

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)



Time Allowed: 3 Hours

Maximum Marks: 70

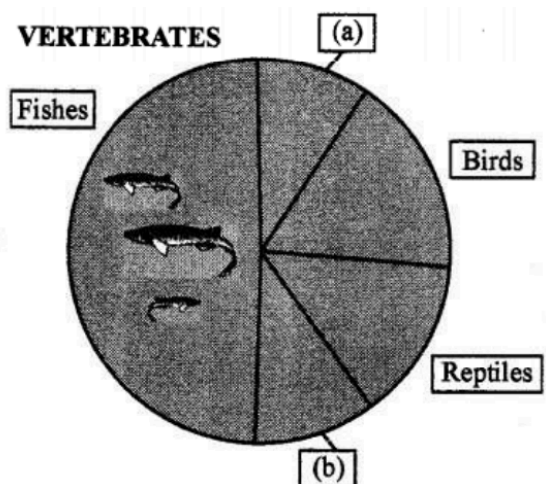
General Instructions

- (i) All questions are compulsory.
- (ii) The question paper consists of four sections: A, B, C and D. Section A contains 8 questions of 1 mark each; Section B contains 10 questions of 2 marks each; Section C contains 9 questions of 3 marks each; and Section D contains 3 questions of 5 marks each.
- (iii) There is no overall choice. An internal choice is provided in one question of 2 marks, one question of 3 marks and all three questions of 5 marks. Attempt only one alternative in such questions.
- (iv) Draw neat and properly labelled diagrams wherever necessary.

Section A

1. State the cause of Accelerated Eutrophication.

2. Identify 'a' and 'b' in the figure given below representing proportionate number of major vertebrate taxa.



3. Give an example of an organism that enters 'diapause' and why.

4. Name the two intermediate hosts which the human liver fluke depends on to complete its life cycle so as to facilitate parasitization of its primary host.

5. Mention the type of host cells suitable for the gene guns to introduce an alien DNA.

6. Name any two types of cells which act as 'Cellular barriers' to provide Innate Immunity in humans.

7. Mention how does DNA polymorphism arise in a population.

8. Write the name of the organism that is referred to as the 'Terror of Bengal'.

Section B

9. Name the organic materials the exine and intine of an angiosperm pollen grains are made up of. Explain the role of exine.

10. (i) Name the scientist who suggested that the genetic code should be made of a combination of three nucleotides. (ii) Explain the basis on which he arrived at this conclusion.

11. How does the gene 'I' control ABO blood groups in humans? Write the effect the gene has on the structure of red blood cells.

OR

11. Write the types of sex-determination mechanisms the following crosses show. Give an example of each type. (i) Female XX with Male XO (ii) Female ZW with Male ZZ.

12. A cross was carried out between two pea plants showing the contrasting traits of height of the plant. The result of the cross showed 50% of parental characters. (i) Work out the cross with the help of a Punnett square. (ii) Name the type of the cross carried out.

13. How can healthy potato plants be obtained from a desired potato variety which is viral infected? Explain.

14. How are 'sticky ends' formed on a DNA strand? Why are they so called?

15. What is Biopiracy? State the initiative taken by the Indian Parliament towards it.

16. Construct an age pyramid which reflects a stable growth status of human population.

17. Apart from being part of the food chain, predators play other important roles. Mention any two such roles supported by examples.

18. Write the role of 'Ori' and 'restriction' site in a cloning vector pBR322.

Section C

19. A colourblind child is born to a normal couple. Work out a cross to show how it is possible. Mention the sex of this child.

OR

19. Mendel published his work on inheritance of characters in 1865, but it remained unrecognized till 1900. Give three reasons for the delay in accepting his work.

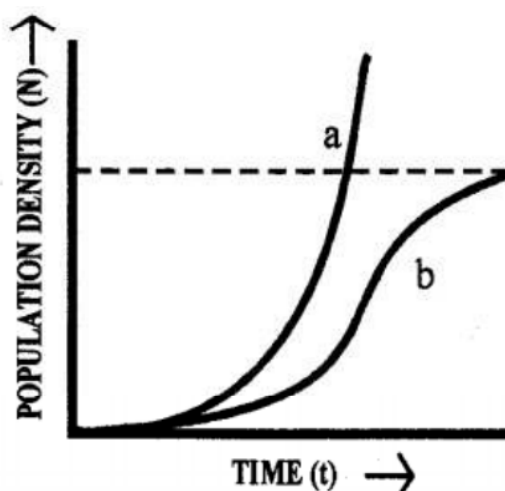
20. A cross between a normal couple resulted in a son who was haemophilic and a normal daughter. In course of time, when the daughter was married to a normal man, to their surprise, the grandson was also haemophilic. (a) Represent this cross in the form of a pedigree chart. Give the genotypes of the daughter and her husband. (b) Write the conclusion you draw of the inheritance pattern of this disease.

21. Women are often blamed for producing female children. Consequently, they are ill treated and ostracized. How will you address this issue scientifically if you were to conduct an awareness programme to highlight the values involved?

22. Draw a labelled diagram of the sectional view of a human seminiferous tubule. (six parts to be labelled)

23. (i) What is primary productivity? Why does it vary in different types of ecosystems? (ii) State the relation between gross and net primary productivity.

24. Study the graph given below and answer the questions that follow:



(i) Write the status of food and space in the curves (a) and (b). (ii) In the absence of predators, which one of the two curves would appropriately depict the prey population? (iii) Time has been shown on X-axis and there is a parallel dotted line above it. Give the significance of this dotted line.

25. How did the process of RNA interference help to control the nematode from infecting roots of tobacco plants? Explain.

26. Why are beehives kept in crop field during flowering period? Name any two crop fields where this is practiced.

27. (a) Name the tropical Sugar cane variety grown in South India. How has it helped in improving the sugar cane quality grown in North India? (b) Identify 'a', 'b' and 'c' in the following table:

No. / Crop	Variety	Insect Pests
1. Brassica	Pusa Gaurav	(a)
2. Flat bean	Pusa Sem 2, Pusa Sem 3	(b)
3. (c)	Pusa Sawani, Pusa A-4	Shoot and fruit borer

Section D

28. (a) Explain the process of DNA replication with the help of a schematic diagram. (b) In which phase of the cell cycle does replication occur in Eukaryotes? What would happen if cell-division is not followed after DNA replication?

OR

28. (a) Explain Darwinian theory of evolution with the help of one suitable example. State the two key concepts of the theory. (b) Mention any three characteristics of Neanderthal man that lived in near east and central Asia.

29. (a) Name the technology that has helped the scientists to propagate on large scale the desired crops in short duration. List the steps carried out to propagate the crops by the said technique. (b) How are somatic hybrids obtained?

OR

29. (a) Cancer is one of the most dreaded diseases of humans. Explain 'Contact inhibition' and 'Metastasis' with respect to the disease. (b) Name the group of genes which have been identified in normal cells that could lead to cancer and how they do so? (c) Name any two techniques which are useful to detect cancers of internal organs. (d) Why are cancer patients often given α -interferon as part of the treatment?

30. Explain the ovarian and uterine events that occur during a menstrual cycle in a human female, under the influence of Pituitary and Ovarian hormones respectively.

OR

30. (a) Why does endosperm development precede embryo development in angiosperm seeds? State the role of endosperm in mature albuminous seeds. (b) Describe with the help of three labelled diagrams the different embryonic stages that include mature embryo of dicot plants.

- End of Question Paper -