

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. Ovulation occurs under the influence of 1
 - A. progesterone
 - B. estrogen
 - C. follicle stimulating hormone
 - D. luteinising hormone

2. In marine ecosystem, the pyramid of biomass is 1
 - A. inverted
 - B. upright
 - C. linear
 - D. ellipsoidal

P.T.O.

3. Phenotypic and genotypic ratios are similar in 1
- A. segregation
 - B. independent assortment
 - C. incomplete dominance
 - D. epistasis
4. Which is used for synthesising Reverse transcriptase ? 1
- A. mRNA
 - B. rRNA
 - C. cDNA
 - D. chimaric DNA

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

5. What is emasculation ? 1
6. What are carcinogens ? 1
7. Name the cancelled biopatent plant which was patented through US patent and Trademark office in 1997 but originated from India. 1
8. What is hibernation ? 1
9. Why is the oral contraceptive 'Saheli' widely used ? 1
10. Why is self pollination procedure essential among the different progeny hybrids for the selection of new recombinants in plant breeding programme ? 1
11. Why are plasmids used as gene carrier ? 1
12. How did generation of electricity by nuclear energy create serious problems in living organisms ? 1
13. Why do internodal segments of sugarcane fail to propagate vegetatively even with they are in contact with damp soil. 1
14. "Higher species diversity is reported in tropical region". Give reason. 1

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

15. What is pleiotropy ? Give one example of it. 2
16. Write *two* advantages of active immunity. 2
17. Name *two* genetically modified bacteria which are used for the production of improved quality of alcohol. 2
18. What are the *two* basic types of intraspecific competition. 2
19. Differentiate between Directional selection and Disruptive selection. 2
20. How inbreeding depression takes place and how it is to be controlled ? 2
21. Differentiate between Bivoltine and Multivoltine silk moth with *one* example. 2
22. "*Agrobacterium* is a natural genetic engineer of plants." Analyse it with *two* points. 2
23. Draw a neat diagrammatic view of an anatropous ovule and label embryo sac and micropyle. 2
24. Draw a neat diagrammatic structure of a molecular model of DNA proposed by Watson and Crick and label base pairs and deep groove. 2

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

25. Write the advantages of cross pollination. 3
26. What are homologous organs ? Give *one* example each from plant and animal. 3
27. Now-a-days farmers preferred natural predators of pests than chemical pesticides. Support this statement with examples. 3
28. Explain the working mechanism of protoplasm fusion technique. 3

29. How municipal solid waste can be managed to reduce environmental pollution ? 3
30. A haemophilic man marries a woman whose mother was normal but her father was haemophilic. What percentage of children would be there to be haemophilic. Explain it with necessary crossing. 3
31. A person suffered from high fever, weakness, stomach pain, constipation, headache and loss of appetite. Name the probable disease and which type of microorganism is responsible for this disease ? What is the main source of infection of this disease ? 3

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

32. What are the *two* criterias of Biodiversity Hotspots ? Name the *three* Biodiversity Hotspots located in India. 2+3=5
33. Differentiate between asexual and sexual reproduction. 5
34. Explain how Beadle and Tatum put forward the one-gene one-enzyme hypothesis ? 5