of an electric bulb. Number of electrons passing through a cross section of the filament ion 16 seconds would be roughly
   A. 10^{20}
   B. 10^{16}
   C. 10^{18}
   D. 10^{23}
   Answer: A

9. The rate of flow of an electric charge is called :
   A. electric current
   B. electric energy
   C. electric potential
   D. none of these
   Answer: A

10. A body is said to have one coulomb electric charge, if compared to protons, it has in excess or in deficit:
    A. 6.25×10^8 electron
    B. 2.65×10^8 electron
    C. 6.25×10^{18} electron
    D. 6.25×10^{19} electron
    Answer: C

11. Work done in moving a unit positive charge from infinity to another point inside an electrical field, is called :
    A. Electric Potential
    B. field
    C. field intensity
    D. potential difference
    Answer: A

12. Electricity constituted by moving electric charges, is called :
    A. positive electricity
    B. negative electricity
    C. current electricity
    D. static electricity
    Answer: B

13. The work done in moving unit positive charge across two pointsinan electric circuit is measure of?
    A. Potential difference
    B. Current

C. Resistance
D. Galvanometer

Answer: A

14. The free electrons of a metal
    A. are free to move anywhere in the metal
    B. do not collide with each other
    C. do not collide with each other
    D. are free to escape through the surface

Answer: A

15. Three equal resistances when combine in series are equivalent to 90Ω. Their equivalent resistance when combined in parallel will be
    A. 10Ω
    B. 270Ω
    C. 30 Ω
    D. 810 Ω

Answer: C

16. A battery is used to
    A. Maintain a potential difference
    B. Measure electric current
    C. Measure electric potential
    D. Safeguard against short – circuit

Answer: A

17. Ohms law relate potential difference with
    A. Current
    B. Time
    C. Waves
    D. Energy

Answer: A

18. Electric current is:
    A. flow of charge per unit time
    B. work done per unit time
    C. Resistance per unit time
    D. All of these

Answer: A

19. The space around a charge in which some other charge experiences attraction or repulsion, is called its :
    A. Potential
    B. Electric field
    C. Electric field intensity
    D. Potential difference

Answer: B

20. Unit of potential difference is:
    A. Joule/Coulomb
    B. Volt
    C. Coulomb
    D. (a) & (b) are correct

Answer: B

21. Electron volt is measure of:
    A. charge
    B. current
    C. electrical potential
    D. energy

Answer: D

22. Which of the following is an ohmic resistor
    A. Nichrome
    B. Diamond
    C. Germanium
    D. Diode

Answer: A

23. At the time of short circuit, the electric current in the circuit :
    A. vary continuously
    B. does not change
    C. reduce substantially
    D. increase heavily

Answer: D

24. Resistance of the wire is given by
    A. $R = V/I$
    B. $R = I/V$
    C. $R = IV$
    D. $R = I^2V$

Answer: A

25. A neutral body has equal amount of :
    A. Both positive and negative charges
    B. Only positive charge
    C. Only negative charge
    D. No charge at all

Answer: A

26. Law which gives force between two charges is :
    A. Ohm's law
    B. Faraday's law
    C. Coulomb's law
    D. None of these

Answer: C

27. Two heater wires of same length and material but of different thickness are connected in a series across a power supply. The power dissipated :
    A. Will be same in both
    B. will be more in thinner wire
    C. will be more in a thicker
    D. cannot be predicted

Answer: B

28. Current flows through a wire only when there is _____ between the ends of the wire
    A. Potential difference
    B. Work is done in moving a charge
    C. Potential difference at one end is more than at the other end
    D. all the above

    Answer: C

29. When there is electric current passing through a wire, the particles moving are
    A. Electrons
    B. Protons
    C. Atoms
    D. Ions

    Answer: A

30. Unit of electric power may also be expressed as :
    A. volt- ampere
    B. kilowatt-hour
    C. watt-second
    D. joule-second

    Answer: A

31. A sure test of electrification is :
    A. Attraction
    B. Repulsion
    C. Friction
    D. Induction

    Answer: B

32. What is not true for electric charge :
    A. Electric charge is scalar quantity
    B. Charge on the body may be + ve or –ve
    C. S.I unit of charge is coulomb
    D. one coulomb is charge of one electron

    Answer: D

33. All the following statements are correct except:
    A. A body is said to be negatively charged when it has got excess of electrons.
    B. When a body is charged positively, some electrons escape from it.
    C. The presence of moisture in the air reduces conductivity .
    D. none of the above

    Answer: C

34. Electric fuse is connected with:
    A. Live wire
    B. neutral wire
    C. earthing
    D. parallel to the live wire

    Answer: A

35. Potential difference in a circuit in which components are connected in series
    A. Remain the same across each component
    B. Gets distributed equally
    C. Gets divided across each component
    D. potential difference does not appear

    Answer: C

36. Commercial unit for electrical energy is :
    A. Calorie
    B. Joule
    C. Kilowatt hour
    D. All of these

    Answer: C

37. Electrical resistivity of a given metallic wire depends upon :
    A. Its length
    B. Its thickness
    C. Its shape
    D. Nature of the material

    Answer: D

38. The current in a wire
    A. depends on both resistance and potential difference
    B. depends only on the potential difference applied
    C. depends only on the resistance of wire
    D. does not depend on resistance and potential difference

    Answer: A

39. A body get positively charged by losing:
    A. Neutrons
    B. Electrons
    C. Protons
    D. α-particles

    Answer: B

40. 30 electrons are flowing through a electric wire in a time of 3sec (c) Then the amount of current flowing through the wire is
    A. 1.6×10^{-18} A
    B. 4.8×10^{-19} A
    C. 9×10^{-18} A
    D. 9×10^{-9} A

    Answer: A

41. Joule /Coulomb is same as?
    A. Volt
    B. Ampere
    C. Ohm
    D. Watt
    Answer: A

42. What is principle behind the working of an electric motor?
    A. Magnetic effect of current
    B. Heating effect of current
    C. Chemical effect of current
    D. Electrostatics
    Answer: A

43. Which of the following is the device that coverts mechanical energy into electrical energy?
    A. Dynamo
    B. Motor
    C. Transformer
    D. Resistor
    Answer: A

44. Appliances that have a metal body are generally connected to the earthing wire. What is the reason to earth these wires?
    A. To prevent the excess of current
    B. To prevent the leakage of current
    C. To provide extra current to the appliances
    D. To provide high resistance to the appliances
    Answer: B

45. Which of the following is the SI unit of magnetic field?
    A. Joule
    B. Volt
    C. Ampere
    D. Tesla
    Answer: D

46. The most suitable material for making the core of an electromagnet is :
    A. Steel
    B. Iron
    C. Soft iron
    D. Aluminium
    Answer: C

47. Which of the following is not attracted by a magnet?
    A. Steel
    B. Cobalt
    C. Brass
    D. Nickel
    Answer: C

48. When a straight conductor is carrying current:
    A. There are circular magnetic field lines around it
    B. There are magnetic field lines parallel to the conductor
    C. There are no magnetic field lines
    D. None of the above
    Answer: A

49. Which of the following is the property of a magnetic field?
    A. It can change the direction of a moving charged particle
    B. It can change the speed of a moving charged particle
    C. It can create an electric field
    D. It can create a gravitational field
    Answer: A

50. Which of the following is the direction of the magnetic field produced by a straight current-carrying conductor?
    A. Away from the conductor
    B. Toward the conductor
    C. Parallel to the conductor
    D. Perpendicular to the conductor
    Answer: D

51. A soft iron bar is introduced inside a current-carrying solenoid. The magnet field inside a solenoid:
    A. Decreases
    B. Will increase
    C. Will be zero
    D. Will remain unaffected
    Answer: B

52. When current-carrying conductor placed in a magnetic field, what is the force experienced by a conductor?
    A. Electric force
    B. Gravitational force
    C. Magnetic force
    D. None of the above
    Answer: C

53. A strong bar magnet is placed vertically above a horizontal wooden board. The magnetic lines of a force will be:
    A. Only the horizontal plane around the magnet
    B. Only the vertical plane around the magnet

C. In horizontal as well vertical planes around the magnet
D. In all the planes around the magnet

Answer: D

54. Magnetic field lines do not intersect because:
    A. An explosion takes place, if they intersect
    B. They mutually repel each other
    C. They always travel parallel to each other in north to south direction
    D. None of these

    Answer: B

55. The most important safety method used for protecting home appliance from short circuiting or overloading is:
    A. Earthing
    B. Use of fuse
    C. Use of stabilizers
    D. Use of electric meter

    Answer: B

56. We can see in a room which is not directly illuminated by sunlight due to:
    A. Regular reflection
    B. Refraction
    C. Irregular reflection
    D. None of these

    Answer: C

57. When you stand in front of mirror, your image is always erect, of the same size and laterally inverted. The mirror may be:
    A. Plane
    B. Concave
    C. Convex
    D. Both A and B

    Answer: A

58. Which of the following quantity does not have any unit?
    A. Velocity of light
    B. Light year
    C. Magnification
    D. Power of lens

    Answer: C

59. The image of an object in a spherical mirror appears magnified, erect and behind it. The spherical mirror is:
    A. Convex
    B. Concave
    C. Plane
    D. None of these

    Answer: B

60. Which of the following can produce a virtual image?
    A. Convex image
    B. Concave mirror
    C. Plane mirror
    D. All of these

    Answer: D

61. A ray of light incident perpendicularly on a glass slab:
    A. Bends towards the normal
    B. Bends away from the normal
    C. Moves along the normal
    D. None of these

    Answer: C

62. The perpendicular shift in the path of light while emerging from another optical medium is called:
    A. Displacement
    B. Lateral displacement
    C. Shifting
    D. None of these

    Answer: B

63. A material medium having the lowest optical density is:
    A. Water
    B. Glass
    C. Air
    D. Diamond

    Answer: C

64. When the light travels from one medium to another medium of different refractive index, then which of the following will change?
    A. Wavelength and speed
    B. Frequency and wavelength
    C. Frequency and speed
    D. Frequency, Wavelength and Speed

    Answer: A

65. A parallel beam of light on striking a concave lens appears to converge at a point on the principal axis. The point is called:
    A. Optical centre of lens
    B. First principal focus of lens
    C. Second principal focus of lens
    D. None of these

    Answer: B

66. The laws of reflection are true for.
    A. A plane mirror only
    B. The concave mirror only
    C. The convex mirror only

D. All reflecting surfaces
Answer: D

67. In order to have a very wide field of view, the mirror used in cars is.
A. Convex
B. Plane
C. Concave
D. None of these
Answer: A

68. The blind spot on retina has:
A. Few nerve endings
B. High concentration of nerve endings
C. No nerve endings
D. None of these
Answer: C

69. The ciliary muscles help in:
A. Only holding eye lens in position
B. Only in altering focal length of crystalline lens
C. Both A and B
D. None of these
Answer: C

70. The focal length of the eye lens increases when eye muscles:
A. Are relaxed and lens become thinner
B. Contract and lens become thicker
C. Are relaxed and lens become thicker
D. Contract and lens become thinner
Answer: A

71. The danger signals installed at the top of tall building 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
Answer: B

72. Which of the following statement is correct?
A. A person with myopia can see distant object clearly
B. A person with hypermetropia can see nearby object clearly
C. A person with myopia can see nearby object clearly
D. A person with hypermetropia cannot see distant object clearly
Answer: C

73. The screen behind the eye lens is called the:
A. Iris
B. Ciliary muscles
C. Retina
D. Pupil
Answer: C

74. At noon the sun appears white as
A. light is least scattered
B. all the colours of the white light are scattered away
C. blue colour is scattered the most
D. red colour is scattered the most
Answer: A

75. 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
Answer: B

76. Twinkling of stars is due to atmospheric
A. Dispersion of light by water droplets
B. Refraction of light by different layers varying refractive indices
C. Scattering of light by dust particles
D. Internal reflection of light by clouds
Answer: B

77. 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. Total internal reflection of light
D. Reflection of light from the earth
Answer: B

78. The bluish colour of water in deep sea is due to
A. The presence of algae and other plants found in water
B. Reflection of sky in water
C. Scattering of light
D. Absorption of light by the sea
Answer: C

79. When light rays enter the eye, most of the refraction occurs at the
A. Crystalline lens

B. Outer surface of the cornea
C. Iris
D. Pupil

Answer: B

80. Light of a single wavelength is called:
A. Bi-chromatic light
B. Dichromatic light
C. Monochromatic light
D. None of these

Answer: C

[Chemistry]

1. A chemical reaction is characterized by
(A) a change in state
(B) formation of new products
(C) evolution or absorption of energy
(D) all of these

Ans:(D) all of these

2. Which one amongst the following is a complete balanced equation?
(A) $2Al(s) + 3H_2SO_4\ (aq) \rightarrow Al_2(S0_4)_3\ (l) + 3H_2(g)$
(B) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3\ (g) + 3H_2(g)$
(C) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3\ (aq) + 3H_2(g)$
(D) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3\ (aq) + 3H_2(g) + \Delta H$

Ans: (C) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3\ (aq) + 3H_2(g)$

3. Regarding a balanced chemical equation which one of the following is incorrect?
(A) It tells us about the rate of reaction
(B) It tells the ratio of masses of the reactants and products.
(C) It saves time and space in expressing a chemical reaction.
(D) All the above.

Ans:(A) It tells us about the rate of reaction

4. Which of the following processes involves 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 the presence of air at high temperature

Ans: (D) Heating copper wire in the presence of air at high temperature

5. Zinc or aluminium do not corrode because
(A) They do not react with moist air
(B) They react with moist air to form a very thin layer of oxides which is very sticky and hard
(C) They are inactive metals
(D) They are metalloids.

Ans: (B) They react with moist air to form a very thin layer of oxides which is very sticky and hard

6. Which of the following is (are) double displacement reaction(s)?
(A) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$
(B) $Na_2SO_4 + BaCl_2 \rightarrow BaS0_4 + 2NaCl$
(C) $C + O_2 \rightarrow CO_2$
(D) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

Ans:(B) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$

7. Regarding a balance chemical equation which one of the following is incorrect?
(A) It tells about the rate of reaction
(B) It tells the ratio of masses of reactants and products
(C) It saves time and space in expressing a chemical reaction
(D) All the above

Ans: (A) It tells about the rate of reaction

8. The reaction $AgNO_3 + HCl \rightarrow AgCl + HNO_3$ is a
(A) Decomposition reaction
(B) Double displacement reaction
(C) Displacement reaction
(D) Combination reaction

Ans: (B) Double displacement reaction.

9. The reaction $2HgO(s) \rightarrow 2Hg(l) + O_2(g)$ is a
(A) Combination reaction
(B) Displacement reaction
(C) Decomposition reaction
(D) Double displacement reaction

Ans: (C) Decomposition reaction.

10. A chemical reaction that proceeds with the release of heat energy is called:
(A) Endothermic reaction

(B) Redox reaction
(C) Exothermic reaction
(D) Reduction reaction
Ans: (C) Exothermic reaction

11. A researcher adds barium hydroxide to hydrochloric acid to form a white-coloured barium chloride. Which of the following option gives the balanced chemical equation of the reaction?
(A) $HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2H_2O$
(B) $2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2H_2O$
(C) $2HCl + Ba(OH)_2 \rightarrow BaH_2 + 2HCl + O_2$
(D) $HCl + 2Ba(OH) \rightarrow 2BaCl_2 + 2H_2O + O_2$
Ans: (B) $2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2H_2O$

12. Which of the following shows an oxidation reaction?
(A) Gain of oxygen
(B) Loss of oxygen
(C)Gain of hydrogen
(D)None of the above
Ans: (A) Gain of oxygen

13. Give the ratio in which hydrogen and oxygen are present in water by volume.
(A). 1:2
(B). 1:1
(C). 2:1
(D).1:8
Ans: (C) 2:1

14. Which of the following oxides of iron would be obtained on the 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) Fe_3O_4

15. An aqueous solution turns red litmus blue. Excess addition of which of the following solutions would reverse the change?
(A) Baking powder
(B) Lime
(C) Ammonium hydroxide
(D) Hydrochloric acid
Ans : (D) Hydrochloric acid

16. 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)Methyl orange
Ans: (C) Vanilla essence

17. Which one of the following is a strong acid?
(A). Carbonic acid
(B). Sulphurous acid
(C). Nitrous acid
(D). Hydrochloric acid
Ans: (D) Hydrochloric acid

18. Which one of the following is not a neutral salt?
(A). NaCl
(B). $NaNO_3$
(C)$Na_2 SO_4$
(D). $Na_2 CO_3$

Ans: (D) $Na_2 CO_3$

19. The property of a metal that can be beaten into thin sheets is known as
(A) Ductility.
(B) Malleability.
(C) Sonority.
(D) Conductivity.
Ans: (B) Malleability

20. The acid present in sour milk or curd is
(A). acetic acid
(B). lactic acid
(C). formic acid
(D). uric acid
Ans: (B) lactic acid

21. Which of the following acid-base indicators will turn blue in basic or alkaline solutions?
(A) Methyl orange
(B) Phenolphthalein
(C) Blue litmus
(D) Red litmus
Ans: (D) Red litmus

22. If a few drops of a concentrated acid accidentally spills 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) Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate.

23. 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) Basic

24. The pH of the gastric juices released during digestion is
(A) less than 7
(B) (B) more than 7
(C) equal to 7
(D) equal to 0

Ans: (A) Less than 7

25. Which of the following is acidic in nature?
(A) Lime juice
(B) Human blood
(C) Lime water
(D) Antacid

Ans: (A) Lime Juice

26. Which among the following is not a base?
(A) NaOH
(B) KOH
(C) NH_4 OH
(D) C_2H_5 OH

Ans: (D) C_2H_5 OH

27. Plaster of Paris on mixing with water forms the fine crystals of
(A) Gypsum
(B) Anhydrous calcium sulphate
(C) Calcium hydrogen sulphate
(D) None of these

Ans: (A) Gypsum

28. A compound form by the partial or complete replacement of H^+ (aq) ion of an acid by a metal ion or an electropositive ion is called:
(A). Base
(B). Salt
(C). Metal oxide
(D). Acid

Ans: (B) Salt

29. The gas with which snacks packed in aluminium bags are flushed before packing is
(A). Nitrogen
(B). Oxygen
(C). Hydrogen
(D). Air

Ans: (A) Nitrogen

30. Which Acid is present in Tomato?
(A). Citric Acid
(B). Oxalic Acid
(C). Lactic Acid
(D). HCl

Ans: (B) Oxalic Acid

31. Lactic Acid is present in
(A). Orange
(B).Tea
(C). Curd
(D).Vinegar

Ans: (C) Curd

32. Which of the following salts does not contain water of crystallisation?
(A). Blue vitriol
(B). Baking soda
(C). Washing soda
(D). Gypsum
Ans: (B) Baking Soda

33. Which one of the following metals does not react with cold as well as hot water?
(A)Na
(B) Ca
(C)Mg
(D) Fe

Ans: (D) Fe

34.A metal whose density is less than 1 gcm^{-3} is
(A). aluminium
(B). magnesium
(C). calcium
(D). sodium
Ans: (D) Sodium

35.The metal that is not malleable at room temperature is
(A). copper
(B) zinc
(C). lead
(D) tin
Ans: (B) Zinc

36. A metal that is the best conductor of electricity is
(A). Copper
(B) aluminium
(C). sodium
(D). silver
Ans: (D) Silver

37. A non-metal which is stored in water is
(A). Sulphur
(B). silicon
(C) phosphorus
(D) carbon
Ans: (C) Phosphorus

38. Aluminium is used for making cooking utensils. Which of the following property of aluminiumn is responsible for the same?
(A) Poor thermal conductivity
(B) Good electrical conductivity
(C) Ductility
(D) High melting point
Ans: (D) High melting point

39. Which of the following is a strategic metal?
(A). uranium
(B). platinum
(C). titanium
(D). radium
Ans: (C) Titanium

40. Which of the following is not a radioactive metal
(A). Uranium
(B). Magnesium
(C). thorium
(D). radium
Ans: (B) Magnesium

41. Which of the following is a noble metal?
(A). Calcium
(B). Iron
(C). Lead
(D). Gold
Ans: (D) Gold

42. A liquid in a fused state or solution form that conducts electricity and at the same time decomposes into ions is called
(A). conducting solution
(B). molten solution
(C). electrolyte
(D). none of these
Ans: (C) electrolyte

43. A small piece of sodium is dropped into a beaker containing water. Which of the following observations is incorrect?
(A) It floats on the surface of water to form a silvery ball
(B) It darts over the surface of water and decreases in size
(C) It catches fire and burns with a golden-yellow flame
(D) The water on testing turns blue litmus red
Ans: (D) The water on testing turns blue litmus red

44. Which of the following properties is not generally exhibited by ionic compounds?
(A). Solubility in water
(B). Electrical conductivity in solid state
(C). High melting and boiling points
(D). Electrical conductivity in molten state
Ans: (B) Electrical conductivity in solid state

45. Although metals form basic oxides, which of the following metals form an amphoteric oxide?
(A). Na
(B) Ca
(C) Al
(D) Cu
Ans: (C) Al

46. Silver articles become black on prolonged exposure to air. Thís ís due to the formation of
(A). Ag_3N
(B). Ag_2O
(C). Ag_2S
(D). Ag_2S and Ag_3N
Ans: (C) Ag_2S

47. Alloys are homogeneous 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) Steel

48. The principal metal in stainless steel is
(A). Iron
(B) Carbon

(C) Chromium
(D) Nickel
Ans: (A) Iron

49. The conversion of metal oxide into metal is called
(A) Froth floatation
(B) Calcination
(C) Roasting
(D) Reduction
Ans: (D) Reduction

50. Which of the following will displace hydrogen from dilute sulphuric acid?
(A). Copper
(B) Zinc
(C) Mercury
(D) Gold
Ans: (B) Zinc

51. Which of the following non-metal has the Lustre?
(A). Chlorine
(B). Bromine
(C). Potassium
(D). Iodine
Ans: (D) Iodine

52. What happens when a pellet of sodium is dropped in water?
A. It catches fire and forms oxide
B. It absorbs heat and forms oxide
C. It catches fire and forms hydroxide
D. It absorbs heat and forms hydroxide
Ans: (C) It catches fire and forms hydroxide

53. Which of the following properties is not generally exhibited by ionic compounds?
(A) Solubility in water
(B) Electrical conductivity in solid state
(C) High melting and boiling point
(D) Electrical conductivity in molten state
Ans: (B) Electrical conductivity in solid state

54. The electronic configuration of sodium atom is
(A) 2, 8, 1
(B) 2, 8, 7
(C) 2, 8, 8
(D) 2, 8, 8, 1
Ans: (A) 2, 8, 1

55. Classification of elements helps us to
(A) study elements better in a systematic way
(B) correlate the properties of elements with some fundamental properties of matter
(C) reveal relationship of various elements with each other
(D) All of the above
Ans: (D)All of the above

56. Long form of Periodic Table was reconstructed by
(A) Moseley
(B) Niels Bohr
(C) J. J. Thomson
(D) Rutherford
Ans: (B) Niels Bohr

57. Which of the following forms the basis of the Modern Periodic Table?
(A). Atomic mass
(B) Atomic number
(C) Number of nucleons
(D) All of the above
Ans: (B) Atomic number

58. What is the other name for Group 18 elements?
(A). Noble gases
(B) Alkali metals
(C) Alkaline earth metals
(D) Halogens
Ans: (A) Noble gases

59. The law of octaves for the classification of elements was stated by
(A). Mendeleev
(B) Dobereiner
(C) Niels Bohr
(D) Newlands
Ans: (D) Newlands

60. Which among the following elements has the largest atomic radii?
(A) Na
(B) (B) Mg
(C) K
(D) Ca
Ans: (C) K

61. Three elements B, Si and Ge are
(A) Metals

(B) non-metals
(C) metalloids
(D) metal, non-metal and metalloid respectively

Ans: (C) Metalloid

62. Which one of the following does not increase while moving down the group of the periodic table?
(A) Atomic radius
(B) Metallic character
(C) Valency
(D) Number of shells in an element

Ans: (C)Valency

63. According to Mendeleev's Periodic Law, the elements were arranged in the periodic table in the order of
(A) increasing atomic number
(B) decreasing atomic number
(C) increasing atomic masses
(D) decreasing atomic masses

Ans: (C) increasing atomic masses

64. Name the element which Mendeleev had named as Eka-Aluminium, what is the present name of this element?
(A). Germanium
(B). Gallium
(C). Scandium
(D). Aluminium
Ans: (B) Gallium

65. Organic compounds having the same molecular formula, but different structural formulae are called:
(A) Allotropes
(B) (B) Isomers
(C) Isobars
(D) None of the above

Ans: (B) Isomers

66. Which of the following is the most reactive element of group 17?
(A). Oxygen
(B). Sodium
(C). Fluorine
(D). Magnesium

Ans: (C) Fluorine

67. Carbon exists in the atmosphere in the form of
(A) carbon monoxide only
(B) carbon monoxide in traces and carbon dioxide.
(C) carbon dioxide only
(D) coal

Ans: (C) carbon dioxide

68. Buckminsterfullerene is an allotropic form of
(A). Phosphorus
(B). sulphur
(C). carbon
(D). tin

Ans: (C) Carbon

69. Oils on treating with hydrogen in the presence of palladium or nickel catalyst form fats. This is an example of
(A). Addition reaction (B). Substitution reaction
(C). Displacement reaction
(D). Oxidation reaction

Ans: (A)Addition reaction

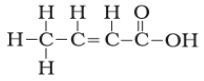
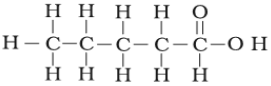
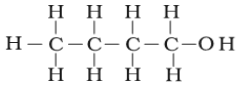
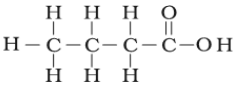
70. The first member of alkene homologous series is
(A) ethene
(B) (B) ethane
(C) propyne
(D) methane

Ans: (A) Ethene

71. Which amongst the following is not a free state of carbon?
(A). Diamond
(B) Graphite
(C) Petrol
(D) Coke

Ans: (C) Petrol

72. The correct structural formula of butanoic acid is

(A) 
(B) 
(C) 
(D) 

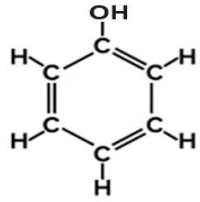
Ans – (D)

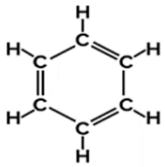
73. The first member of alkyne homologous series is
(A). Ethyne
(B) Ethane
(C) Propyne
(D) Methane

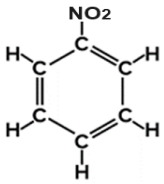
Ans: (A) Ethyne

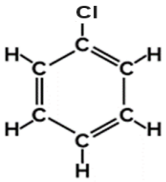
74. Chlorine reacts with saturated hydrocarbons at room temperature in the
    (A) absence of sunlight
    (B) presence of sunlight
    (C) presence of water
    (D) presence of hydrochloric acid
    Ans: (B) Presence of sunlight

75. Structural formula of benzene is


(A)


(B).


(C)


(D)

    Ans: (B)

76. Hydrolysis of an ester by sodium hydroxide solution is known as:
    (A). Neutralisation
    (B). Saponification
    (C). Both (A) and (B)
    (D). None of these
    Ans: (B) Saponification

77. A homologous series of unsaturated hydrocarbons, characterised by the presence of triple covalent bond in straight chain carbon compound is called:
    (A). Alkyne series
    (B). Alkene series
    (C). Alkane series
    (D). None of these
    Ans: (A) Alkyne Series

78. The IUPAC name of the compound C_2H_5OH is:
    (A). Ethanol
    (B). Methanol
    (C). Propanol
    (D). Ethane
    Ans: (A) Ethanol

79. The common name of CH_3COOH is:
    (A). Formic acid
    (B). Acetic acid
    (C)Propionic acid
    (D). Butyric acid
    Ans: (B) Acetic acid

80. The hardest naturally occurring substance is
    (A). Diamond
    (B). Titanium
    (C). Platinum
    (D). Silicon
    Ans: (A) Diamond

[Biology]

1. Plants store carbohydrates in the form of
    (A). Glycogen.
    (B). Starch.
    (C). Glucose.
    (D). Protein
    Ans. (B) Starch.

2. What is the correct sequence of different parts present in alimentary canal?
    (A). Stomach, oesophagus, small intestine, large intestine
    (B). Stomach, oesophagus, large intestine, small intestine
    (C). Oesophagus, stomach, small intestine, large intestine
    (D). Oesophagus, stomach, large intestine, small intestine
    Ans. (C) Oesophagus, stomach, small intestine, large intestine

3. The inner lining of the stomach is protected by one of the following from hydrochloric acid
    (A). Pepsin.
    (B). Mucus.
    (C) Salivary amylose.
    (D). Bile
    Ans. (B) Mucus.

4. Which part of alimentary canal receives bile from the liver?
    (A). Stomach.
    (B). Small intestine.
    (C) Large intestine
    (D). Oesophagus
    Ans. (B) Small intestine.

5. The mode of nutrition in which the organism depends on another organism(host) for nutrition is called
    (A) Holozoic.
    (B) Saprophytic.
    (C)Symbiotic.
    (D) Parasitic
    Ans. (D) Parasitic

6. The opening and closing of the stomatal pore is a function of
   (A). Guard cells.
   (B) Epidermal cells.
   (C) Subsidiary cells.
   (D). Mesophyll
   Ans. (A) Guard cells.

7. The process that converts light energy to chemical energy is
   (A) Respiration.
   (B) Circulation.
   (C) Photosynthesis.
   (D) Photolysis
   Ans. (C) Photosynthesis.

8. The oxygen released during photosynthesis comes from
   (A) Photolysis of water.
   (B) Fixation of carbon dioxide.
   (C)Excitation of chlorophyll.
   (D) Sunlight
   Ans. (A) Photolysis of water.

9. An enzyme that digests protein is
   (A) Lipase.
   (B). Amylase.
   (C)Pepsin.
   (D) Hydrochloric acid
   Ans. (C) Pepsin.

10. Complete digestion of food takes place in the
   (A).Stomach.
   (B) Small intestine.
   (C) Mouth.
   (D) Large intestine
   Ans. (B) Small intestine.

11. Saliva contains an enzyme called
   (A) Pepsin.
   (B) Salivary amylase.
   (C)Trypsin.
   (D) Lipase
   Ans. (B) Salivary amylase.

12. The digested food is absorbed by the wall of the
   (A) Small intestine.
   (B) Stomach.
   (C)Mouth.
   (D) Large intestine
   Ans. (A) Small intestine.

13. An autotrophic plant showing heterotrophic mode of nutrition is
   (A) Pitcher plant.
   (B) Mustard plant.
   (C)Mimosa.
   (D) Mango tree
   Ans. (A) Pitcher plant.

14. The rate of photosynthesis increases with rise in temperature and slows down at a temperature more than
   (A) 30ºC.
   (B) 40ºC.
   (C) 35ºC.
   (D) 45ºC
   Ans. (B) 40ºC.

15. The photosynthetic pigment is
   (A) Pyruvate.
   (B) Chlorophyll.
   (C)Xanthophyll.
   (D) Carotenoids
   Ans. (B) Chlorophyll.

16. Nutrition in Amoeba is
   (A)Saprophytic.
   (B) Symbiotic.
   (C)Holozoic.
   (D) Parasitic
   Ans. (C) Holozoic.

17. The taking in of food inside the body is
   (A)Ingestion.
   (B) Digestion.
   (C) Assimilation.
   (D) Egestion
   Ans. (A) Ingestion.

18. The utilization of absorbed food materials for growth, reproduction, repair by living organisms is
   (A) Absorption.
   (B) Assimilation.
   (C)Digestion.
   (D) Egestion
   Ans. (B) Assimilation.

19. In human muscles, deficiency of oxygen results in breakdown of pyruvate into
   (a) Ethanol and Carbon dioxide
   (b) Carbon dioxide only
   (c) Lactic acid only
   (d) Lactic acid and carbon dioxide
   Ans. (C) Lactic acid only

20. First step of respiration is
   (a) Formation of pyruvic acid
   (b) Formation of oxygen
   (c) Formation of glucose

(d) Formation of carbon dioxide

Ans. (A) Formation of pyruvic acid

21. The respiratory pigment in humans is
    (A) Chlorophyll.
    (B) Haemoglobin.
    (C) Fibrinogen.
    (D) Glucose

    Ans. (B) Haemoglobin.

22. The energy currency of a cell is
    (A) Glucose.
    (B) Starch.
    (C)ATP.
    (D) ADP

    Ans. (C) ATP

23. Plants growing in mangroves or saline swamps have breathing or respiratory roots called
    (A) Lenticels.
    (B) Stomata.
    (C) Pneumatophores.
    (D) Velamen

    Ans. (C) Pneumatophores.

24. The breakdown of glucose into pyruvate takes place in
    (A) Mitochondria.
    (B) Cytoplasm.
    (C)Nucleus.
    (D) Plasma membrane

    Ans. (B) Cytoplasm.

25. The part of the respiratory tract supported by rings of cartilage to ensure air passage does not collapse is
    (A) Trachea.
    (B) Nasal passage.
    (C) Pharynx.
    (B) Nose

Ans. (A) Trachea.

26. The actual site for gaseous exchange is
    (A) Trachea.
    (B) Bronchus.
    (C)Alveoli.
    (D) Bronchioles

    Ans. (C) Alveoli.

27. Platelets help in
    (A) Transport of oxygen
    (B) Transport of carbon dioxide
    (C) Clotting of blood
    (D) Pumping of blood

    Ans. (C) Clotting of blood

28. The human heart has
    (A) Four chambers.
    (B) Three chambers.
    (C) Two chambers.
    (D) One chamber

    Ans. a) Four chambers.

29. The instrument used to measure blood pressure is
    (A) Thermometer.
    (B) Sphygmomanometer.
    (C) Stethoscope.
    (D) Glucometer

    Ans. (B) Sphygmomanometer.

30. Water and minerals move from the soil upwards to the leaves through the
    (A) Xylem.
    (B) Phloem.
    (C) Epidermal cells
    (D) Mesodermal Cells

    Ans.(A) Xylem.

31. Loss of water from the aerial parts of the plant in the form of vapour is termed as
    (A) Translocation
    (B) Transpiration.
    (C) Evaporation.
    (D) Precipitation

    Ans. (B) Transpiration.

32. The transport of products of photosynthesis from leaves to other parts of the plant takes place through
    (A) Xylem.
    (B) Phloem.
    (C)Epidermis.
    (D) Cortex

    Ans. (B) Phloem

33. Which blood vessel brings oxygenated blood to the human heart from the lungs?
    (A) Vena cava.
    (B) Pulmonary artery.
    (C)Pulmonary vein.
    (D) Aorta

    Ans. c) Pulmonary vein.

34. The functional units of the excretory system are the
    (A) Villi
    (B) Nephron
    (C)Neuron
    (D) Alveoli

    Ans. (B) Nephron

35. Artificial removal of nitrogenous waste from the blood is called
    (A) Haemophilia.
    (B) Haemodialysis.
    (C) Haemoglobin
    (D) Haemoprotein
    Ans. (B) Haemodialysis

36. Urine is released to the outside through the
    (A) Ureter.
    (B) Urethra.
    (C) Collecting duct.
    (D) Urinary bladder
    Ans. (B) Urethra.

37. Which of the following is the largest part of the brain?
    (A) Cerebrum.
    (B) Cerebellum.
    (C) Medulla.
    (D) Pons
    Ans. (A) Cerebrum.

38. The neuron that transmits impulse from receptors to the brain are
    (A) Motor neuron.
    (B) Sensory neuron.
    (C) Connector neuron.
    (D) Muscle
    Ans. (B) Sensory neuron

39. Which of the following is an example of reflex action
    (A) Running a race.
    (B) Climbing a tree.
    (C) Removal of hand on touching a hot object.
    (D) Eating a fruit
    Ans. (C) Removal of hand on touching a hot object.

40. The control centres for thirst, sleep, fatigue and hunger is situated in the
    (A) Cerebrum.
    (B) Pons.
    (C) Medulla.
    (D) Hypothalamus
    Ans. (D) Hypothalamus

41. Posture and balance of the body is controlled by the
    (A) Cerebrum.
    (B) Cerebellum.
    (C) Medulla.
    (D) Pons
    Ans. (B) Cerebellum.

42. How many pairs of cranial nerves are present in the human body?
    (A) 12 pairs.
    (B) 21 pairs.
    (C) 13 pairs.
    (D) 31 pairs
    Ans. (A) 12 pairs.

43. The nerves Controlling involuntary actions of smooth muscles and certain glands constitute the
    (A) Somatic nervous system
    (B) Autonomic nervous system
    (C) Central nervous system
    (D) Peripheral nervous system
    Ans. (B) Autonomic nervous system

44. Dwarfism results due to
    (A) Excess secretion of thyroxine
    (B) Less secretion of growth hormone
    (C) Less of secretion of adrenaline hormone
    (D) Excess secretion of growth hormone
    Ans. (B) Less secretion of growth hormone

45. The place of opposition of end plate of a neuron with the surface of the muscle is called
    (A) Cell plate junction
    (B) Neuro muscular junction
    (C) Synapse
    (D) Neural joint
    Ans. (B) Neuro muscular junction

46. The movement in plant in response to touch is termed as
    (A) Nyctinastic movements
    (B) Tropic movements
    (C) Seismonastic movements
    (D) Phototropism
    Ans. (C) Seismonastic movements

47. The movement of shoot towards light is called
    (A) Geotropism.
    (B) Hydrotropism.
    (C) Chemotropism.
    (D) Phototropism
    Ans. (D) Phototropism

48. Which plant hormone promotes ripening of fruits?
    (A) Gibberellins.
    (B) Cytokines.

(C)Ethylene.
(D) Abscisic acid
Ans. (C) Ethylene

49. This hormone is responsible for 'fight or flight' response
(A) Thyroxine.
(B) Insulin.
(C)Adrenaline.
(D) Glycogen
Ans. (C) Adrenaline.

50. The endocrine gland that secretes insulin is
(A) Pancreas.
(B) Liver.
(C) Adrenal gland
(D) Pituitary gland
Ans. (A) Pancreas.

51. Which of the following endocrine gland is unpaired?
(A) Pituitary.
(B) Adrenal.
(C) Testes
(D) Ovary
Ans. (A) Pituitary.

52. Which of the following acts as blue print of life?
(A) DNA
(B) RNA
(C) Nucleus
(D) Chromosome
Ans: (A) DNA

53. During germination, a seedling develops from a/an
(A) Ovule
(B) seed coat
(C) embryo
(D) seed
Ans: (C) embryo

54. External fertilisation takes place in
(A) Human
(B) Cows
(C) Monkeys
(D) Frogs
Ans: (D) Frogs

55. The mature ovary develops into a
(A) Seed
(B) Fruit
(C) Stamen
(D) Pistil
Ans: (B) Fruit

56. Yeast reproduces by
(A) Seeds
(B) Budding
(C) Spore formation
(D) Fragmentation
Ans: (B) Budding

57. This plant has unisexual flowers.
(A) Rose
(B) Papaya
(C) Mustard
(D) Peas
Ans: (B) Papaya

58. The process leading to the fusion of male and female gametes is called
(A) Fertilisation
(B) Pollination
(C) Germination
(D) Seed formation
Ans: (A) Fertilisation

59. The male reproductive part of a flower is
(A) Stamen
(B) Anther
(C) Filament
(D) Carpel
Ans: (A) Stamen

60. During favourable conditions, Amoeba reproduces by-
(A) Multiple fission
(B) Binary fission
(C)Budding
(D) Fragmentation
Ans: (B) Binary fission

61. In human beings, the fertilization occurs in the
(A) fallopian tubes
(B) vagina
(C) ovaries
(D) uterus
Ans: (A) fallopian tubes

62. We can get disease free plants by
(A) Fission
(B) Regeneration
(C) Fragmentation
(D) Micro propagation
Ans: (D) Micro propagation

63. The male gamete from pollen tube fuses with the egg to form
(A) polar nuclei
(B) embryo
(C) zygote

(D) endosperm

Ans: (C) zygote

64. Which among the following diseases is not sexually transmitted?
    (A) Syphilis
    (B) Hepatitis
    (C) HIV – AIDS
    (D) Gonorrhoea

    Ans: (B) Hepatitis

65. Offspring formed as a result of sexual reproduction exhibit more variations because -
    (A) sexual reproduction is a healthy process
    (B) genetic material comes from two different parents of the same species
    (C) genetic material comes from two parents of different species
    (D) genetic material comes from many parents.

    Ans: (B) genetic material comes from two different parents of the same species

66. Which of the following is an inherited trait?
    (A) Reduction in the weight of an organism due to starvation.
    (B) Removal of tail in mice by surgery.
    (C) Type of earlobe.
    (D) Development of muscles in athletes.

    Ans. (C) Type of earlobe

67. Which of the following is not true with respect to variation?
    (A) All variations in a species have an 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 minimal in Asexual reproduction.

    Ans. (A) All variations in a species have an equal chance of survival.

68. A trait in an organism is influenced by
    (A) Paternal DNA only.
    (B) Maternal DNA only.
    (C) Both paternal and maternal DNA.
    (D) Neither by paternal nor by maternal DNA.

    Ans. (C) Both paternal and maternal DNA.

69. Random change in frequency of alleles in a population over successive generation due to error during DNA copying called
    (A) Acquired trait
    (B) Inherited trait
    (C)Genetics
    (D) Genetic drift

    Ans. (D) Genetic drift

70. Human evolution took place in
    (A) Africa
    (B) America
    (C) India
    (D) China

    Ans. (A) Africa

71. Some dinosaurs had feathers although they could not fly but birds have feathers that help them to fly. In the context of evolution, this means that
    (A) Reptiles have evolved from birds
    (B) There is no revolutionary connection between reptiles and birds
    (C) Feathers are homologous structures in both organisms
    (D) Birds have evolved from reptiles

    Ans. (D) Birds have evolved from reptiles

72. The genetic constitution of an organism is called
    (A) Phenotype
    (B) Genotype
    (C)Heredity
    (D) Inheritance

    Ans. (B) Genotype

73. Which of the following is a unit of inheritance passed from parents to offspring?
    (A) Chromosomes
    (B) Gene
    (C) Allele
    (D) Gamete

    Ans. (B) Gene

74. In men, a sperm contains autosomes and
    (A) Both x and y chromosomes
    (B) Either x or y chromosomes
    (C) Only x chromosomes
    (D) Only y chromosomes

    Ans. (A) Both x and y chromosomes

75. Planaria can give to new individual by _____ process
    (A) Binary fission
    (B) Multiple fission

(C) Regeneration
(D) Fragmentation

Ans. (C) Regeneration

76. The study of inheritance and variation is known as
    (A) Genetics
    (B) Archaeology
    (C) Palaeontology
    (D) Heredity

Ans. (A) Genetics

77. A zygote which has an x- chromosome inherited from the father will develop into a
    (A) Boy
    (B) Girl
    (C) Either boy or girl
    (D) x- chromosome does not determine the sex of a child

Ans. (B) Girl

78. From the list given below, select the character which can be acquired but not inherited
    (A) Colour of the eyes
    (B) Colour of the skin
    (C) Texture of hair
    (D) Size of the body

Ans. (D) Size of the body

79. The formation of a new species is known as
    (A) Classification
    (B) Specification
    (C) Fertilisation
    (D) Reproduction

Ans. (B) Specification

80. The transfer of character from one generation to the next generation is known as
    (A) Evolution
    (B) Heredity
    (C) Genetics
    (D) Speciation

Ans. (B) Heredity

Section-B

Very Short Answer Question (2 Marks)

[Physics]

1. What is reflection of light?

Ans: When a ray of light travelling through a certain medium strikes on opaque, but a smooth polished surface, it bounces of the surface in to the original medium the phenomenon is called reflection of light.

2. State the laws of Reflection of light.

Ans: The two laws of Reflection of light are:

(i) The angle of incidence is equal to angle of reflection at the point of incidence.

(ii) At the point of incidence, the incident ray, the reflected ray and the normal lie in the same plane.

3. State the two laws of refraction of light?

Ans: Following are the laws of refraction:

(i) The incident ray, the refracted ray and the normal to the surface of the separation of 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 given colour, for the given pair of media.

4. What is an inverted image and a laterally inverted image?

Ans: During inversion the image turns around its horizontal axis through an angle of $180^{0.}$

During lateral inversion the image turns through an angle of 180^0 through vertical axis rather than horizontal axis.

5. Write the uses of concave mirror?

Ans: (i) It is used as a shaving mirror.

(ii) It is used as a reflector in the head lights of automobiles, such as car, trucks motor bikes.

(iii) Concave mirror is used as a reflector in dish type solar cookers and solar furnace.

6. What do you understand by the term power of lens? State and define the unit of power of a lens.

Ans: The reciprocal of focal length in metres is called power of lens.

$$\text{Power of lens} = \frac{1}{\text{Focal length of the lens (in metres)}}$$

$$\text{Or} \quad P = \frac{1}{f(in\ m)}$$

The SI unit of power of lens is called Dioptre. A lens is said to have a power of one dioptre, if its focal length is one metre.

7. What do you mean by lens? Name the two broad classes of lens.

Ans: A lens is defined as a portion of a transparent optical material, having one or two spherical surfaces.

Two broad classes of lens are:

(a) Converging lens or convex lens

(b) Diverging lens or concave lens

8. Give the characteristics of the image formed when the object is placed between the principal focus and the pole of a concave mirror.

Ans: (i) The image is Virtual.

(ii) The image is erect.

(iii) The image is magnified.

(iv) The image is formed behind the concave mirror.

9. Why is convex mirror preferred over plane mirror for rear view?

Ans: Convex mirror is used as a rear view mirror in automobiles, because it can cover a very wide field behind the driver and hence enables to see the traffic behind him without turning his head.A plane mirror is not useful as a rear view mirror, because its field of view is very small.

10. What do you understand by the term myopic eye? How can it be corrected?

Ans: A short-sighted (myopic) person can see objects at the point of distinct vision clearly but cannot see objects which are far-off.

Short-sightedness or Myopia can be corrected by using a Concave lens of appropriate focal length.

11. What do you understand by the term hypermetropic eye? How can it be corrected?

Ans: A long-sighted (hypermetropic) person can see far-off objects clearly but cannot see objects at the point of distinct vision clearly.

Long-sightedness or Hypermetropia can be corrected by using a Convex lens of appropriate focal length.

12. State two causes of the Myopia defect.

Ans: (i) Due to elongation of eye ball.
(i) Weakening a ciliary muscles.

13. State two causes of the hypermetropia defect.

Ans: (i) Due to shortening of the eye ball.
(ii) Stiffness of ciliary muscles.

14. What do you mean by the terms (i) Spectrum; (ii) Dispersion

Ans: (i) The bond of seven colours obtained on the screen when a white light splits into its component colours is called the spectrum.
(ii) The phenomenon due to which a whit light splits into its component colours when passed through a prism is called dispersion.

15. What do you understand by monochromatic light and polychromatic light?

Ans: Monochromatic light of a single colour or single wavelength is called monochromatic light.
And Polychromatic light that made of two or more colours is called polychromatic light.

16. (a) What is rainbow?
(b) Name the light sensitive and colour sensitive cell in retina of human eye.

Ans: (a) Rainbow is produced just after the rain, due to the dispersion of sunlight by tiny droplets of water suspended in air.
(b) The Rod is the light sensitive cell and Cone is the colour sensitive cell in retina.

17. A student sitting at the back of a regular classroom could not see what is written on the board. What defect of the eyes is he suffering? What type of lens should he wears to correct the defect?

Ans: Myopia is the defect of the eye with which the student is suffering.
To correct this defect, the student should wear spectacle (contact lens) fitted with concave lens of suitable focal length.

18. State and define S.I. unit of electric current.

Ans-: When a charge of one coulomb flows through a conductor in one second, them the current flowing the conductor is said to be one ampere.
S.I. unit of electric current is Ampere (A).

19. What do you understand by the term electric potential? Write the S.I. unit of potential difference?

Ans: The amount of work done in moving a unit positive charge from infinity to a given point in an electric field is called the electric potential at that point.
S.I. unit of potential difference is Volt (V).

20. State unit of electric potential and define it.

Ans: S.I. unit of electric potential is Volt (V) when one coulomb of an electric charge is brought from infinity to a given point in an electric field. Such that the work done is one joule them the electric potential at that point is one volt.

21. State and define the unit of electric resistance.

Ans: S.I unit of electric resistance is Ohm (Ω)
When a current of one Ampere flows through a conductor at a potential difference of one Volt across its ends. Then the resistance of the conductor is said to be one Ohm.

22. Name two devices which can produce continuous current.

Ans: (i) Chemical cell or cell
(ii) Electric generator or dynamo.

23. Four resistors of 1Ω, 2Ω, 3Ω, and 4Ω are connected is series. Calculate the total resistance of the circuit.

Solution: Here, $r_1 = 1\Omega$, $r_2 = 2\Omega$, $r_3 = 3\Omega$, $r_4 = 4\Omega$
We know that, resistance is a series circuit is given by the expression.

$$R = r_1 + r_2 + r_3 + r_4$$
$$= 1\Omega + 2\Omega + 3\Omega + 4\Omega$$
$$= 10\Omega$$

Therefore, total resistance (R) = 10Ω

24. What do you understand by the term closed electric circuit and open electric circuit?

Ans: An electric circuit in which all the components of the circuit are joined to one another, such that a continuous current flows through them is called a closed electric circuit.

An electric circuit in which electric contact is broken at some point such that no current flows through the components of the circuit is called an open electric circuit.

25. What do you understand by the term electric circuit? Name an instrument used for measuring the current.

Ans: A continuous conducting path between the terminals of a source of electric energy conducting wire and other electrical components, along with the electric current flow is called an electric circuit.

The instrument used for measuring the current is Ammeter.

26. What do you understand by the term Series Circuit? Write an expression for the total resistance R when resistor r_1, r_2 and r_3, are connected in series.

Ans: When a number of resistors are connected end-to-end such that the tail end of one resistor is connected to the initial end of the other resistor so as to form a closed circuit then such a circuit is called the series circuit.

$R_s = r_1 + r_2 + r_3$

27. How can the power of an electric motor be increased? (Write any four points)

Ans: The power of an electric motor can be increased by

(i) By increasing the number of turns in the coil.
(ii) By increasing the area cross-section of the coil.
(iii) By increasing the strength of the magnetic field.
(iv) By increasing the magnitude of the current flowing through the coil.
(v) By laminating the soft iron core.

28. What is an electric motor? State the principle of an electric motor.

Ans: An electric motor is a device which converts electric energy into mechanical energy.

When a rectangular coil is placed in a magnetic field and current is passed through it, the coil rotates as a result of the forces acting on the coil.

29. What is meant by the term magnetic field lines? List any two properties of magnetic field lines.

Ans: The curved lines along which the iron filings align themselves are called magnetic field lines.

Characteristics of magnetic field lines are:

(i) Magnetic field lines are closed curves.
(ii) Magnetic field lines repel each other.

30. What is an electromagnet? Give two practical uses of electromagnets.

Ans: A Solenoid which has an iron core within it is called an electromagnet.

Electromagnets are employed:

(i) In electrical appliances like electric bell, electric fan, relays etc.
(ii) In electrical motors and generators.

31. What do you mean by the term (i) Solenoid and (ii) Magnetic field.

Ans: An insulated copper wire wound on some cylindrical card board or plastic tube, such that its length is greater than its diameter and it behaves like a magnet when a current is made to flow through it is called a solenoid.

The space surrounding a bar magnet in which its influence in the form of magnetic force can be detected is called magnetic field.

32. Differentiate between overloading and short-circuiting.

Ans:When a large number of appliances are connected in a particular electric circuit. This leads to flow of large amount of current in the electric circuit, which in turn melts the fuse.

When the live wire due to mishandling or some other reason gets connected to the neutral wire. This in turn increases the magnitude of current in the circuit and hence fuse wire melts.

33. State the Fleming's left-hand rule.

Ans: Stretch the thumb, the forefinger and the middle finger of your left hand mutually at right angles to each other, such that the forefinger points in the direction of the magnetic field and the middle finger in the direction of flow of current. Then the thumb gives the direction of motion of conductor.

[Chemistry]

34. What is combination reaction? Give an example.

Ans: When two elements or compounds react chemically to form a single new compound then the chemical reaction that takes place is called a chemical combination reaction.

Example: $2H_2(g) + O_2(g) \rightarrow 2H_2O(l) + \Delta$

Hydrogen Oxygen Water

35. What happens when iron is dipped in Copper sulphate solution? Write down the balanced chemical equation involved.

Ans: When iron is dipped in copper sulphate solution, the blue colour of copper sulphate will slowly turn to light green due to the formation of iron sulphate. The reason is that iron displaced copper from copper sulphate as it is more reactive than copper.

$CuSO_4 + Fe \rightarrow FeSO_4 + Cu$

Blue colour Light green

36. What happens chemically when quicklime is added to water? Give the equation.

Ans: Calcium oxide (Quick lime) reacts vigorously with water to form calcium hydroxide (slaked lime), with the release of large amount of heat energy.

$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + \Delta$

Quick lime Slaked lime

37. Give two characteristics of a chemical reaction.

Ans: The characteristics of a chemical reaction are:

a. A chemical reaction is characterized by a change in state.
b. New products are formed during a chemical reaction.
c. There can be change in colour during a chemical reaction.
d. There can be evolution of gases during a chemical reaction.
e. Heat energy released or absorbed during a chemical reaction.

38. What is an oxidation reaction? Give an example of oxidation reaction.

Ans: Oxidation reaction is a reaction in which oxygen is added or hydrogen is removed from a substance.

Example: $2Cu(s) + O_2(g) \rightarrow 2CuO(s)$

Copper Oxygen Copper oxide

39. Give one example of chemical decomposition reaction that is carried out by:
(i) Electric energy and (ii) heat energy

Ans: (i) Chemical decomposition reaction by electric energy/current is

$2H_2O(aq) \rightarrow 2H_2(g) + O_2(g)$

Acidulated water

Hydrogen Oxygen

(at cathode) (at anode)

(ii) Chemical decomposition reaction by heat energy is

$2HgO(s) \rightarrow 2Hg(l) + O_2(g)$

Mercury (II) oxide Mercury Oxygen

40. What is reducing agent? Give example.

Ans: The substance that causes the addition of hydrogen or removal of oxygen is called a reducing agent.

Example: Hydrogen (H_2), Carbon (C), Carbon monoxide (CO) etc.

41. What are alkalis? Give two examples of alkalis.

Ans: An alkali is a compound which on dissolving in water gives hydroxyl [$OH^+(aq)$] ions as the only negatively charged ions.

Example: NaOH, KOH, $Ca(OH)_2$

42. Name four natural plant materials that can be used as indicators.

Ans: (i) Red cabbage leaves
(ii) Turmeric
(iii) Hydrangea and
(iv) Geranium.

43. What are basic salts? Give two examples.

Ans: The salts formed by the action of weak acids and strong alkalis are called basic salts.

Examples: Na_2CO_3, $NaHCO_3$, K_2CO_3

44. (a) Write the chemical formula for washing soda.
(b) Name any two uses of washing soda, other than washing clothes.

Ans: (a) The chemical formula of washing soda is $Na_2CO_3.10H_2O$

(b) Uses of washing soda are:

(i) It is a common household cleansing agent.

(ii) It is used in the manufacture of caustic soda, borax, sodium phosphate and water glass.

45. Write the uses of Plaster of Paris? (Any two)

Ans: (i) It is used for making blackboard chalk.

(ii) It is used for making fireproof materials.

(iii) It is used in panelling of the roofs in houses.

46. How will you prepare bleaching powder? Give relevant chemical equation.

Ans: It is prepared by passing chlorine gas through freshly prepared slaked lime $[Ca(OH)_2]$ paste, till the gas stop reacting with it.

$Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O$

Bleaching powder

47. Define the term Salt. What do you mean by family of salts?

Ans: An ionic compound containing a positive ion other than hydrogen ion and a negative ion other than hydroxyl ion or oxide ion is called a salt.

Salts belonging to the same positive or negative radicals are said to belong to a family.

48. A compound that is prepared from gypsum has a property of hardening when mixed with proper quantity of water.

(i) Identify the compound.

(ii) Write the chemical name of the compound.

(iii)What happens when it is heated above 393K?

Ans: (i) The compound name is Plaster of Paris.

(ii) The chemical name of the compound is Calcium sulphate hemihydrate

(iii) When it is heated above 393K, and then its water of crystallisation is lost and formation of anhydrous calcium sulphate takes place which is also known as dead burnt plaster

49. Compound X and aluminium are used to join railway tracks.

(a) Identify the compound X.

(b) Name the reaction.

(c) Write down the reaction.

Ans: (a) Iron (III) Oxide or Fe_2O_3.

(b) Thermite reaction.

(c) $Fe_2O_3 + Al \rightarrow 2Fe + Al_2O_3 + Heat$

50. Why do ionic compounds have high melting points?

Ans: This is linked to strong electrostatic forces which bind the oppositely charged ions. As a lot of energy is required to weaken strong electrostatic forces, therefore, ionic compounds are non-volatile and have very high melting points.

51. Write balanced chemical equation for the reaction taking place

(i) when steam is passed over red-hot iron

(ii)when steam is passed over hot aluminium.

Ans: (i) $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$

(ii) $2Al + 3H_2O \rightarrow Al_2O_3 + 3H_2$

52. Give reason as to why sodium and potassium are kept immersed in kerosene oil.

Ans: Sodium and potassium are highly reactive elements. They can easily catch fire even in contact with air. Hence, to prevent accidental fires, they are kept immersed in kerosene oil.

53. Define the term 'alloy.' Write two advantages of making alloys.

Ans: A homogeneous mixture of two or more metals (or a non- metal) obtained by melting them together, is called an alloy.

The advantages are: (i) Change in hardness and (ii) Resistance to corrosion.

54. Write the IUPAC names of the following:

(a) CH_3OH

(b) CH_3COOH

(c) HCHO

(d) CH_3COCH_3

Ans: (a) Methanol

(b) Ethanoic acid

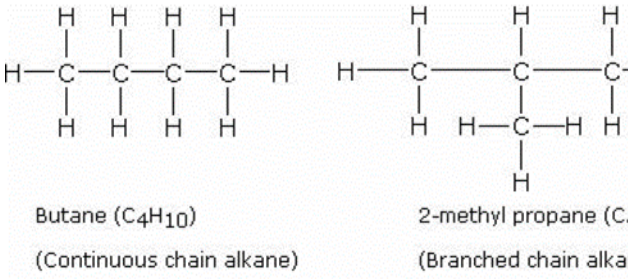
(c) Methanal

(d) Propanone

55. What are isomers? Write the structural formula of two isomers of butane

Ans: Organic compounds having the same molecular formula but different structural formulae, and hence, different physical and chemical properties are called isomers.

Two isomers of butane are n-butane and isobutane(2-methyl propane).



56. What is allotropy? Name two allotropes of carbon.

Ans: The existence of a chemical element in two or more forms, which may differ in the arrangement of atoms is allotropy. Graphite and diamond are the two allotropes of carbon.

57. What is meant by the term functional group? Write the names of the following functional group (i) – OH (ii) –COOH.

Ans: The functional group in an organic compound is an atom or a group of atoms bonded together in such a unique fashion, that it is usually the site of chemical reactivity of an organic molecule. The names of the functional group are (i) Alkanol (ii) Alkanoic acid

58. What are hydrocarbons? State one difference between saturated and unsaturated hydrocarbons.

Ans: The compounds made of carbon and hydrogen only are known as hydrocarbons.

The compounds of carbon in which each valency is satisfied by a single covalent bond are called saturated carbon compounds, wheras, the compounds of carbon in which the valency between two carbon atoms is satisfied by double or triple covalent bond are called unsaturated carbon atoms.

59. Write two uses of ethanol.

Ans: (1) It is used as a fuel in spirit lamps and stoves.

(2) It is used for sterilising wounds, and, hence, is used as an antiseptic.

60. Give two uses of ethanoic acid.

Ans: i) It is used in the production of vinegar which is used in the food processing industry.

ii) It is used in the formation of esters which is used in the perfume making process.

61. State two differences between soaps and detergents.

SOAPS	DETERGENTS
1. Soaps are the sodium salts of long chain carboxylic acid	1.Detergents are sodium salts of long chain benzene sulphonic acid
2.Soaps are biodegradable	2.Detergents are non-biodegradable.

62. State the modern periodic law. How many groups and periods are there in the modern periodic table?

Ans: 'Properties of elements are the periodic function of their atomic number.'

There are 18 groups and 7 periods in the periodic table.

63. How does the valency vary (i) on going down a group and (ii) in a period on going from left to right?

Ans: (i) On going down a group, valency of all elements remains the same.

(ii) On going from left to right across a period, the valency of elements increases from 1 to 4 and then falls to 1.

64. An element P belongs to group 2 and element Q belongs to group 17 of the long form of the periodic table.

(i) How many valence electrons are there in P?

(ii) What is the valency of P?

(iii) What is the valency of Q?

(iv) Write the chemical formula of the compound of P and Q.

Ans: (i) P has 2 valence electrons.

(ii) The valency of P is 2.

(iii) The valency of Q is 8-7=1

(iv) The formula of the compound is PQ_2.

65. How does the metallic character of elements change (i) on moving down a group and (ii) on moving across a period?

Ans: (i) While moving down a group, the metallic character of the elements increases.

(ii) On moving from left to right across a period, the metallic character of the element gradually decreases.

66. State Mendeleev's periodic law. State one limitation of Mendeleev's classification.

Ans: 'The physical and chemical properties of all elements are the periodic function of their atomic masses.' One limitation is that the position of hydrogen in his table was not justified.

[Biology]

67. What is sphygmomanometer? What is its purpose?

Ans: Blood pressure is the force that blood exerts against the wall of vessel. It is measured with the help of an instrument called sphygmomanometer.

68. Name the four major chambers of the human heart.

Ans: The four major chambers of the human heart are

(i) Left Atrium
(ii) Right Atrium
(iii) Left Ventricle and
(iv) Right Ventricle

69. What is respiration? Write the full form of ATP?

Ans: Respiration may be defined as a metabolic process in which stepwisebreakdown of respiratory substrate occurs with the liberation of energy in the form of ATP.

Full form of ATP is Adenosine Triphosphate.

70. Which enzyme present in saliva breaks down starch? What is the role of saliva in the digestion of food?

Ans: Salivary amylase.

Saliva helps in wetting the food so as that it can easily pass through the soft inner lining of the alimentary canal.

71. State two functions of Lymph.

Ans: Two functions of Lymph are:

(a) It carries digested and absorbed fat from the intestine.
(b) It drains the excess fluid from extra cellular space back into the blood.

72. (i) Define Translocation.

(ii) Name the plant tissue that transports the following:

(a) Water and minerals
(b) Food

Ans: (i) Translocation is process by which prepared food is transported in plants.

(ii) (a) Xylem moves water and minerals from the soil up to the leaves.

(b) Phloem transports product of photosynthesis from leaves to other parts of the plant.

73. Name the process by which autotrophs prepare their own food. List two events which occur during the above process.

Ans: Photosynthesis is the process by which autotrophs prepare their own food.

Light reaction and dark reaction occur during the photosynthesis

74. What are the basic raw materials for photosynthesis other than Light?

Ans: Carbon dioxide (CO_2), water (H_2O), Chlorophyll and Temperature

75. What is the role of (a) teeth and (b) tongue in digestion?

Ans: (a) The teeth help in crushing the food so it can easily pass through the digestive tract.

(b) The tongue helps in mixing the food to form into a bolus.

76. Write any two functions of Liver?

Ans: (a) It secretes a fluid called bile.
(b) It regulates vitamin storage
(c) It produces red blood cells in the embryo.
(d) It removes excess amino acids by the process of deamination.

77. What do you mean by systolic pressure and diastolic pressure?

Ans: Systolic pressure is the pressure of blood inside the artery during ventricular contraction.

Diastolic pressure is the pressure of blood inside the artery during ventricular relaxation.

78. What is excretion? Name the parts of the excretory system in human.

Ans: Excretion is the biochemical process that removes harmful metabolic wastes from the body of living organisms

The parts of the excretory system in human being are Kidney, Ureter, Urinary bladder and Urethra

79. What are villi? Where are they present?

Ans: The digested food is also absorbed by the wall of the small intestine which is lined on the inner side by numerous finger-like projections called Villi.

Villi are present in the small intestine.

80. Define chemotropism. Mention one example of chemotropism?

Ans: The directional movement or orientation of the plants in response to chemical stimulus is known as chemotropism.

During the process of fertilization growth of pollen tube towards the ovule in the ovary.

81. What is reflex action? Give two examples

Ans: Reflex action is a rapid automatic response to stimulus nerve-mediated involuntary action that occurs without the will of an animal.

Example: Blinking of eyes, watering of mouth on seeing the food when hungry.

82. What are hormones? Name the hormones secreted by adrenal gland.

Ans: Chemical communication takes place by means of chemical substances called hormones.

Glucocorticoids and Adrenaline.

83. Name the hormones required for the following: -

a) Functioning of mammary glands.
b) Regulation of calcium and phosphate in blood.
c) Lowering of blood glucose
d) Development of moustache and beard in human male.

Ans: (a) Oestrogen
(b) Parathormone
(c) Insulin
(d) Testosterone

84. Mention the functions of diencephalon of the forebrain.

Ans: Diencephalon: It is distinguishable in two parts thalamus and hypothalamus. Thalamus controls various types of movement including facial muscles, chewing, swallowing, movement of tongue, etc. and hypothalamus controls hunger, thirst, fatigue, sleep, sweating, body temperature and emotions.

85. What are the major divisions of the fore-brain? Name the covering in brain and the fluid present in between.

Ans: (a) Cerebrum and (b) Diencephalon

The brain is protected by cranial bones and meninges. In between them cerebrospinal fluid are present.

86. Name the part of the brain which controls equilibrium and posture of the body. What is the function of cerebrospinal fluid?

Ans: Cerebellum.

It is serves as a shock absorbing medium and protects the brain and spinal cord against jerks and jolts.

87. Name the four plant hormones or phytohormones.

Ans: (i) Auxins
(ii) Gibberellins
(iii) Cytokinins
(iv) Ethylene

88. Mention one function for each of these hormones.

(a) Thyroxine
(b) Insulin

Ans: (a) Thyroxine: Promotes tissue metabolism, growth and differentiation.

(b) Insulin: Regulatelowers blood sugar level.

89. What is Pollination? Name two types of Pollination.

Ans: The transfer of Pollen grains from another to stigma is called Pollination. Two types of pollination are:

(i) Self- pollination
(ii) Cross pollination

90. What are sexually transmitted disease? Name two such diseases.

Ans: The infections disease which spreads from infected person to healthy person by sexual contact is called Sexually Transmitted Disease.

Example: Gonorrhoea and Syphilis.

91. What do you mean by bisexual flower? Give two Example of it.

Ans: A flower having both reproductive whorl is called bisexual flower.

Example: Mustard, tomato etc.

92. Write the full from of STDs, and AIDS.

Ans: STDs = Sexually Transmitted Diseases.

AIDS = Acquired Immune Deficiency Syndrome.

93. What is vegetative propagation? In which type of plant is it performed?

Ans: Many plants reproduce by means of vegetative parts such as stem, roots leaves and buds. The formation of a new individual from any vegetative part of the plant body is known as vegetative propagation.

Vegetative propagation performed in higher plants and Ornamental plants

94. In a complete flower, identify the following:
    (i) Part that produces pollen grain.
    (ii) Part that transfers male gametes to the female gametes.
    (iii) Part that is sticky to trap the pollen grain.
    (iv) Part that develops into a fruit.

Ans: (i). Anther or stamen / Androecium.
(ii) Style or pollen tube.
(iii) Stigma
(iv) Ovary

95. What is meant by Variation and Evolution?

Ans: Variation: The differences among the individuals of a plant or animal of a species are called variations.

Evolution: It is gradual process by which the present diversity of plants and animals arose from the earliest and primitive organisms.

96. The wings of a bird and the wings of a bat not considered homologous. Why?

Ans: The wings of a bat are skin fold between the elongated fingers, while the wings of bird are feathery covering all along the arms though the basic design of these wings are completely different, they look similar because they have a common function so the wings of bird and the wings of bat not considered homologous.

97. Discuss the monohybrid ratio given by Mendel's.

Ans: In an experiment a cross between purple flower and white flower produces the F_1 progeny all with purple flowers when the F_1 progeny were allowed for self pollination the F_2 progeny produced were showing both the purple and white flower in the radio of 3:1 this is called a monohybrid ratio.

98. Define the following terms: (i) Phenotype and (ii) Genotype.

Ans: (i) Phenotype: An external appearance or body character of an organism irrespective of its genetic make-up is said to be phenotype.

(ii) Genotype: The genetic constitution of an individual is said to be genotype.

99. Define inheritance or heredity? Who is known as the father of genetics?

Ans:Heredity is the transmission of traits from over generation to the following generation.

Gregor Johannes Mendel.

100. What is the common name and the scientific name of the plant on which Mendel performed his experiments? Give one reason why Mendel chose this plant for his experiments.

Ans: The common name is Garden Pea and scientific name is *Pisum sativum*.

Mendel chose the Pea plant for his experiments due to the following reasons:

a. The flowers of this plant are bisexual.
b. They are self- pollinating.
c. They are annual plants.
d. The different physical characteristics are easy to recognize and study.

Section-C
Short Answer Questions (3 Marks)

[Physics]

1. Distinguish between real image and virtual image.

Ans.

Real Image	Virtual Image
1.The rays of light after reflection or refraction actually meet at a point	1. The rays of light after reflection or refraction appear to meet at some other point or appear to diverge from some other point.
2.It can always be taken on the screen	2.It cannot be taken on a screen
3.It is always inverted	3.It is always erect, but laterally inverted

2. What is refraction of light?The velocity of light in air is $3X10^8$m/s and in glass is $2X10^8$ m/s. Find the refractive index of the glass.

Ans. The phenomenon due to which a ray of light deviates from its path, when the ray of light is travelling from one optical medium to another optical medium, is called refraction of light.

Refractive index,$n=\frac{velocity\ of\ light\ in\ air}{velocity\ of\ light\ in\ glass}$

$=\frac{3\ X10^8}{2X10^8}$

$= 1.5$

3. State Snell's law of refraction. State two factors on which lateral displacement of emergent ray depends.

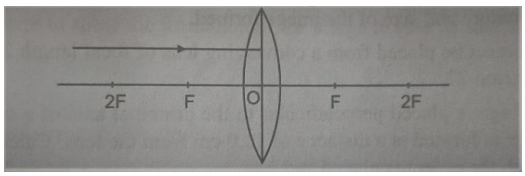
Ans. The ratio of the sine of angle of incidence to the sine of angle of refraction is a constant.

Lateral displacement depends on the following factors:

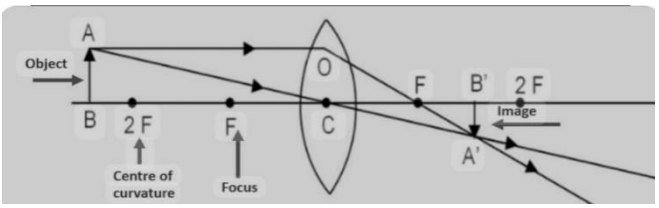
(a) It increases with the increase in the angle of incidence.

(b) It increases with the increase in the thickness of the glass slab.

4. In the diagram given, complete the path of light beyond the lens



Ans



5. Define Power of a lens. A convex lens has focal length of 40 cm. Calculate its power.

Ans. The reciprocal of focal length in metres is called power of a lens.

Here,f=40 cm=$\frac{40}{100}$=0.4m

P=$\frac{1}{f}$

P= $\frac{1}{0.4}$

= 2.5D

6. What is a prism? State the factors affecting angle of deviation.

Ans. Prism is a piece of glass or any other transparent material, bounded by two triangular and three rectangular surfaces.

Factors affecting angle of deviation are:

(i) Angle of incidence; (ii) Angle of prism; (iii) Refractive index of the material of prism; and (iv) Colour of light.

7. A person needs a lens of power -4.5D for correction of her vision.

(i)What kind of defect is she suffering from?

(ii)What is the focal length of the corrective lens?

(iii)What is the nature of the corrective lens?

Ans. (i)Myopia

(ii) f=$\frac{1}{P}$

f= $\frac{1}{-4.5} = -0.22\ m\ or -22cm$

(iii) The lens is a concave lens

8. Why does the sun appear bigger during sunset or sunrise?

Ans. During sunset or sunrise, the rays of light travel through maximum length of the atmosphere, therefore refraction is also maximum and hence the apparent position of the sun is very much closer to the eye. Thus, it appears bigger.

9. What is scattering of light? Why does the sky appear dark to an astronaut?

Ans. The phenomenon due to which a particular wave of light is absorbed by a particle, which is greater in diameter than the wavelength of light and then transmits in all possible directions is called scattering of light.

In space, there is no atmosphere thus no scattering takes place. Hence the sky appears darker to an astronaut.

10. What is a rainbow? How is it formed?

Ans. A rainbow is a natural spectrum, form due to dispersion of light in nature.

The rainbow is produced due to the dispersion of sunlight by tiny droplets of water suspended in air, just after rain.

11. Why do planets not twinkle?

Ans. Planets do not twinkle because they are very close to the earth compared to the stars. Their apparent positions also change with the change in density of different layers of the atmosphere. However, the size of their apparent image is still large and hence they do not appear to twinkle.

12. (a)Define electric current and write its SI unit.

(b)An electric bulb draws a current of 0.2A when the voltage is 220V. Calculate the amount of electric charge flowing through it in one hour.

Ans. (a) The rate of flow of charge from a body at a higher potential to a body at lower potential is called electric current. Its SI unit is Ampere. (A)

(b) Using, $I=\frac{q}{t}$,

$q=It$

Here, I=0.2A and t= 1hr=1X60x60s

$q=0.2 \times 1x60x60$

$q=720$ C

13. (a)State the relationship between work, charge and potential difference for an electric circuit.

(b)Calculate the charge on one electron.

Ans. (a) Work = Charge X Potential difference

(b) 6.25×10^{18} have a charge of = 1C

1 electron has a charge of

$=\frac{1}{6.25X10^{18}}$ C

$= 0.16 \times 10^{-18}$ C

$= 1.6 \times 10^{-19}$C

14. (a)State Ohm's law.

(b)Give the factors of resistance of a wire on which it depends

Ans. (a) Ohm's law states that the current flowing through a conductor is directly proportional to the potential difference at its ends provided the physical conditions of the conductor remains the same.

(b) The resistance depends on the following factors:

(i) length of the wire, (ii) Area of cross section of the wire, (iii)nature of material of the conductor, (iv) temperature

15. An electric bulb draws a current of 0.8A and works on 250 V on the average eight hours a day. If the energy costs ₹ 3.00 per Kwh, calculate the monthly bill.

Ans. Electrical energy in a month (30days) = power x time x days = current x potential x time x days

= 0.8 x 250 x 8 x30 = 48000 watt h

=48kWh

Monthly bill = ₹ 3.00 X 48

= ₹144.00

16. (a)What do you understand by the term electric fuse?

(b) How does a fuse wire protect an electric circuit?

Ans. (a) A fuse is a safety device in an electric circuit

(b) A fuse wire protects an electric circuit because of its low melting point and high resistance. When the electric circuit is overloaded, the fuse wire will melt and stop the flow of current in a given circuit.

17. State the factors on which the force on the rod pushed out of the magnetic field depends.

Ans. It depends upon:
(a)Strength of the current flowing through the rod
(b) Magnetic intensity of the magnet
(c) length of the rod within the magnet

18. State the function of (i) Coil (ii) Commutator (iii) Brush in an electric motor

Ans. (i)The function of the coil is to set up an electric field when the current flows.
(ii) The function of the commutator is to alter the direction of the current after every half rotation
(iii) The function of the brushes is to supply a continuous current to the rotating coil.

19. List three characteristics of a magnetic field.

Ans.(a)Strength of a magnetic field is a vector quantity.
(b) The relative strength of a magnetic field is shown by the degree of closeness of magnetic field lines
(c) The strength of a magnetic field at a given point depends upon its distance from the poles of a bar magnet.

20. (a) What do you understand by the term earthing?
(b) How does earthing protect the user from getting an electric shock?

Ans.(a) By earthing, we mean that the metallic body of the appliance is connected to a thick copper wire which is buried in the earth to prevent from electric shock
(b) When an appliance is earthed, even if there is a short circuit, the current from its metal body flows into the earth instead of a user thus prevent the user from getting electric shock.

[Chemistry]

21. What changes are observed when hydrated ferrous sulphate is heated strongly? State the type of chemical reaction.

Ans: The following changes were observed:
i)When hydrated ferrous sulphate is heated strongly , its colour changes from green to brownish black mass of Ferric oxide.
ii)A colourless gas is evolved that smells like burning sulphur. This gas is sulphur dioxide.
The type of reaction is a Thermal decomposition reaction.

22. 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.

$Al_2O_3 + 6HCl \longrightarrow 2AlCl_3 + 3H_2O$

$Al_2O_3 + 2NaOH \longrightarrow NaAlO_2 + H_2O$

23. Name
i) Two elements that have a single electron in their outermost shell
ii) Two elements that have two electrons in their outermost shell
iii) Two elements with filled outermost shell

Ans: i) Lithium (Li) and Sodium(Na)
ii) Magnesium (Mg) and Calcium(Ca)
iii) Neon(Ne) and Argon(Ar)

24.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".

25. i) What is meant by pH of a substance?
ii) The pH of substance A is 5 and the pH of B is 1. Which substance basic and which one is acidic . Why?

Ans: pH which stands for power of hydrogen, is a quantitative measure of the acidity and basicity of aqueous or other liquid solutions.
Substance A is acidic and substance B is basic. This is because a pH less than 7 is acidic and pH greater than 7 is basic.

26. State the differences between oxidizing and reducing agents.

Ans:

OXIDISING AGENTS	REDUCING AGENTS
1. Substances that causes the addition of oxygen or removal of hydrogen.	1. Substances that causes the addition of hydrogen or removal of oxygen.
2. Reduction occ2rs in oxidizing agents during redox reactions.	2. Oxidation occurs in reducing agents during redox reactions.
3. Examples are H_2O_2 , HNO_3 .	3. Examples are C, CO .

27. What is water of crystallization? Write the name and formula of two salts containing water of crystallization.

Ans: The fixed number of water molecules that are in loose combination with one molecule of a salt, is called water of crystallization.

Two examples of salts containing water of crystallization are:

i) Gypsum or calcium sulphate bihydrate ($CaSO_4.2H_2O$)

ii) Washing Soda or Sodium carbonate decahydrate ($Na_2CO_3.10H_2O$)

28.(i) Write down the chemical reaction that takes place between Lead nitrate and Potassium iodide

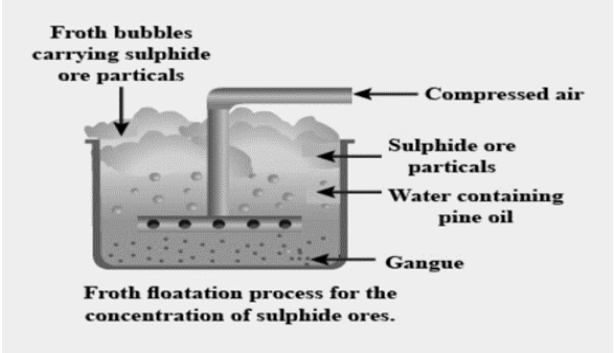
(ii)What is the colour of the precipitate formed in the above reaction? Name the precipitate.

Ans: (i) $PbNO_3$ (aq) + KI(aq) $\longrightarrow$ PbI_2 ( ) + $2KNO_3$ (aq)

(ii)The colour of the precipitate is yellow. The precipitate formed is Potassium Nitrate.

29. Draw a labeled diagram for the Froth Floatation Process

Ans:



Froth floatation process for the concentration of sulphide ores.

30.Write down the general formula of Ketones. Name the first member of thishomologous series and mention its IUPAC name. What is its molecular formula? 1+1+1=3

Ans: The general formula of Ketones is R-CO-R'.

The first member of the Ketone family is Acetone and its IUPAC name is Propanone.

Its molecular Formula is CH_3-CO-CH_3.

31. i) Name the raw materials required to manufacture Baking Soda.

ii) Write the Overall equation involved in the manufacture of Baking Soda.

iii) Write down two characteristics of Baking soda

Ans: i) The raw materials required to manufacture Baking Soda are Sodium chloride, Ammonia, Limestone.

ii) The overall equation for the manufacture of Baking Soda is as follows:

$NaCl + H_2O + NH_3 + CO_2 \longrightarrow NH_4Cl + NaHCO_3$

iii) Baking Soda or Sodium bicarbonate or Sodium hydrogen carbonate is sparingly soluble in water.

Baking Soda is a fine white crystalline salt basic in nature.

32. 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:

$CaCO_3(s) + 2HCl\ (aq) \longrightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$

33. An element A has atomic number 19.

i) Name this element and write its electronic configuration

ii) To which period does this element belong? How many elements are there in this period?

iii) To which group does this element belong to?

Ans: i) The element is Potassium (K) . Its electronic configuration is 2,8,8,1

ii)Potassium belongs to the fourth period as it has four shells. There are 18 elements in this period

iii) As there is one valence electron in the outermost shell, therefore it belongs to Group 1.

34. In Thermite welding

(i) What is the Thermite mixture?

(ii) What is the ignition mixture?

(iii) Write the chemical equation for the Thermite welding process.

Ans: (i) The thermite is a mixture of Ferric oxide (Fe_2O_3) and powdered Aluminium.

(ii) The ignition mixture is a mixture of Magnesium powder and Barium peroxide.

(iii) The equation is as follows:

$$Fe_2O_3 + 2Al \xrightarrow{\Delta} 2Fe\ (l) + Al_2O_3(s) + Heat$$

35. Explain esterification with the help of a chemical equation.

Ans: A chemical reaction in which an alcohol reacts with carboxylic acid to form a sweet smelling ester. This process of formation of esters is called Esterification.

$$CH_3COOH + C_2H_5OH \xrightarrow{conc.\ H_2SO_4} CH_3COOC_2H_5 + H_2O$$

Ethanoic acid Ethanol Ethyl Ethanoate Water

36. 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 the thermal decomposition of carbonate ores.	2. Roasting is carried out for sulphide ores
3. During calcination, carbon dioxide is given out.	3.During Roasting, sulphur dioxide is produced

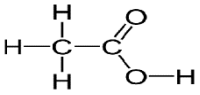
37. Draw the structure of the following compounds:

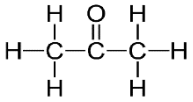
(i) Ethanoic acid

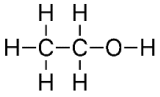
(ii) Propanone

(iii) Ethanol

Ans:

(i)ETHANOIC ACID 

(ii) PROPANONE 

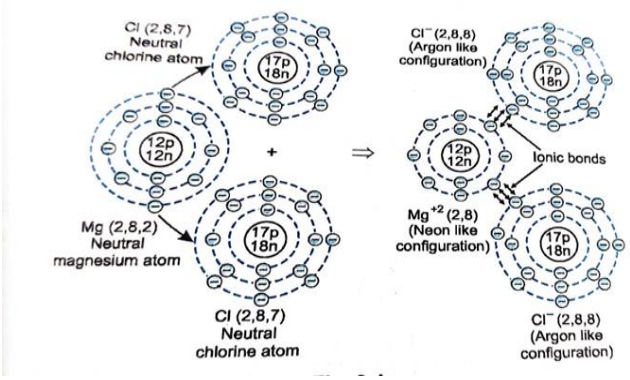
(iii) ETHANOL 

38. Explain the formation of $MgCl_2$ with the help of a geometric diagram.

Ans: The electronic configuration of Magnesium atom is 2,8,2. It is an electropositive element which can donate two electrons from its valence shell to form Mg^{+2}.

$$Mg - 2e \longrightarrow Mg^{+2}$$

The electronic configuration of Chlorine atom is 2,8,7. It is an electronegative element which can accept one electron. Thus Magnesium will donate its electrons to two chlorine atoms and therefore form Magnesium chloride . This formation can be represented by a geometric diagram as follows:



39. What happens when Ethanol and excess Concentrated Sulphuric acid are mixed? Write the chemical equation for the reaction. What is the function of sulphuric acid

in this reaction?

Ans: When ethanol is mixed with excess of concentrated Sulphuric acid and heated to 170◦C , the sulphuric acid removes a molecule of water from its molecule to form unsaturated ethene gas.

$CH_3\text{-}CH_2\text{-}OH + H_2SO_4$ (conc) ⟶ $CH_2{=}CH_2 + H_2SO_4.H_2O$

Ethanol Sulphuric acid Ethene Hydrated sulphuric acid

In this reaction, Concentrated Sulphuric acid acts as a Dehydrating agent.

40. In the extraction of Aluminium from Aluminium oxide,

i) Write the formula of Cryolite. Why is it added to aluminium oxide ?

ii) Write the reactions that occur at the cathode and anode during this process

Ans: i) The formula of Cryolite is Na_3AlF_6 . Cryolite is added to lower the melting point of Alumina and make alumina a good conductor of electricity for the electrolysis process.

ii) Reactions at cathode:

$Al^{+3} + 3e^-$ ⟶ Al

Aluminium ion electron Aluminium atom

Reactions at anode: $O^{2-} - 2e^-$ ⟶ O

Oxide ion electron Oxygen atom

$C + 2O$ ⟶ CO_2

Carbon Oxygen Carbon dioxide

[Biology]

41. (a) Define Respiration.

(b) Give reasons for the following

i) The lung alveoli are covered with blood capillaries.

ii) The walls of trachea is supported by cartilage rings.

Ans: (a) Respiration is defined as the catabolic process in which stepwise breakdown of respiratory substrate (mainly glucose) occurs with the liberation of energy in the form of ATP.

(b) (i) The lung alveoli are covered with blood capillaries because the thin walled capillaries help in easy gaseous exchange.

(ii) The walls of trachea is supported by cartilage rings to prevent the air passage from collapsing.

42. State the functions of the blood vessels of human circulatory system.

Ans: The functions of the blood vessels of human circulatory system are

i. Arteries carry blood away from the heart to various organs.

ii. Veins collect blood from different organs and bring it back to the heart.

iii. Capillaries help in the exchange of materials between blood and surrounding tissues across their thin walls.

43. (a) Name the three pairs of salivary glands in humans. Where do they open?

(b) Which enzyme present in saliva breakdowns starch?

Ans: (a) The three pairs of salivary glands in humans are Parotid glands, Submandibular glands and Sublingual glands.

They open into the buccal cavity (mouth).

(b) Salivary amylase present in the saliva helps in breaking down starch.

44. State the difference between Transpiration and Translocation.

Ans:

Transpiration	Translocation
1. It is the loss of water vapour from the aerial parts of the plant.	1. It is the transport of food materials from one part of the plant to another.
2. It occurs through xylem .	2. It occurs through phloem.
3. It involves physical forces.	3. It requires metabolic energy.

45. (a)Define excretion. Name two excretory organs in humans.

(b) Give the functional unit of Kidney and Nervous system.

Ans: (a)Excretion is the biological process that removes harmful metabolic wastes from the body of living organisms.

Two excretory organs in humans are Lungs and Kidneys

(b) The functional unit of Kidney are Nephrons.

The functional unit of nervous system is Neuron.

46. What are stomata? Write down two functions of stomata.

Ans: Stomata are tiny pores present on the surface of the leaves. Two functions of stomata are

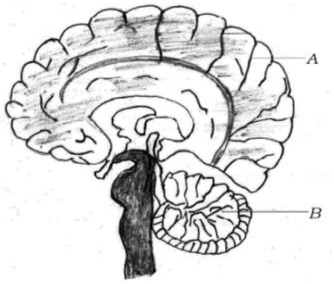
i. Gaseous exchange in plants takes place through stomata.
ii. Plants lose large amount of water through stomatal pores.

47. Differentiate between aerobic and anaerobic respiration

Ans

AEROBIC RESPIRATION	ANAEROBIC RESPIRATION
1. It takes place in the presence of oxygen	1.It takes place in the absence of oxygen.
2. It takes place in the cytoplasm and mitochondria	2. It takes place only in the cytoplasm.
3. Pyruvate breaks down into carbon dioxide, water and energy	4. Pyruvate breaks down into carbon dioxide, ethyl alcohol / lactic acid and energy

48. Inthe given diagram of human brain, name the parts labelled A and B and write their functions (any one function for each)



Ans: A – Cerebrum- Cerebrum helps in thinking.

B- Cerebellum – Cerebellum helps in maintaining posture.

49. Name the animal hormone responsible for
(a) Regulating protein metabolism and body growth
(b) Lowering blood sugar level
(c) Regulating calcium and phosphorus metabolism.

Ans: (a)Regulating protein metabolism and body growth – Growth hormone
(b) Lowering blood sugar level-Insulin
(c) Regulating calcium and phosphorus metabolism –Parathormone

50. (a) Define nerve impulse.

(b)Which structure in a neuron helps to conduct a nerve impulse
(i) Towards the cell body
(ii) Away from the cell body

(c) Define Synapse.

Ans: (a) A nerve impulse is an electrical signal that travels along an axon.

(b) (i).Towards the cell body - Dendrites
(ii). Away from the cell body -Axon

(c) Synapse is the point of contact between the terminal branches of the axon of one neuron with the Dendrites of another neuron.

51. What are plant hormones? Write down two important functions of Cytokinins.

Ans: Plant hormones or Phytohormones are naturally occurring chemical substances present in plants and bring about control and coordination various activities in plants.

Two important functions of Cytokinins are:
i. It promotes cell division in plants and also helps in breaking the dormancy of seeds and buds.
ii. It also delays ageing in leaves and also promote opening of stomata.

52. State the functions of sensory neuron, motor neuron and connector neuron.

Ans: The functions of :

Sensory neuron - To transmit impulses from the receptors to the brain and spinal cord.

Motor neuron – Carry instructions from the brain and spinal cord to various organs.

Connector neuron – Interconnect the sensory neuron and motor neuron.

53. Give three advantages of vegetative propagation.

Ans.Three advantages of vegetative propagation are:

1. Plants raised by vegetative propagation can bear flowers and fruits earlier than those produced from seeds.
2. Some plants like bananas, seedless grapes, potato, rose which cannot produce viable seeds.
3. It is an easier, less expensive and rapid method of propagation.

54. (a) Differentiate between self and cross pollination.
(b) Name two agents of pollination.

Ans. (a) Self-pollination: The transfer of pollen grains from the another of a flower to the stigma of the same flower or of another flower borne on the plant is called self-pollination.

Cross pollination: The transfer of pollen grains from anther of a flower of one plant to the stigma of a flower of another plant of the same species is called cross pollination.

(b) Two agents of pollination are: wind and water.

55. Give three differences between pollination and fertilization.

Ans.

Pollination	Fertilization
It is the transfer of pollen grains from anther to the stigma of a flower.	It is the fusion of male and female gametes.
It is a physical process	It is a physico-chemical (biological) process.
It occurs in seed plants	It occurs in plants and animals of various types

56. Define: (a) Implantation; (b) Placenta; (c) Parturition

Ans: (a)After fertilization, the embryonic development begins in the fallopian tube. The zygote moves from fallopian tube to the uterus and gets implanted in the lining of the uterus. This process is called implantation.

(b)The organ by which the embryo is attached to the walls of the uterus is called placenta.

(c)The act of giving birth to a baby is known as parturition.

57. Give three differences between Acquired and Inherited traits.

Ans:

Acquiredtraits	Inheritedtraits
These are somatic variations	These are genetic variations
These develop due to the effect of environmental factors, use and disuse of organs and special efforts	These develop due to reshuffling of genetic material and mutations.
Eg: learning of dance, music etc.	Eg: Attached or free earlobe and curly hair

58. State Darwin's theory of natural selection

Ans: (i) All animals and plants have a natural tendency to produce offsprings.

(ii) The number of offspring is maintained at a constant level.

(iii) Struggle for existence.

(iv) Variation and heredity.

(v) Survival of the fittest.

(vi) Origin of species.

59. What are homologous organs? Give examples.

Ans: The organs which are similar in basic structure and embryonic origin but perform different functions in different species are called homologous organs.

Example: The fore limbs of human are used for holding objects, forelimbs of a bird are modified for flying purpose, forelimbs of lizard are modified for creeping and the forelimbs of a frog act as shock absorbers after a leap.

60. Explain Mendel's law of dominance.

Ans: When a pair of contracting characters are present together, only one is able to express itself in the F1 generation while others remain suppressed. A cross between purple flower and white flower produces the F1 progeny all with purple flowers. When the F1 progeny were allowed for self-pollination the F2 progeny produced were showing both the purple and white flowers in the ratio of 3:1.

Section-D
Long Answer Questions (4 Marks)

[Physics]

1. State any Four common characteristics of light?

Ans: The Four common characteristics of light are as follows:

(i) The velocity of light in vacuum is $3 \times 10^8\ m/s$

(ii) Light gets refracted when it travels from one medium to another medium.

(iii) Light is an invisible energy which on rebounding from the surface of matter cause sensation of vision.

(iv) Light travels along a straight-line path, but it is an electromagnetic wave which is transverse in nature.

(v) Light produces shadows, when obstructed by opaque objects.

(vi) The velocity of light changes while travelling from one transparent medium to another transparent medium.

2. (a) What is reflection of light?

(b) You are provided a convex mirror, a concave mirror and a plane mirror.

How will you distinguish between them, without touching them or using any other apparatus?

Ans: (a) When a ray of light travelling through a certain medium strike on opaque, but a smooth polished surface, it bounces of the surface in to the original medium the phenomenon is called reflection of light.

(b) (i) If the image is erect and equal in size and it does not change its size and nature on moving the mirror closer or away from the face, the mirror is plane.

(ii) if the image is erect and magnified and it becomes inverted on moving the mirror away from the face, the mirror is concave.

(iii) If the image is erect and diminished and it remains erect on moving the mirror away from the face, the mirror is convex.

3. (a) Define spherical mirror?

(b) A convex lens produces a real and inverted image 2.5 times magnified at a distance of 25 cm from the lens. Calculate focal length of the lens.

Ans: (a) A mirror which is made from a part of a hollow sphere is called a spherical mirror.

(b) Solution: Magnification (m) = - 2.5 (real image)

Distance of the image from the lens (v) = 25 cm

Distance of the object from the lens (u) = ? (to be calculated)

Focal length of the lens (f) = ? (to be calculated)

We know that, $m = \frac{v}{u}$

$\Rightarrow$ $-2.5 = \frac{25}{u}$

$\Rightarrow$ $u = \frac{25}{-2.5}$

$\Rightarrow$ $u = \frac{25 \times 10}{-25}$

$\Rightarrow$ $u = -10$ cm

Again, we know that: $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

$\Rightarrow$ $\frac{1}{25} - \frac{1}{-10} = \frac{1}{f}$

$\Rightarrow$ $\frac{1}{f} = \frac{2+5}{50}$

$\Rightarrow$ $\frac{1}{f} = \frac{7}{50}$

$\Rightarrow$ $f = \frac{50}{7}$

$\Rightarrow$ $f = 7.14$ cm

Thus, the focal length of the lens is 7.14 cm

4. (a) What do you understand by the term accommodation of eye?

(b) What is presbyopia?

(c) Why do we see a rainbow in the sky only after rainfall?

(d) What is dispersion of light?

Ans: (a) The process by which the ciliary muscles alter the focal length of the crystalline lens, so as to focus nearer or far-off objects clearly on the retina is called the accommodation of the eye.

(b) Presbyopia is an old age defect in which a person cannot see the near by object clearly but can see the far object clearly.

(c) The rainbow is produced due to the dispersion of sunlight by tiny droplets of water suspended in air, just after rain.

(d) The splitting-up of white light into its component colours is called dispersion.

5. (a) What causes dispersion of white light?
   (b) A person is advised to wear spectacles with convex lenses. What type of defect of vision is he suffering from?

Ans:(a) White light is a mixture of several waves of electromagnetic radiations, whose wavelengths vary from 700 nm to 400 nm. The highest wavelengths produce red sensation in the eye, whereas the lowest wavelengths produce violet sensation. The wavelengths between the 700 nm and 400 nm produce the effect of indigo, blue, green yellow and orange. These waves travel with same speed ($3\times10^8\,ms^{-1}$) in vacuum.

However, on passing through the prism, the waves of different wavelengths slow down, the red showing down the least and violet the maximum. This in turn bends the waves of different angles. Thus, the white light splits to component colours or the dispersion of white light take place.

(b) He is suffering in Long-sightedness or Hypermetropia

6. (a) Name an instrument used for measuring the current?
   (b) What do you understand by the term electric potential?
   (c) State unit of electric potential and define it.

Ans: (a) Ammeter

(b) The amount of work done in moving a unit positive charge from infinity to a given point in an electric field is called the electric potential at that point.

(d) S.I. unit of electric potential is Volt (V). When one coulomb of an electric charge is brought from infinity to a given point in an electric field. Such that the work done is one joule them the electric potential at that point is one volt.

7. What do you understand by the term parallel Circuit. Give three characteristics of a parallel circuit.

Ans: When a number of resistors are connected in such a way that they have a common positive terminal and a common negative terminal then the resistors are said to be connected in parallel.

Characteristics of a parallel circuit.

(a) The potential difference for all resistors in parallel remains constant i.e. it is same for all the resistors.

(b) The current branches in the inverse ratio of the resistances of the resistors from this it implies that more the resistance of a resistors less the current flowing through it.

(c) The total amount of current entering or leaving the parallel circuit is equal to the sum total of currents flowing in individual resistors.

i.e. $I = I_1+I_2+I_3$

8. Define the term resistivity of a material. Four resistors of resistance 24Ω, 12Ω, 8Ω and 4Ω are connected in parallel. Calculate the total resistance of the circuit.

Ans: Resistivity is the amount of resistance offered by a conductor of unit length and unit area of cross-section, such that current enters and leaves from its opposite faces is called its resistivity or specific resistance.

Here, $r_1 = 24\Omega$, $r_2 = 12\Omega$, $r_3 = 8\Omega$, $r_4 = 4\Omega$

We know that, Resistance in a parallel circuit is given by the expression,

$$\frac{1}{R} = \frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} + \frac{1}{r_4}$$
$$= \frac{1}{24} + \frac{1}{12} + \frac{1}{8} + \frac{1}{4}$$
$$= \frac{1+2+3+6}{24}$$
$$= \frac{12}{24}$$
$$= \frac{1}{2}$$
$$Hence, Total\ resistance(R_p) = 2\Omega$$

9. Give four differences between permanent magnet and an electromagnet.

Ans: The differences between permanent magnet and an electromagnet are:

Electromagnet	Permanent magnet
1. An electromagnet exhibits a much stronger magnet field.	1. A permanent magnet does not exhibit a very strong magnetic field.
2. The polarity of an electromagnet can readily be reversed by changing the direction of current. 3. An electromagnet can readily be demagnetized by stopping the current through the solenoid. 4. The strength of the electromagnet can be changed easily by adjusting the current or the number of turns.	2. The polarity of a permanent magnet is fixed. 3. Permanent magnet cannot be readily demagnetized. 4. In case permanent magnets, no such change can be done.

10. (i) What is an electric generator?

(ii) State the principle of an electric generator.

(iii) How can you convert an AC generator to a DC generator?

Ans: (i) An electric generator is a device which converts mechanical energy into electric energy.

(ii) It works on the principle of electromagnetic induction. The principle of electromagnetic induction states that the change in the magnetic field around the conductor generates electric current in the circuit.

(iii) An AC generator can be changed to a DC generator by replacing the slip rings with split rings.

[Chemistry]

11. (a) What do you understand by the term chemical equation?

(b) What is observed when a solution of potassium iodide is added to a solution of lead nitrate in a test tube? (c) What type of reaction is this?

(d) Write a balanced chemical equation to represent the above reaction.

Ans: (a) A chemical equation is a statement that describes a chemical reaction in terms of symbols and formulae.

(b) Yellow Precipitate is formed when a solution of potassium iodide is added to a solution of lead nitrate in a test tube.

(c) Precipitation reaction.

(d) $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$

12. (a) Define precipitation reaction or Double displacement reaction?

(b) Identify (i) the substance oxidized and (ii) the substance reduced (iii) oxidising agent (iv) reducing agent in the following reaction:

$$ZnO + C \rightarrow Zn + CO$$

Ans: (a) When the aqueous solutions of two ionic compounds react by exchanging their ions/radicals, to form two or more new compounds, such that one of the products formed is an insoluble salt, and hence, forms a precipitate, that the double displacement reaction is said to be a precipitation reaction.

(b)(i) The substance oxidized → C

(ii) The substance reduced → ZnO

(iii) Oxidising agent → ZnO

(iv) Reducing agent→ C

13. (a) What do you mean by water of crystallization?

(b) A compound that is prepared from gypsum has a property of hardening when mixed with proper quantity of water.

(i) Identify the compound.

(ii) Write the chemical name of the compound.

(iii) For what purpose it is used in hospitals?

Ans: (a) The fixed number of water molecules that are in loose combination with one molecule of a salt, is called water of crystallization.

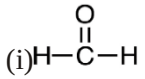
(b) (i)The compound name is Plaster of Paris.

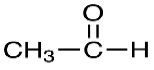
(ii)The chemical name of the compound is Calcium sulphate hemihydrate.

(iii) Plaster of Paris when mixed with water rapidly sets into a hard mass. It is this property that is utilized to keep the fractured bones in a fixed position by applying Plaster of Paris around the affected bones.

14. (a) What do you understand by saturated and unsaturated hydrocarbons?

(b) Write down the common names of the following:

(i) 

(ii) 

Ans: (a) Saturated hydrocarbons are hydrocarbons which contain single bond between any two carbon atoms whereas unsaturated carbons are hydrocarbons which contain at least one double and triple bond between any two carbon atoms.

(b) (i) Formaldehyde

(ii) Acetaldehyde

15. (a) A non-metal X exists in two different forms Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Identify X, Y and Z.

(b) Give two physical properties of Z.

(c) X is considered to be versatile. Why?

Ans: (a) Amongst the allotropes of Carbon, diamond is the hardest naturally occurring substance, which does not melt. Graphite is another allotrope of carbon that has luster and a good conductor of electricity.Therefore, X is Carbon, Y is Diamond and Z is Graphite

(b) Z which is graphite, is a soft and is a good conductor of electricity.

(c) i. Carbon is versatile because it forms single double and triple covalent bonds.

ii. It shows catenation

iii. It is tetravalent in nature.

16. (a) Why there is a necessity for the Classification of elements? Give three reasons

(b) What are groups and periods in the periodic table?

Ans: (a) Following are the reasons for the classification of elements:

(i) Classification may help to study elements better.

(ii) Classification may lead to correlate the properties of elements with some fundamental properties, characteristic to all elements.

(iii) Classification may further reveal relationship between one element and another element.

(b) The vertical columns in the periodic table are called groups.

The horizontal rows in the periodic table are called periods

17. (a) Define functional group. Name the class of organic compound associated with the functional group —COOH.

(b) Atomic number of a few elements are 10, 20, 7, 14. Identify the elements.

Ans: (a) An atom or a group of atoms bonded together in such a unique fashion that it is usually, the site of chemical reactivity of an organic molecule.

The organic compound is Carboxylic acid.

(b)

Atomic Number	Name of Element
10	Neon
20	Calcium
7	Nitrogen
14	Silicon

18. (i) Why are metals considered malleable and ductile?

(ii) Name a metal that is most malleable and a metal that is most ductile.

(iii)Name a metal and a non-metal which are liquid at room temperature.

Ans: (i) Metals are considered to be malleable as they can be beaten into thin sheets. They are also ductile as they can be drawn into thin wires.

(ii) Gold is the most malleable metall and silver is the most ductile metal

(iii) Mercury is a metal which is liquid at room temperature and Bromine is a non-metal which is liquid at room temperature.

19. (i)Define Concentration of the ore.

(ii) Explain the Froth Floatation Process

Ans. (i)The process of removal of the gangue from an ore is known as concentration or dressing or benefaction of an ore.

(ii) In this process, sulphide ores are pulverized to powder and then taken into a tank filled with water. In the tank some pine oil is added and the mixture is agitated with air. The pine oil wets the ores whereas the

gangue particles are wetted with water. The air which is blown in the tank causes froth which rises up taking the ore particles to the surface while the gangue particles settle at the bottom of the tank. The froth is then skimmed off and dried which contains the ore particles.

20. Amongst the following, which will displace hydrogen from dilute sulphuric acid?
(i) Carbon (ii) Copper (iii) Sulphur (iv) Zinc

Ans: Only those metals, whose position is higher than hydrogen in the metal reactivity series, will displace hydrogen gas from dilute sulphuric acid.

(i) Carbon will not displace hydrogen from dilute sulphuric acid as it is a non-metal.

(ii) Copper will not displace hydrogen, as its position is lower than hydrogen in the metal reactivity series.

(iii) Sulphur will not displace as it is a non-metal.

(iv) Zinc will displace hydrogen from dilute sulphuric acid as its position is higher than hydrogen in the metal reactivity series.

[Biology]

21. Name the source gland and give one main action of the following hormones-
(i) prolactin; (ii) calcitonin;(iii) insulin; and(iv) parathormone.

Ans : (i) Prolactin – the source gland is anterior lobe of pituitary gland. The main action is it stimulates milk production and secretion.

(ii) Calcitonin – the source gland is thyroid gland and the main action is helps the movement of calcium ions from blood cells to bones.

(iii). Insulin – the source gland is pancreas and the main action is that it lowers blood sugar levels.

(iv). Parathormone – the source gland is parathyroid gland and the main action is it regulates calcium and phosphorus metabolism.

22. What are the different types of heterotrophic nutrition? Give one example of each.

Ans- There are four main types of heterotrophic nutrition-

(i). Holozoic nutrition – In this type the organisms eat their food whole. The complex food is broken into smaller particles in the digestive system and then absorbed. Example humans

(ii). Saprophytic nutrition – In this mode of nutrition organisms feed on dead and decaying organic matter. Example some types of bacteria.

(iii). Parasitic nutrition – In this type the organisms depend on another organism (host) for nutrition. The parasite may live in or on the body of the host. Example tapeworms.

(iv). Symbiotic nutrition – the organisms derive nutrition from living in close association with another organism. Example lichen (algae and fungi).

23. Write a note on the events which occur during light reaction of photo synthesis?

Ans. The main events are as follows:
(i)Light energy is absorbed by the chlorophyll that attains a higher energy state and releases an excited electron.

$$\text{Chlorophyll} \xrightarrow{\text{Light energy}} \text{Chlorophyll 'a'} + e^-$$
(Reduced chlorophyll) (oxidized chlorophyll)

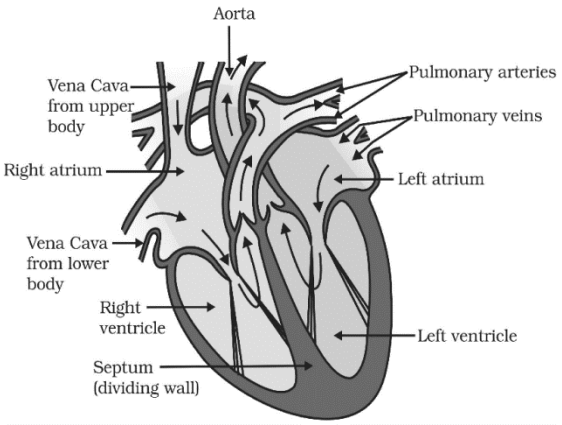
(ii) The excited electron then gets passed on from one electron acceptor to another in a series of oxidation-reduction reactions. This electron- flow is coupled to the formation of energy rich compounds that are used in dark reaction. This process also results in photolysis of water.

$$H_2O \rightleftharpoons 2e^- + \tfrac{1}{2} O_2 + 2H^+$$

This step results in conversion of light energy to chemical energy.

24.Draw the diagram of human heart and label the following parts, auricles, ventricles, pulmonary artery, aorta and vena cava.

Ans:



25. Write the differences between photosynthesis and respiration.
Ans:

Photosynthesis	Respiration
i. It is anabolic process	i. It is a catabolic process.
ii It converts light energy into chemical energy	ii. It liberates chemical energy that can be used.
iii. It can occur only in day time when light is available.	iii. It occurs all the time in the living cell.
iv. It liberates oxygen and uses carbon dioxide.	iv. It requires oxygen and releases carbon dioxide.

26. Elimination of waste products is completely different in case of plants. Justify the statement.

Ans: Elimination of waste products is completely different in case of plants. It can be summarised as:

(i) The excess water from plant is removed by transpiration.

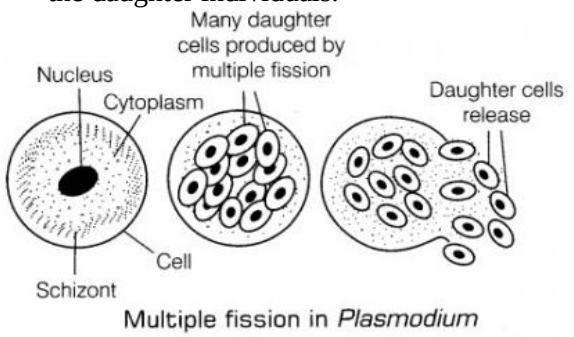
(ii) Some waste products can be stored within dead permanent tissues such as heart wood or barks of trees.

(iii) Some waste products may be stored in some plant like leaves, seeds and flowers that fall off.

(iv) Some waste products are stored as resins and gums in special type of tissues, e.g. resin ducts in old xylem of pine trees store resin.

27.Explain multiple fission in lasmodium with a diagram.

Ans: Plasmodium divide into many daughter cells simultaneously, this type of fission is called multiple fission. First the nucleus divides repeatedly to form a number of daughter nuclei. Then cytoplasm gathers each nucleus to form daughter cells. The parent cell or cyst bursts open and releases the daughter individuals.



Multiple fission in *Plasmodium*

28. (a) Define gene.
(b) State Mendel's Laws of Inheritance.

Ans: (a)Gene is a segment of DNA which is responsible for the inheritance of a character rom one generation to another.

(b)Mendel's Laws of Inheritance are:

(i) Law of Dominance: When a pair of contrasting characters are present together, only one is able to express itself in the F_1 generation while others remain suppressed.

(ii) Law of Segregation: According to this law when a pair of allele comes together in a hybrid the members of the pair (alleles) stay together without mixing and separate (segregate) when hybrid forms.

(iii) Law of Independent Assortment: When two or more pairs of contrasting characters are brought together in an individual, the allele of one character separates independently.

29.(a) Define fossils.
(b) Why the wings of bird and wings of bat considered analogous organs?

Ans: (a) Fossils are the remains or traces and impressions of any organism that lived in the geological past.

(b) The organs which look alike and perform same functions but are quite different in basic structure and embryonic origin in different species are called analogous organs. For example, the wing of a bat and the wing of a bird are analogous organs because the wings of a bat are skin fold between the elongated fingers, while the wings of a bird are feathery covering all along the arms. Though the basic design of these wings are completely different, they look similar because they have a common function i.e. flying.

30.(a) Define plant hormones.

(b) Mention the role of auxins, gibberellins and abscisic acid.

Ans: (a) Chemical substances present in plants which bring about control and coordination of various activities in them are called plant hormones or phytohormones.

(b) Auxins: It promotes cell enlargement and cell differentiation in plants.

Gibberellins: It promotes the growth in stems, leaves, flowering and also increases the size and number of fruits.

Abscisic acid: It promotes the dormancy in seeds and buds.

******

Sample Question Paper

(SSLC Examination 2024-25)

Science & Technology

(Old Course)

by

Meghalaya Board of School Education (MBOSE)

A. 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**

Sample Question Paper

Science & Technology
(Old Course)
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 58 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 70 (seventy) words each.

Section- A

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

1. We can see in a room which is not directly illuminated by sunlight due to:
   (A). Regular reflection
   (B). Refraction
   (C). Irregular reflection
   (D). None of these

2. A ray of light incident perpendicularly on a glass slab:
   (A) Bends towards the normal
   (B) Bends away from the normal
   (C) Moves along the normal
   (D) None of these

3. The blind spot on retina has:
   (A) Few nerve endings
   (B) High concentration of nerve endings
   (C) No nerve endings
   (D) None of these

4. The focal length of the eye lens increases when eye muscles:
   (A) Are relaxed and lens become thinner
   (B) Contract and lens becomes thicker
   (C) Are relaxed and lens become thicker
   (D) Contract and lens become thinner

5. At noon the sun appears white as
   (A) light is least scattered
   (B) all the colours of the white light are scattered away
   (C) blue colour is scattered the most
   (D) red colour is scattered the most

6. A body is said to have one coulomb electric charge, if compared to protons, it has in excess or in deficit:
   (A) 6.25×10^8 electron (B) 2.65×10^8 electron
   (C) 6.25×10^{18} electron
   (D) 6.25×10^{19} electron

7. The work done in moving unit positive charge across two points in an electric circuit is measure of?
   (A) Potential difference
   (B) Current
   (C) Resistance
   (D) Galvanometer

8. Resistance of the wire is given by
   (A) R = V/I
   (B) R = I/V
   (C) R = IV
   (D) $R = 1^2 V$

9. The strength of magnetic field inside a long current carrying straight solenoid is :
   (A) more at the end than a centre
   (B) minimum in the middle
   (C) same at all points
   (D) found to increase from end to other

10. What is principle behind the working of an electric motor?
   (A) Magnetic effect of current
   (B) Heating effect of current
   (C) Chemical effect of current
   (D) Electrostatics

11. Which one amongst the following is a complete balanced equation?
   (A) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3(l) + 3H_2(g)$
   (B) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3(g) + 3H_2(g)$
   (C) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3(aq) + 3H_2(g)$
   (D) $2Al(s) + 3H_2SO_4(aq) \rightarrow Al_2(S0_4)_3(aq) + 3H_2(g) + \Delta H$

12. Which of the following is (are) double displacement reaction(s)?
   (A) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$
   (B) $Na_2SO_4 + BaCl_2 \rightarrow BaS0_4 + 2NaCl$
   (C) $C + O_2 \rightarrow CO_2$
   (D) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

13. An aqueous solution turns red litmus blue. Excess addition of which of the following solutions would reverse the change?
   (A) Baking powder
   (B) Lime
   (C) Ammonium hydroxide
   (D) Hydrochloric acid

14. Which one of the following is not a neutral salt?
   (A) NaCl
   (B) $NaNO_3$
   (C) Na_2SO_4
   (D) Na_2CO_3

15. Which of the following statements is not correct?
    (A) All metal carbonates react with an acid to give salt, water and carbon dioxide.
    (B) All metal oxides react with water to give salt and acid.
    (C) Some metals react with acid to give salt and hydrogen.
    (D) Some non-metal oxides react with water to form an acid.

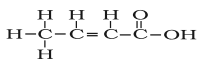
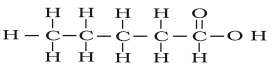
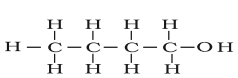
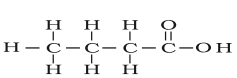
16. The conversion of metal oxide into metal is called
    (A) Froth floatation
    (B) Calcination
    (C) Roasting
    (D) Reduction

17. Long form of Periodic Table was reconstructed by
    (A) Moseley
    (B) Niels Bohr
    (C) J. J. Thomson
    (D) Rutherford

18. What is the other name for Group 18 elements?
    (A) Noble gases
    (B) Alkali metals
    (C) Alkaline earth metals
    (D) Halogens

19. Buckminsterfullerene is an allotropic form of
    (A) Phosphorus
    (B) sulphur
    (C) carbon
    (D) tin

20. The correct structural formula of butanoic acid is

(A) 
(B) 
(C) 
(D) 

21. Plants store carbohydrates in the form of
    (A) Glycogen.
    (B) Starch.
    (C) Glucose.
    (D) Protein

22. The part of the respiratory tract supported by rings of cartilage to ensure air passage does not collapse is
    (A)Trachea.
    (B) Nasal passage.
    (C)Pharynx.
    (D) Nose

23. Vena cava are
    (A) large veins that carry oxygenated blood.
    (B) large veins that carry deoxygenated blood.
    (C) large arteries that carry oxygenated blood.
    (D) large arteries that carry deoxygenated blood.

24. Which of the following is the largest part of the brain?
    (A) Cerebrum.
    (B) Cerebellum.
    (C) Medulla.
    (D) Pons

25. Which of the following is an example of reflex action
    (A) Running a race.
    (B) Climbing a tree.
    (C) Removal of hand on touching a hot object.
    (D)Eating a fruit

26. Dwarfism results due to
    (A) Excess secretion of thyroxine
    (B) Less secretion of growth hormone
    (C) Less of secretion of adrenaline hormone
    (D) Excess secretion of growth hormone

27. "Reproduction is not an essential process for the survival of an individual. But it is important for -
    (i) Continuation of life
    (ii) Strength of life
    (iii) Perpetuation of Species
    (iv) Maintenance of cellular machinery
    (A) (i)and (ii)
    (B) (i), (iii) and (iv)
    (C) (i) and (iii)
    (D) (iii) and (iv)

28. The mature ovary develops into a
    (A) Seed
    (B) Fruit
    (C) Stamen
    (D) Pistil

29. Which of the following is an inherited trait?
    (A) Reduction in the weight of an organism due to starvation.
    (B) Removal of tail in mice by surgery.
    (C) Type of earlobe.
    (D) Development of muscles in athletes.

30. Random change in frequency of alleles in a population over successive generation due to error during DNA copying called
    (A) Acquired trait
    (B) Inherited trait
    (C) Genetics
    (D) Genetic drift

Section-B

Very Short Answer Questions: Answer **any 10 (ten)**. (2x10=20 marks)

31. What is an inverted image and a laterally inverted image?
32. What do you understand by the term myopic eye? How can it be corrected?
33. What is an electric motor? State the principle of an electric motor.
34. What is an electromagnet? Give two practical uses of electromagnets.
35. What do you understand by the term Series Circuit? Write an expression for the total resistance R when resistor r_1, r_2 and r_3, are connected in series.
36. Define the term, Salt. What do you mean by family of salts?
37. What is reducing agent? Give example.
38. Define the term 'alloy.' Write two advantages of making alloys.
39. What are isomers? Write the structural formula of two isomers of butane
40. State Mendeleev's periodic law. State one limitation of Mendeleev's classification.
41. Name the four major chambers of the human heart.
42. What is reflex action? Give two examples
43. What are sexually transmitted disease? Name two such diseases.
44. What a Pollination? Name two types of Pollination.

Section- C

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

45. Define electric current and write its SI unit.An electric bulb draws a current of 0.2A when the voltage is 220V.Calculate the amountof electric charge flowing through it in one hour.

46. State Ohm's law.Give the factors of resistance of a wire on which it depends.
47. What do you understand by the term earthing?How does earthing protect the user from getting an electric shock?

48. During the extraction of metals, electrolytic refining is used to obtain pure metals. Which material will be used as anode and cathode for refining of copper in this process? Suggest a suitable electrolyte.What is anode mud?

49. Name the raw materials required to manufacture Baking Soda.Write the Overall equation involved in the manufacture of Baking Soda. Write down two characteristics of baking soda

50. What happens when Ethanol and excess Concentrated Sulphuric acid are mixed? Write the chemical equation for the reaction. What is the function of sulphuric acid in this reaction?

51. Define Respiration. Give reasons for the following. (i) The lung alveoli are covered with blood capillaries; and (ii) The walls of trachea is supported by cartilage rings.

52. State Darwin's theory of natural selection.

53. Explain Mendel's law of dominance.

Section-D

Long Answer Questions: Answer **any 3(three)**
(3x4=12 marks)

54. What do you understand by the term parallel Circuit. Given the three characteristics of a parallel circuit.
55. How can the power of an electric motor be increased? Explain with any four point.
56. You are given Calcium hydroxide and chlorine, how will you prepare bleaching powder? Mention two of its uses.

57. Why there is a necessity for the Classification of elements? Give three reasons?What are groups and periods in the periodic table?
58. Write a note on the events which occur during light reaction of photo synthesis?

*** End of the Question Paper ***