

2021

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 4 select the most appropriate one from the given alternatives A, B, C and D and rewrite the same.

1. Genus represents – 1
 - A. An individual plant or animal.
 - B. A collection of plants and animals
 - C. A collection of closely related species
 - D. A collection of closely related family

2. The epithelial cells of trachea are – 1
 - A. Squamous
 - B. Columnar
 - C. Ciliated
 - D. Cuboidal

P.T.O.

3. Which of the following is an essential amino acid? 1
- A. Serine
 - B. Tryptophan
 - C. Proline
 - D. Glycine
4. With reference to pituitary gland, which one of the following is true? 1
- A. Neurohypophysis secretes TSH and STH
 - B. Neurohypophysis secretes MSH
 - C. Adenohypophysis secretes Vasopressin and Oxytocin
 - D. Pars intermedia secretes MSH

Question Nos. 5 to 14 are very short answer type questions carrying 1 mark each.

5. Define Cytotaxonomy. 1
6. Why are sponges included in the phylum porifera? 1
7. What is staminode? 1
8. Name the infolding of plasmalemma in prokaryotic cell below the wall. 1
9. Why is meiosis essential in sexually reproducing organisms? 1
10. "Anaerobic respiration is also called fermentation." Justify in one point. 1
11. Name the fluid filled double membranous layer that surrounds the lungs of human beings. 1
12. Why is oxytocin called birth hormone? 1
13. Why is the axoplasm of a resting axon negatively charged? 1
14. "Vasopressin is also known as antidiuretic hormone". Comment. 1

Question Nos. 15 to 24 are short answer type- II questions carrying 2 marks each.

15. Differentiate between haplontic and diplontic life cycle by giving one example in each. 2

16. "*Ornithorhynchus* is considered as an exceptional mammal". Justify. 2
17. Why are the leaves of cactus plant modified into spines? Give two points. 2
18. "Blood is a connective tissue". Analyse the statement by giving two points. 2
19. Name the two cell organelles also known as semi-autonomous particles. 2
20. How does temperature and pH affect enzyme activity? 2
21. What are the main two steps in aerobic respiration? 2
22. Distinguish between short-day plants and long-day plants by giving two points. 2
23. How does water stress decrease the rate of photosynthesis? 2
24. Why is sino-atrial node called pacemaker of heart? 2

Question Nos. 25 to 31 are short answer type- I questions carrying 3 marks each.

25. Name the body fluid present in cockroach. Mention its components. 3

Or

Give the location of hepatic caecae in cockroach. State their function.

26. Differentiate between smooth muscle tissue and cardiac muscle tissue by giving three points. 3
27. State three points of difference between cilia and flagella. 3

Or

Based on the position of centromere name the types of chromosomes.

28. Why is abscisic acid also known as stress hormone? 3

Or

Why are C_4 plants special? Give *three* points.

29. "Aerobic respiration is more efficient than anaerobic respiration." Comment on the above statement. 3

30. Why are capillaries known as exchange vessels? Give three points. 3

Or

How do myelinated nerve fibres differ from non-myelinated fibres? Give three points.

31. Draw a neat diagram of the Human Urinary system and label the following: 3

(i) Dorsal aorta

(ii) Kidney

(iii) Urinary bladder

Question Nos. 32 to 34 are essay type questions carrying 5 marks each.

32. Distinguish between Mitosis and Meiosis by giving five points. 5

Or

Differentiate between DNA and RNA by giving five points.

33. What are plant growth regulators? Mention four different chemical natures of them with examples. 5

Or

Define Seed dormancy. Mention three causes for seed dormancy.

34. "Pancreas acts as both exocrine and endocrine gland." Comment on the statement by giving suitable points." 5

Or

"Other than the kidneys some other organs also help in excretion". Justify the above statement.