2022

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. The embryonic stage that gets implanted in the uterine wall of human female is –   1

    A. Zygote

    B. Morula

    C. Blastula

    D. Gastrula

2. Which of the following gene produced repressor protein ?   1

    A. Regulator gene

    B. Operator gene

    C. Structural gene

    D. Promoter gene

P.T.O.

3. The step of cutting separated bands of DNA and extraction from the gel piece is called –   1

    A. Probe

    B. Plasmid

    C. Elution

    D. Electrophoresis

4. In population interactions Amensalism is indicated by –   1

    A. +, +

    B. –, 0

    C. –, +

    D. –, –

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

5. Define gemmules.   1

6. Why are human testes located outside the abdominal cavity ?   1

7. Banana is considered a good example of parthenocarpy. Give reason.   1

8. Why is thalassemia known as Mendelian disorder ?   1

9. Divergent evolution leads to homologous structures. Justify in one point.   1

10. Name the bacteria that bring about decomposition of sewage.   1

11. Why is the South Indian sugarcane preferred by agriculturists ?   1

12. Meristem culture in plant tissue culture gives virus free plants. Justify by giving one point.   1

13. What is downstream processing ? 1

14. Mention one advantage for preferring CNG over diesel as automobile fuel. 1

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

15. Differentiate between albuminous and non-albuminous seeds by giving two points.

2

16. State any two functions of histones in DNA packaging. 2

17. How is sex determined in humans ? 2

18. Differentiate between inbreeding and outbreeding by giving two points. 2

19. Why do organic farmers not recommend eradication of insect pests? Support your answer with two points. 2

20. "A vaccine for a particular disease immunise human body against that disease". Justify. 2

21. Why is proinsulin so called ? How is insulin different from it ? 2

22. "Green House Effect is a threat to mankind." Explain. 2

23. Explain any two ways that are responsible for the loss of biodiversity. 2

24. Justify the role of decomposer in the ecosystem by giving two points. 2

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

25. Explain the role of lactose as an inducer in a lac operon. 3

26. A haemophilic male marries a normal female whose father is also haemophilic. Predict the probability of their sons being haemophilic with the help of checker board. 3

27. Differentiate between exonucleases and endonucleases by giving three points. 3

28. "Biotechnology is a boon to medical science." Analyse. 3

29. Explain the term biological magnification. How does biomagnification of DDT affect the bird population in the aquatic food chain ? 3

30. Now-a-days e-wastes have become a major problem in the developing and developed countries. Analyse with a probable solution. 3

31. Draw a neat diagram of a mature embryo sac of an angiosperm and label the following : 3

    (i)   Antipodals

    (ii) Polar nuclei

    (iii) Synergids

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

32. Write five points of differences between wind pollinated flowers and insect pollinated flowers. 5

OR

Give any five contraceptive devices with their functions that can be used by women for family planning. 5

33. "Genetic code is said to be universal, degenerate and unambiguous." Analyse. 5

OR

"Industrial melanism support Darwin's theory of natural selection." Justify. 5

34. Distinguish between active and passive immunity by giving five points. 5

OR

Differentiate between the primary sewage treatment and secondary sewage treatment by giving five points. 5

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