



GENERAL INSTRUCTIONS:

- i) This question paper consists of four parts A, B, C and D. Part D consists of two parts, Section-1 and Section-II.
- ii) All the parts are compulsory.
- iii) Draw the diagrams whenever necessary. Unlabelled diagrams or illustrations do not attract any marks.

Part-A

Answer the following questions in *one* word or *one* sentence each:

10x1=10

1. Why do corn cobs have long tassels?
2. Mention the post fertilization events.
3. What is polygenic inheritance?
4. Define Germplasm collection?
5. Expand ELISA.
6. Name the biggest Dinosaur.
7. 'Saheli', an oral contraceptive pill was developed by which institute?
8. Name the metals (any 2) obtained from e-waste?
9. What is translation unit?
10. Catalytic converters should use unleaded petrol. Justify.

Part-B

Answer any FIVE of the following questions in 3-5 sentences each, wherever applicable: 5x2=10

11. A diploid organism is heterozygous for 4 loci, how many types of gametes can be produced?
12. Draw a neat labelled sketch of sparged tank bioreactors.
13. List 2 contributions of Frederick Sanger.
14. a) Exine wall is highly resistant to acids. Justify.
b) Meiosis and gametogenesis are interlinked. Justify. (1+1)
15. Draw a neat labelled sketch of antibody molecule.
16. Draw any two pedigree symbols mentioning the feature used in the human pedigree analysis.
17. Differentiate between primary and secondary succession.
18. Name the parts of female external genitalia.

Part-C

Answer any FIVE of the following questions in 40-80 words each, wherever applicable: 5x3=15

19. Explain an experiment to determine biochemical characterisation of transforming principle.
20. a) State Gause's Competitive Exclusion Principle.
b) Gause's principle need not be true always. Justify with an example. (1+2)
21. Give the functions of the following glands:
a) Bulbourethral gland b) Prostate gland c) Seminal vesicle.
22. What is Aneuploidy? Down's syndrome and Turner's syndrome are example of aneuploidy. Justify.
23. Differentiate between primary and secondary lymphoid organs. Give 2 examples for each.
24. a) Endosperm is Triploid. Justify.
b) What is apomixes and what is its importance? (1+2)
25. List out any three features of insect resistant plants.
26. a) Expand PAR .
b) Plants are said to be conformers. Justify.
c) Name the 2 Hotspots of India.

Part- D

Section-I

Answer any FOUR of the following questions in 200-250 words each, wherever applicable:

4x5=20

27. a) Explain how genetic material is packed in prokaryotes.
b) State Hardy-Weinberg's principle.
c) What type of sex-determination is found in Drosophila?
28. Explain the process of decomposition of detritus.
29. Explain: a) Sickle cell anaemia b) Haemophilia (2.5+2.5)
30. a) Name the green house gases.
b) How can we control global warming?
c) What is Biomagnification? (2+2+1)
31. a) Draw a neat labelled diagram of grass embryo.
b) Some seeds can stay alive/viable even after 1000's of years. Justify with 2 examples (3+2)
32. Describe the process by which the BOD levels of sewage water can be reduced.

Section-II

Answer any THREE of the following questions in 200-250 words each, wherever applicable:

3x5=15

33. a) Define Allen's rule.
b) Very small animals are rarely found in Polar region. Justify
c) Define Endemism.
d) Draw a neat labelled diagram of a Scrubber. (1+1+1+2)
34. a) . Draw a neat labelled diagram of Mammary glands.
b) What is the function of alveoli in Mammary glands. (4+1)
35. a) Explain one function of the following:
i. Promoter ii. tRNA iii. Exons
b) If the sequence of the one strand of DNA is 5'-ATGCATGCATGCATGC-3', write the sequence of complementary strand giving reasons. (3+2)
36. List out the points that are important for successful Bee keeping.
37. a) Differentiate between food web and food chain.
b) Differentiate between DFC and GFC.
c) Represent species area relationship on the log scale. (1+2+2)
