

2018

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. Entry of pollen tube into the ovula through micropyle is called – 1
 - A. Mesogamy
 - B. Pseudogamy
 - C. Porogamy
 - D. Chalazogamy.

2. Heterosis is – 1
 - A. Hybrid sterility
 - B. Hybrid vigour
 - C. Hybrid breakdown
 - D. Hybrid incompatibility.

P.T.O.

3. Which of the following nonsense codons is called 'ochre' ? 1
- A. AUG
- B. UAG
- C. UGA
- D. UAA.
4. Which one of the following is the most stable ecosystem ? 1
- A. Mountain
- B. Desert
- C. Forest
- D. Ocean.

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

5. What is the function of trophoblast in human embryo ? 1
6. Define the term hemizygous. 1
7. State the function of cell mediated immune response. 1
8. What is downstream processing ? 1
9. State the main function of RNA interference. 1
10. Why did Urey and Miller not use oxygen as one of the gases in their experiment? 1
11. Why is 'Starter' added to set the milk into curd'? 1
12. How methanogens bring about digestion of food in ruminants ? 1
13. Which component of sunlight causes snow blindness ? 1
14. "Sexual reproduction has biological advantage". Justify the statement by giving one point. 1

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

15. Mention two conditions in which medical termination of pregnancy is advised. 2
16. What is genetic variability? Name any two sources of variation in the gene pool. 2

17. Give two criteria for determining a biodiversity hotspot. 2
18. Why is cross pollination considered to be superior to self pollination? Give two points. 2
19. Why is Human Genome Project called mega project ? Give two points. 2
20. Differentiate between active immunity and passive immunity by giving two points. 2
21. Tourists visiting hill stations are advised to resume normal active life after some days of rest. Explain the statement by giving two points. 2
22. "The use of GM crops leads to the development of certain problems".
Comment on the statement with two suitable reasons. 2
23. Draw a neat diagram of a mature embryo sac of an angiosperm and label the following: 2
- (i) Antipodal cells
 - (ii) Polar nuclei
 - (iii) Synergids.
24. Draw a neat diagram of antibody molecule and label the following: 2
- (i) Light chain
 - (ii) Heavy chain.

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

25. List three characters to show that DNA is a better genetic material than RNA. 3
26. Explain the salient features of unambiguous, universal and degenerate nature of genetic code. 3
27. Why adolescence is the period of high vulnerability to drug abuse and other risk taking behaviours. Explain in three points. 3
28. Explain the three steps involved in polymerase chain reaction. 3
29. Differentiate between phosphorus cycle and carbon cycle by giving three points. 3

30. A patient showed signs of high fever, stomach pain, constipation, headache, loss of appetite but no blood clot in stools. Predict the disease and its pathogen. How does the disease get transmitted? 3
31. "Biotechnology is a boon to medical science". Analyze the above statement by giving three suitable examples. 3

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

32. Give five methods of assisted reproductive technology to help infertile childless couple to have a child. 5
33. A test is done to determine the biological father of a child. The child's blood group is 'A'. The mother's blood group is 'B'. The first claimant has a blood group 'O' and the second one has blood group 'AB'. Predict the true biological father of the child with the help of cross. 5
34. Explain biomagnification. How does the biomagnification of toxicants affect the population of fish eating birds in the aquatic food chain? 5