2020

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

1. How many times of mitotic division will take place to produce 512 cells from a single parent cell ? 1

   A. 8

   B. 158

   C. 256

   D. 512

2. Mass flow hypothesis explains the process of 1

   A. Transpiration

   B. Translocation of solutes

   C. Ascent of sap

   D. Root pressure

3. Which one of the following is infectious particles without nucleic acid? 1

A. Virus

B. Viroid

C. Virion

D. Prions

4. What will happen to a person, if one kidney is removed ? 1

A. He will die

B. There will be no urination

C. The person will survive and remain normal

D. Urea will go on accumulation to his blood

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

5. What is meant by plasmogamy? 1

6. Define uremia. 1

7. Why is classification necessary in the study of living organisms? 1

8. Explain the importance of zinc in some enzymes. 1

9. How porins help in diffusion ? 1

10. What is the difference between skeletal muscle and smooth muscle? 1

11. Give one point of difference between pectoral and pelvic girdles. 1

12. Cut a transverse section of a young stem of a plant and study it under the dissecting microscope.

How would you ascertain whether it is a monocot stem or a dicot stem? Give one reason. 1

13. Why ATP (adenosine triphosphate) is known as energy currency in living system ? 1

14. Explain why respiration in organisms is known as cellular respiration ? 1

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

15. Mention two economic importance of the family Fabaceae. 2

16. What are the two key features of metaphase in mitosis? 2

17. Enumerate two similarities between Aves and Mammalia. 2

18. Why are the roots modified? Explain with a suitable example. 2

19. Identify two significance of meiosis in sexually reproducing organisms. 2

20. Why root pressure only provide a modest push in the over all process of water transportation? 2

21. Write two points of difference between photoperiodism and vernalisation. 2

22. In what way hypothalamus differs from thalamus? 2

23. Explain why the bryophytes are known as the amphibians of the plant kingdom. 2

24. Analyse the role of Islet of Lengerhans in maintaining sugar level in human body. 2

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

25. Define aerobic respiration. Describe the two crucial events in aerobic respiration. 3

26. What is the diaphragm of human body? Mention its role in breathing. 3

27. State three points of difference between C_3 and C_4 plants in regard to CO_2 fixation. 3

28. By the study of abdomen how you can identify a female cockroach ? Give three points. 3

29. Why do lipids, whose molecular weight do not exceed 800 Da, come under macromolecular fraction ? 3

30. Bile juice contains no digestive enzyme, yet it is important in digestion. Give reasons. 3

31. Draw a diagram of an open stomata and label subsidiary cells, chloroplast, guard cells and stomatal pore. 3

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

32. Illustrate five points of difference between Prokaryotic and Eukaryotic cells. 5

33. Identify five functions of blood in human body. 5

34. Predict the different roles played by Phosphorous, Potassium, Calcium, Magnesium and Sulphur in plants. 5

OR

"Transpiration is a necessary evil". Comment.