

**2026**

**BIOLOGY**

**(Theory)**

**Full Marks : 70**

**Pass Marks : 21**

**Time : Three hours**

*All the questions are compulsory.*

*The figures in the right margin indicate full marks for the questions.*

*For Question Nos. 1 to 8 select the most appropriate one from the given alternatives A, B, C and D and rewrite the same.*

1. The Kingdom that is common to unicellular animals and plants is – 1  
(A) Monera (B) Plantae  
(C) Protista (D) Fungi
  
2. The waxy material deposited in the casparian strip of the endodermis is – 1  
(A) Pectin (B) Suberin  
(C) Lignin (D) Cellulose

P.T.O.

3. The single membrane - bound cell organelle is – 1
- (A) Lysosome (B) Ribosome  
(C) Mitochondria (D) Plastid
4. Which one of the following groups of animals is bilaterally symmetrical and triploblastic? 1
- (A) Coelenterates (B) Ctenophores  
(C) Sponges (D) Aschelminthes
5. Simple leaves are different from compound leaves in presence of – 1
- (A) Serrated margins (B) Stipules at the base  
(C) Reticulate venation (D) Single leaf blade
6. Which one of the following characteristics of chloroplasts constitutes to their semi-autonomy? 1
- (A) Function of secretion (B) Ability to synthesize protein  
(C) Presence of lysosome (D) Role of cellular respiration
7. RuBisCO is required in a very high concentration for photosynthesis because – 1
- (A) It acts as an oxygenase (B) It is degraded very rapidly  
(C) It is very slow acting enzyme (D) It catalyses a reversible reaction

8. Which one of the following proteins is involved in coagulation of blood? 1

- (A) Albumin (B) Globulin  
(C) Serum (D) Fibrinogen

*Question Nos. 9 and 10 consist of two statements each, printed as Assertion and Reason. While answering these questions, select the most appropriate one from the given alternatives A, B, C and D and rewrite the same:*

- (A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.  
(B) Both Assertion and Reason are true but Reason is not the correct explanation of the Assertion.  
(C) Assertion is true but Reason is false.  
(D) Assertion is false but Reason is true.

9. Assertion : In dicot stem, vascular bundles are open type. 1

Reason : Dicot stem bears cambium in the vascular bundles.

10. Assertion : Series of reactions in TCA cycle takes place in mitochondria. 1

Reason : Mitochondrial envelope contains all the respiratory enzymes required for respiratory reactions.

*Question Nos. 11 to 17 are very short answer type questions carrying 1 mark each:*

11. What is aestivation? 1
12. Mention the chemical nature of plasma membrane of a eukaryotic cell. 1
13. Why is the placentation in tomato said to be axile? 1
14. How is co-enzyme different from co-factor? 1
15. Why is abscisic acid called stress hormone in plants? 1
16. "Frogs exhibit a dual respiratory system". Justify. 1
17. "Plants growth is generally indeterminate". Comment. 1

*Question Nos. 18 to 27 are short answer type-II questions carrying 2 marks each:*

18. What is electrocardiogram? Write its significance. 2
19. How does the study of the nature of coelom contribute to animal classification? 2
20. Give two points of difference between cymose and racemose inflorescence. 2
21. Why do some cells enter the  $G_0$  phase during cell cycle and what triggers this decision? 2
22. How does the structure of a myelinated nerve fibre contribute to its faster conduction velocity compared to a non-myelinated nerve fibre? 2
23. In mango and coconut, the fruit is known as drupe. Give reason. 2

24. "Telophase is the reverse of prophase". Justify. 2
25. What would happen if tubular reabsorption fails during urine formation? 2
26. Draw a neat diagram of L.S. of a monocotyledonous seed (maize) and label scutellum. 2
27. Draw a neat diagram of L.S. of a mitochondrion and label crista. 2

*Question Nos. 28 to 33 are short answer type-I questions carrying 3 marks each:*

28. What is oxidative phosphorylation? Name the enzyme involved in this process and its location. 3
29. Both gymnosperms and angiosperms bear seeds, then why are they classified separately? 3
30. Explain how ATP synthesis during light reaction of photosynthesis is a chemiosmotic phenomenon. 3
31. Differentiate between blood and lymph by giving three points. 3

*Or*

Give three points of difference between cerebrum and cerebellum.

32. "Even though a very few cells in  $C_4$  plants carry out the biosynthetic calvin pathway, yet they are highly productive". Justify. 3

*Or*

"The role of ethylene is both positive and negative". Analyse.

*Question No. 33 is a case study based question carrying 3 marks :*

33. An old patient with end-stage renal disease is undergoing hemodialysis treatment. He has been experiencing fatigue, swelling and shortness of breath.

(a) What is the primary purpose of hemodialysis? 1

(b) How does the artificial kidney machine remove waste products from the patient's blood? 2

*Or*

A 40 yrs. old worker in a manufacturing plant presents with symptoms of wheezing, cough and shortness of breath that worsen during work shifts.

(a) What is the likely cause of the old worker's symptoms? 1

(b) What would be the primary treatment and preventive strategies of the worker? 2

*Question Nos. 34 to 36 are essay type questions carrying 5 marks each :*

34. Explain the key events that occurred during sub-stages of prophase - I in meiosis. 5

*Or*

Explain the basis of enzyme classification and provide examples to illustrate how different types of enzymes catalyze specific reactions.

35. Differentiate between glycolysis and Krebs's cycle by giving five points. 5

*Or*

Give five points of difference between  $C_3$  plants and  $C_4$  plants.

36. "Hypothalamus is the super master endocrine gland in human body". Justify. 5

*Or*

"Cardiac muscle exhibits a blending characteristics of both skeletal and visceral muscles". Analyse.

---