

**2023**  
**BIOLOGY**  
**( Theory )**

*Full Marks : 70*

*Time : 3 hours*

*General Instructions :*

*This question paper consists of 5 (five) sections:*

- (i) Section A consists of two parts A<sub>1</sub> and A<sub>2</sub>.  
 A<sub>1</sub> consists of 5 (five) questions (Q1 – Q5) which are multiple choice questions, of one mark each; should be answered together in one place.  
 A<sub>2</sub> consists of 5 (five) questions (Q6 – Q10) of one mark each, to be answered in one word or one sentence.
- (ii) Section B consists of 7 (seven) questions (Q11 to Q17) of two marks; to be answered in approximately 20 – 30 words each.
- (iii) Section C consists of 9 (nine) questions (Q18 – Q26) of three marks each to be answered in 30 – 50 words each.
- (iv) Section D consists of 1 (one) question (Q27) of 4 marks, to be answered in approximately 70 – 100 words.
- (v) Section E consists of 3 (three) questions (Q28 to Q30) of 5 marks each, to be answered in approximately 80 – 120 words.

SECTION – A<sub>1</sub>

*Choose and write the correct answer :*

$1 \times 5 = 5$

1. Which of the following is a modified root
  - (a) Potato
  - (b) Sweet potato
  - (c) Ginger
  - (d) Onion
2. Water vascular system is present in animals belonging to phylum
  - (a) Arthropoda
  - (b) Annelida
  - (c) Mollusca
  - (d) Echinodermata
3. In Australian acacia, the leaves are modified into
  - (a) Spines
  - (b) Tendrils
  - (c) Swollen, green petiole for synthesis of food.
  - (d) Pitcher.

( 3 )

4. In which cell organelles synthesis of protein takes place

- (a) Golgi complex
- (b) Ribosomes
- (c) Mitochondria
- (d) Plastids

5. The hormone secreted by pineal gland is

- (a) Melanin
- (b) Melatonin
- (c) Melanocytes
- (d) Calcitonin.

SECTION – A<sub>2</sub>

( Very short answer )

1 × 5 = 5

6. Where is the hunger centre located in the human brain? 1

7. What are pneumatophores? 1

8. Name the end product of Glycolysis. 1

9. Which hormone acts as a stress hormone? 1

10. Name the protein-rich layer found in Euglenoids. 1

( 4 )

SECTION – B

( Short answer – I )

2 × 7 = 14

11. Why are bryophytes called as “Amphibians” of the plant kingdom? 2

Or

Define Binomial Nomenclature. Give one example.

1 + 1 = 2

12. Why are Deuteromycetes called as “Imperfect fungi”? 2

13. What are viruses? Who discovered virus? 1 + 1 = 2

14. Draw a labelled diagram of a human heart. 2

15. Define biomacromolecules. Give an example. 1 + 1 = 2

16. State the “Law of Limiting Factors”. 2

17. Name the protective covering of the brain. 2

Or

Old people usually suffer from inflamed and stiff joints.

What is this condition called? State the reasons for the symptoms.

1 + 1 = 2

( 5 )

SECTION — C  
( Short answer – II )                      3 × 9 = 27

- 18.** On what criteria is the five kingdom classification of organisms based?                      3

*Or*

Mention the important characteristics of Gymnosperms.                      3

- 19.** Describe the structure of mitochondria with the help of a diagram.                      2 + 1 = 3

- 20.** Differentiate between plant cells and animal cells.                      3

- 21.** Why photorespiration does not take place in C<sub>4</sub> plants? Explain.                      3

- 22.** Explain the mechanism of enzyme action.                      3

- 23.** Briefly describe the phases of growth with the help of a growth curve.                      2 + 1 = 3

*Or*

Define inflorescence. Differentiate between the racemose and cymose type of inflorescence.                      1 + 2 = 3

( 6 )

- 24.** Give the importance of Liver, Lungs and Skin in excretion.                      3

- 25.** Explain the mechanism of coagulation of blood.                      3

- 26.** Draw a labelled diagram of location of Endocrine glands in human body.                      3

*Or*

Why Pituitary gland is called as “Master gland”?                      3

SECTION – D

- 27.** Describe the mechanism of Urine formation in humans.                      1 + 3 = 4

*Or*

Describe the different types of phyllotaxy with suitable diagrams.                      3 + 1 = 4

SECTION – E

( Long answer type )

- 28.** Explain conduction of nerve impulse along a nerve fibre.                      5

*Or*

Draw and explain the Tricarboxylic acid cycle (Kreb's cycle)                      1 + 4 = 5

( 7 )

- 29.** Describe the process of digestion in Frogs with the help of a diagram.  $4 + 1 = 5$

*Or*

Define muscle. Name the different type of muscles based on their location. Differentiate between straited muscle and Non-straited muscle.  $1 + 1 + 3 = 5$

- 30.** Define mitosis. Describe the different phases of mitosis with well labelled diagrams.  $\frac{1}{2} + 2\frac{1}{2} + 2 = 5$

*Or*

With a labelled diagram describe the internal structures of a dorsiventral leaf.  $1 + 4 = 5$

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