

2016
BIOLOGY
(Theory)

Full Marks : 70

Pass Marks : 21

Time : Three Hours and *Fifteen Minutes

(*Fifteen minutes are given as extra time for reading questions)

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. Formation of embryo directly from nucellus and integument is 1
A. Adventitive polyembryony
B. Apospory
C. Apogamy
D. Apomixis
2. Placenta in human beings is formed by 1
A. Amnion
B. Chorion
C. Allantios
D. Allantois, Chorion and Uterine wall

P.T.O.

3. HIV attacks which of the following? 1
A. B cells
B. T cells
C. Antigen presenting cells
D. T helper cells
4. VAM is important for 1
A. Breaking of dormancy
B. Phosphate nutrition
C. Water uptake
D. Retarding flowering

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

5. Who coined the term gene? 1
6. Define pedigree analysis. 1
7. What is the cause of Klinefelter's syndrome? 1
8. Name the type of cells that produce antibodies. 1
9. What is an anaphylaxis? 1
10. Name a popular recent technique, which is used for detecting the presence of pathogen/virus in an organism. 1
11. What are biopatents? 1

12. Give *one* function of aerenchyma in aquatic plants. 1
13. Define food web. 1
14. What does J-shaped growth curve of a population indicate? 1

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

15. Draw a neat diagram of porogamy mode of entry of pollen tube into the ovule and label micropyle and pollen tube. 2
16. Draw a neat diagram of a mammalian spermatozoon and label acrosome and mitochondrial spiral. 2
17. Explain why the sons of a haemophilic father never suffer from this trait? 2
18. Define DNA finger printing. Give *two* examples of its application. 2
19. List *four* objectives of biofortification. 2
20. Explain in brief the role of animal husbandry in human welfare. 2
21. List the essential features to be present in a cloning vehicles. 2
22. Write *four* strategies for reducing global warming. 2
23. List *four* criteria used for determining a 'Hot Spot'. 2
24. State *two* differences between afforestation and agroforestry. 2

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

25. Mention *three* contrivances to ensure self pollination in flowers. 3
26. List *six* events leading to speciation. 3
27. 'Mutation affect protein structure and function'. Justify the statement by giving *three* points. 3
28. Explain why the symptoms of malaria not appear immediately after the entry of sporozoites into the human body when bitten by female *Anopheles*? 3
29. Point out *three* differences between callus culture and suspension culture. 3
30. Highlight *any three* advantages of Genetically Modified Crops (GM Crops). 3
31. Write a brief account of genetically engineered insulin. 3

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

32. Briefly describe the stages of spermatogenesis in human male. 5
33. Explain the roles played by cell and molecular biology in solving problem of human ancestry. 5
34. Explain the efforts for the conservation of biodiversity at international level. 5