



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. What are multiple alleles?
2. "Some animals do not migrate but escape in time to avoid stress". Justify the statement.
3. What is meant by monosporic development of female gametophyte?
4. Name a blood cholesterol lowering agent and its microbial source.
5. What is "Founder effect"?
6. What does MTP stand for?
7. What is Jhum cultivation?
8. Why should a plasmid preferably have a single recognition site?
9. What is variation?
10. Name a multicellular invertebrate which reproduces asexually by budding.

Part-B

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

11. What is biopiracy? Write notes on ethical issues.
12. If the diploid number of chromosomes in an angiospermic plant is 18. What is the number of chromosome in the endosperm and embryo of that plant.
13. (a). State the central dogma of molecular biology.
(b). Who proposed the Central dogma?
14. What is Punnett square? Who developed it?
15. (a) At which stage is the mammalian embryo implanted in the uterus?
(b) How do oral pills help in contraception?
16. (a) India has greater biodiversity than Norway. Justify the statement.
(b) What are Eco-San toilets?
17. Why are both strands of DNA not copied during transcription?
18. Mention the common approaches for treatment of Cancer. Comment on α -interferon is destroying tumor.

Part-C

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

19. (a) Define Infertility.
(b) Elaborate the following abbreviations: 1. RCH programme 2. GIFT 3. ICSI 4. ART (1+2)
20. Show diagrammatic representation of types of natural selection on the different traits and add a note on types of natural selection.
21. Draw a neat labelled diagram of a section of mammalian ovary.
22. List out the characters of Insect/pest resistant plants achieved by plant breeding technique.
23. (a) Define ecological niche.
(b) Distinguished between Euryhaline and Stenohaline.
(c) Name the 4 abiotic factors affecting the life of an organism.
24. Draw a neat labelled diagram of a female gametophyte.
25. Briefly mention the contribution of T.H.Morgan in genetics.
26. What is translation? List two essential roles of ribosomes during translation.

Part- D
Section-I

Answer any FOUR of the following questions in 200-300 words each, wherever applicable: 4x5=20

27. (a) Differentiate between co-evolution and co-existence.
(b) "Khasi & Jaintia Hills are of great ecological importance". Justify.
(c) Draw an age pyramid for stable and declining population. (1+1+3)
28. (a) What is linkage and recombination?
(b) Explain dihybrid cross conducted by Morgan and add a note on percentage of linkage and Recombination. (2+3)
29. Explain the 5 measures to prevent and control alcohol and drug abuse.
30. (a) Draw a neat labelled diagram of pBR322.
(b) Diagrammatically represent recombinant DNA technology. (2+3)
31. (a) How do flowers reward their insect pollinators?
(b) Write a short note on pollen pistil interaction. (2+3)
32. (a) Mention the 2 approaches used while sequencing human genome.
(b) What are the contributions of Frederick Sanger?
(c) Write the steps involved in sequencing human genome. (1+1+3)

Section-II

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

33. (a) What are the causes that lead to Ozone layer depletion?
(b) Explain the Rivet popper hypothesis? (2+3)
34. (a) State Gause's competitive exclusion principle.
(b) How has the Cuscuta plant evolved to be a parasite.
(c) "Ophrys orchid employs sexual deceit". Justify
(d) A predator is said to be prudent. Why?
(e) What is amensalism?

(OR)

Describe the various responses of organisms towards abiotic factors.

35. (a) Draw a neat labelled diagram of sectional view of seminiferous tubules.
(b) Name the type of sugar present in the seminal fluid. (4+1)
36. (a) List out the various methods of Biodiversity conservation. Comment on hot spot.
(b) What is a catalytic converter?
(c) What is CNG?
(d) Name the GHG's. (2+1+1+1)
37. Mention the strategies of reproductive health.
