

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 "fitness of an individual" according to Darwin?

2. What is biopiracy?

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

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

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

Section B

6. By taking two examples explain how has bio-fortification helped in improving food quality.

7. 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.

8. How does the application of cyanobacteria help improve agriculture output?

9. In a flowering plant a microspore mother cell produce four male gametophytes while a megaspore mother cell form only one female gametophyte. Explain.

10. Describe the structure of a nucleosome.

OR

10. Mention the evolutionary significance of the following organisms:

(a) Shrews

(b) Lobefins

(c) Homo habilis

(d) Homo erectus

Section C

11. 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.

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

OR

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

13. Differentiate between an annual and a biennial plant. Provide one example of each.

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

15. A criminal blew himself up in a local market when was chased by cops. His face was beyond recognition. Suggest and describe a modern technique that can help establish his identity.

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

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

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

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

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

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

21. (a) What is inbreeding depression?

(b) Explain the importance of "selection" during inbreeding in cattle.

22. A group of youth were having a 'rave party' in an isolated area and was raided by police. Packets of 'smack' and syringes with needles were found littered around.

(a) Why is taking 'smack' considered an abuse?

(b) Write the chemical name of 'smack' and the name of its source plant.

(c) Syringes and needles used by the youth for taking the drug could prove to be very fatal. Why?

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. (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

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

25. Read the statement and answer the questions that follow.

A flower of brinjal has 520 ovules in its ovary. However, it produces a fruit with only 480 viable seeds.

(a) What could have prevented the rest of the 40 ovules from maturing into viable seeds? Explain giving a reason.

(b) Describe the development of a dicot embryo in a viable seed.

(c) Why certain angiospermic seed are albuminous while others are exalbuminous? Explain.

OR

25(a). Name the hormones secreted and write their functions:

(i) by corpus luteum and placenta (any two).

(ii) during Follicular phase and parturition.

OR

25(b). Name the stages in a human female where:

(i) Corpus luteum and placenta co-exist.

(ii) Corpus luteum temporarily ceases to exist.

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

OR

26. (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.

- End of Question Paper -