



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. Define GPP. Give its units.
2. What is Mutation breeding?
3. Define Founder effect.
4. Write the significance of *Propionibacterium sharmanii*.
5. Name the causative organism of the following: a. Amoebiasis b. Filariasis
6. What is polyploidy?
7. A single orange seed shows many embryo of different sizes and shapes. Justify.
8. Define Senescence.
9. What is the function of Leydig's cells?
10. What is a genetic code?

Part-B

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

11. State mutation theory. How is it different from Darwin's concept?
12. State and define attributes of a population.
13. Explain structural gene of Lac Operon..
14. a) What are restriction enzymes?
b) What is their mechanism of action?
15. Show Pedigree representation of autosomal recessive trait.
16. Write a short note on biological control of pests.
17. Briefly explain the fate of generative cell during pollen pistil interaction.
18. Differentiate between:
a) Zoospore and Zygote
b) Spermiogenesis and Spermiation

Part-C

Answer any **FIVE** of the following questions in **40-80 words** each, wherever applicable:

5x3=15

19. Industrial melanism supports Darwin's natural selection. Explain.
20. Name it:
a) Fluid filled cavity in a Follicle.
b) Part of sperm composed of Golgi apparatus secretion.
c) Formation of gametes.
21. What is co-dominance? Explain with reference to blood groups in Human.
22. a) Suggest methods used in treatment of cancer.
b) Differentiate between benign and malignant tumor. (2+1)
23. Gene therapy can be used to correct genetic disorders. Explain.
24. Differentiate between ex-situ and in-situ conservation of biodiversity.
25. a) What are blastomeres?
b) Briefly explain the process of pollination in *Vallisneria*. (1+2)
26. Explain: a) Phenyl ketonuria b) Thalassemia (1.5+1.5)

Part- D
Section-I

Answer any FOUR of the following questions in 200-250 words each, wherever applicable: 4x5=20

27. What is semi-conservative DNA replication? Explain with neat labelled diagram.
28. a) Elaborate on the interactions between organisms where one benefits and other one is harmed.
b) Explain "Rivet popper hypothesis" (3+2)
29. List out various events during menstrual cycle.
30. Draw a neat labelled diagram of Anotropous ovule
31. How does HIV survive in a human body? Explain.
32. Illustrate and explain the production of gobar gas with emphasis on the kind of microbes involved.

Section-II

Answer any THREE of the following questions in 200-250 words each, wherever applicable: 3x5=15

33. Define Ecological succession. Explain the xerac succession with reference to the following terms: Sere, Seral stages, Pioneer and Climax community.
34. How does a new variety of plant get development? Explain in detail.
35. Explain briefly the inheritance of two genes.
36. Draw a neat labelled diagram of human female reproductive system and explain the same.
37. a) How is PCR useful in molecular diagnosis?
b) Write notes on Bt cotton. (2+3)
