



General Instructions:

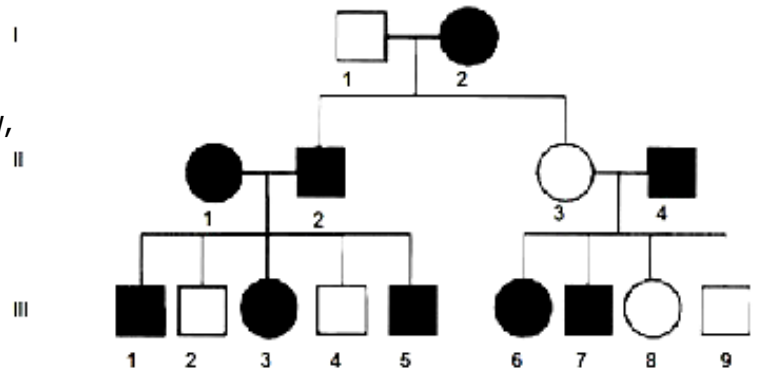
- All questions are compulsory.
- This question paper consists of five Sections A, B, C, D and E. Section A contains 5 questions of one mark each, Section B is of 5 questions of two marks each, and Section C is of 12 questions of three marks each. Section D is of 1 question of four marks and Section E is of 3 questions of five marks each.
- There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks weightage. A student has three questions of 5 marks weightage. A student has to attempt only one of the alternatives in such questions.
- Wherever necessary, the diagrams drawn should be neat and properly labelled.

SECTION - A

- Which of the statements is true of Bryophyllum ?
 - Germinating bud appears from the eyes of the stem tuber.
 - Germinating bud appears from the node of the Rhizome.
 - Germinating bud appears from the notch of the leaf margin.
- Why is the enzyme cellulase used for isolating genetic material from plant cells, but not from animal cells?
- Mention any two uses of cloning vectors in Biotechnology.
- State the Gause's competitive exclusion principle.
- Mention the type of interaction seen in each of the following examples :-
 - Ascaris worms living in the intestine of human.
 - Clown fish living among the tentacles of sea- anemone.

SECTION - B

- Why is ZIFT a boon to childless couples? Explain the procedure.
- Explain the pedigree analysis in the given chart below and find the pattern of inheritance in the following pedigree and write the genotype of III (Third row, individual – 7)



- How do Darwin's finches illustrate adaptive radiation?
- Differentiate between detritivore and decomposer giving an example.
(OR)
'Man can be a primary as well as secondary consumer', justify this statement.
- What is the association between the bumble bee and its favorite orchid Ophrys ?
How would extinction or change of one affect the other?

SECTION - C

- Draw a well labelled diagram of section of ANTHOR showing all its layers and label all the parts..
(OR)
Draw the diagram of human sperm and label any six parts of it.

12. a) Differentiate between Morula and Blastocyst of human beings.
b) Mention the first event that occurs in the secondary oocyte when a sperm enters it.

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13. A couple with normal vision bears a color blind child. Work out a cross to show how it is possible and mention the sex of the child.
14. Describe the process of formation of replication fork during DNA replication. Diagram is essential.
15. What does Hardy-Weinberg's principle of equilibrium indicates? List any two factors that can alter the equilibrium.
16. Trace the life cycle of malarial parasite in the human body when bitten by an infected female anopheles.
17. How is innate immunity different from the immunity that you acquire through vaccines? Describe any two ways by which innate immunity can be accomplished.
18. a) What is the programme called, that is involved in improving the success rate of production of desired hybrid and herd size of cattles?
b) Explain the method used for carrying this programme for cows.
19. How are the following used in Biotechnology:-
a) Plasmid DNA b) Recognition sequences c) Gel electrophoresis
20. Name the genes responsible for making Bt cotton plants resistant to bollworm attack. How do such plants attain resistance against bollworm attack? Explain.
21. Differentiate between mutualism, parasitism and commensalism. Provide one example in detail for each of them.
22. By the end of 2002, the public transport of Delhi switched over to a new fuel. Name the fuel. Why is this fuel considered better? Explain.

SECTION - D

23. A team of research workers observed that the population of fish eating birds is declining every year after the establishment of a pesticide factory nearby five years ago.
a) What may be the possible reason in your opinion? Explain.
b) Can you suggest alternative to pesticide so that factory may be stopped.

SECTION - E

24. a) Draw a labelled diagram of L.S. of Pistil to show the growth of pollen tube reaching the egg apparatus.
b) Pistil of a flower does not accept pollen grains from any plant other than from its own kind. How does it happen? Explain.
c) What is syngamy?

(OR)

Suggest and explain the ART programmes to an infertile couple.

25. a) State the law of Independent Assortment.
b) Using Punnett square, demonstrate the law of Independent Assortment in a dihybrid cross involving two heterozygous parents.

(OR)

Describe the experiment conducted by the scientists Hershey and Chase. Write down the conclusion they arrived after the experiment.

26. Explain the process of water treatment before it can be discharged into the natural water bodies? Why is the treatment essential?

(OR)

Explain the process of replication of a retro virus after it gains entry into the human body.

