

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)



Time Allowed: 3 Hours

Maximum Marks: 70

General Instructions

- (i) This question paper contains **26 questions** in five sections. All questions are compulsory.
- (ii) Section A: Questions 1 to 5 are Very Short Answer type questions of 1 mark each.
- (iii) Section B: Questions 6 to 10 are Short Answer type I questions of 2 marks each.
- (iv) Section C: Questions 11 to 22 are Short Answer type II questions of 3 marks each.
- (v) Section D: Question 23 is a Value Based Question of 4 marks.
- (vi) Section E: Questions 24 to 26 are Long Answer type questions of 5 marks each.
- (vii) There is no overall choice. Internal choice is provided in one question of 2 marks, one question of 3 marks and all three questions of 5 marks. Attempt one of the two alternatives in each such question.

Section A

1. What is biopiracy?

2. Suggest a method to ensure an anamnestic response in humans.

3. State the fate of a pair of autosomes during gamete formation.

4. Our government has intentionally imposed strict conditions for M.T.P. in our country. Justify giving a reason.

5. Rearrange the human activities mentioned below as per the order in which they developed after the modern Homo sapiens came into existence during ice age:

(i) Human settlement

(ii) Prehistoric cave art

(iii) Agriculture

Section B

6. Plenty of algal bloom is observed in a pond in your locality.

(a) Write what has caused this bloom and how does it affect the quality of water.

(b) Suggest a preventive measure.

7. How do mycorrhizae help the plants to grow better?

8. Mention the ploidy of the different types of cells present in the female gametophyte of an angiosperm.

9. Describe the structure of a nucleosome.

OR

9. Mention the evolutionary significance of the following organisms:

(a) Shrews

(b) Lobelins

(c) Homo habilis

(d) Homo erectus

10. "Growing spirulina on a large scale is beneficial both environmentally and nutritionally for humans." Justify.

Section C

11. During a fire in an auditorium a large number of assembled guests got burnt beyond recognition. Suggest and describe a modern technique that can help hand over the dead to their relatives.

12. (a) What is inbreeding depression?
(b) Explain the importance of "selection" during inbreeding in cattle.

13. $p^2 + 2pq + q^2 = 1$. Explain this algebraic equation on the basis of Hardy Weinberg's principle.

14. During a medical investigation, an infant was found to possess an extra chromosome 21. Describe the symptoms the child is likely to develop later in the life.

15. Draw a labelled diagrammatic sectional view of a human seminiferous tubule.

16. Parthenocarpy and apomixis have been observed in some plants. Give an example of each. State a similarity and a difference observed between the two processes.

17. Describe how do 'flocs' and 'activated sludge' help in Sewage Treatment.

18. Explain the role(s) of the following in Biotechnology:

- (a) Restriction endonuclease
- (b) Gel - electrophoresis
- (c) Selectable markers in pBR322.

19. Why do lepidopterans die when they feed on Bt cotton plant? Explain how does it happen.

20. Show with the help of a flow chart only, the life cycle of malarial parasite in humans.

21. 'in-situ' conservation can help endangered/threatened species. Justify the statement.

OR

21. Name and describe any three causes of biodiversity losses.

22. Write the steps you would suggest to be undertaken to obtain a foreign-gene-product.

23. Public all over India is very much concerned about the deteriorating air quality in large parts of North India. Alarmed by this situation the Resident's Welfare Association of your locality organized an awareness programme entitled "Bury not burn". They invited you, being a biology student to participate.

(a) How would you justify your arguments that promote burying and discourage burning? (Give two reasons)

(b) With the help of flow charts, one for each practice depict the chain of events that follow.

Section E

24. State and explain the "law of independent assortment" in a typical Mendelian dihybrid cross.

OR

24. (a) How do the observations made during moth collection in pre- and post-industrialized era in England support evolution by Natural Selection?

(b) Explain the phenomenon that is well represented by Darwin's finches other than natural selection.

25. (a) What is an age-pyramid?

(b) Name three representative kinds of age-pyramids for human population and list the characteristics for each one of them.

OR

25. Discuss the role of healthy ecosystem services as a pre-requisite for a wide range of economic, environmental and aesthetic goods and services.

26. (a) A capsicum flower has 240 ovules in its ovary. But, it produces a fruit with only 180 viable seeds. Explain giving a reason that could be responsible for such a result.

(b) Describe the development of an endosperm in a viable seed. Why does endosperm development precede embryo development?

(c) Give an example of an angiosperm seed that has a perisperm. Name the part the perisperm develops from.

OR

26. (a) Where in the fallopian tube does fertilization occur in humans? Describe the development of a fertilized ovum upto implantation.

(b) How is polyspermy prevented in humans?

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