

2017

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. The sex determination pattern in honeybee is called 1
 - A. gametogony.
 - B. haplodiploidy.
 - C. female haploidy.
 - D. gametic diploidy.

2. The enzyme present in detergents for removing old stains from cloth is 1
 - A. Pectinase.
 - B. Protease.
 - C. Lipase.
 - D. Streptokinase.

3. The biotechnology for designing of organisms to produce antibiotic is termed as 1
- A. red biotechnology.
 - B. white biotechnology.
 - C. green biotechnology.
 - D. blue biotechnology.
4. Inverted ecological pyramid is the characteristic feature of the pyramid of 1
- A. number in a grassland.
 - B. biomass in forest.
 - C. biomass in aquatic ecosystem.
 - D. energy.

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

5. What is the function of germ pore of a pollen grain? 1
6. Name *two* types of tumors found in a cancer patient. 1
7. Write the names of *two* insects, which are used as biocontrol agents. 1
8. What is a DNA library? 1
9. Illustrate *one* important application of apomictic seed. 1
10. Explain the importance of sex linked genes. 1
11. Write *one* point of difference between Turner's syndrome and Klinefelter's syndrome. 1

12. How congenital diseases differ from acquired diseases ? 1
13. How will you define biopatent ? 1
14. Species richness is not only an indicator of ecosystem health but also of human health. Explain. 1

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

15. Mention the *two* types of chromosomes as described in chromosome theory of sex determination. 2
16. Define the *two* favourable conditions for rearing oak Tasar silkworm in Manipur. 2
17. What is the use of plasmid DNA as vehicle in recombinant DNA technology ? Give *two* points. 2
18. Why vegetative propagation is more favourable in some flowering plants ? Give *two* reasons. 2
19. Illustrate the advantages of using protoplast fusion technique for acquiring new varieties of organisms. 2
20. How the energy of an ecosystem follows the laws of thermodynamics ? 2
21. "Linked genes can not be separated except by crossing over". Comment by giving *two* reasons. 2
22. Why should we conserve our biodiversity ? Give *two* reasons. 2
23. Draw a diagrammatic representation of a fertilized embryo sac and label zygote and primary endosperm nucleus. 2
24. Draw a diagram of *Anabaena* filament and label Heterocyst and Akinete. 2

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

25. Describe *three* characteristic features of disease causing pathogens. 3
26. State the *three* types of age pyramids in population study. 3
27. Why did Mendel choose pea plant for his experiment ? Write *three* points. 3
28. How can the comparative study of morphology and anatomy of different life forms be used as evidences of organic evolution ? 3
29. Explain the advantages of cross-breeding. 3
30. "Increase in better health facility causes population explosion". Justify the statement by giving *three* points. 3
31. After the discovery of PCR technique the modern biotechnology has been revolutionised to each and every aspect. Write *three* points in support of the above statement. 3

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

32. Describe the duct system in the secondary sex organs of male reproductive system. 5
33. Write *five* points of differences between DNA and RNA. 5
34. "The effect of air pollution can be severe". Explain with *five* points. 5