

CBSE
Class XII Biology
Sample Paper 4

Time: 3 Hours

Total Marks: 70

General Instructions:

1. All questions are compulsory.
 2. This question paper consists of five sections A, B, C and D. Section **A** contains **5** questions of **one** mark each, Section **B** is of **7** questions of **two** marks each, Section **C** is of **12** questions of **three** marks each and Section **D** is of **3** questions of **five** marks each.
 3. 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 to attempt only one of the alternatives in such questions.
 4. Wherever necessary, the diagrams drawn should be neat and properly labelled.
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Section A

1. What is the main function of the aleurone layer in maize seed? [1]
2. The wild varieties of crops taken for cultivation are low yielding but are still very important to breeders. Which characters are they useful for? [1]
3. Why *Agrobacterium* is called the natural genetic engineer of plants? [1]
4. What is electroporation? [1]
5. Why is the secondary immune response more intense than the primary immune response in humans? [1]

Section B

6. What is rete testis? [2]
7. What is test cross? Give its utility. [2]

OR

The haploid chromosome number for *Drosophila* is 4.

- (a) How many linkage groups should you expect to find in *Drosophila*?
- (b) What can you say about the inheritance of two characters governed by two different genes, one located on chromosome number 3 and the other on chromosome number 4? [2]
8. Give the full name of the human disease in which the body loses its immunity generally towards infection. Mention any two ways by which this disease is transmitted. [2]
9. Describe briefly about the 'origin of replication'. [2]
10. Give one example each of transgenic plant and transgenic animal. [2]
11. Define reproductive isolation. Give its significance. [2]
12. A particular species of wild cat is endangered. In order to save them from extinction, which is a desirable approach in situ or ex situ? Justify your answer. [2]

Section C

13. Explain why meiosis and gametogenesis are always interlinked? [3]
14. What is ovulation? Name the hormones which facilitate this process. [3]

OR

- (a) Name any two copper-releasing IUDs.
- (b) Explain how they act as effective contraceptives in human females.
15. In human beings, blue eye colour is recessive to brown eye colour. A brown-eyed man has a blue-eyed mother.
- (a) What is the genotype of the man and his mother?
- (b) What are the possible genotypes of his father?
- (c) If a man marries a blue-eyed woman, what are the possible genotypes of their offspring? [3]

16. During his studies on sex-linked genes in *Drosophila*, T. H. Morgan found that the F_2 population phenotypic ratios deviated from the expected 9:3:3:1. Explain the conclusion he arrived at? [3]
17. Discuss the concept of IPM. Mention some natural methods of pest control. [3]
18. Briefly describe the life cycle of *Plasmodium*. [3]
19. Make a chart showing a restriction enzyme, the substrate DNA on which it acts, the site at which it cuts DNA and the product it produces. [3]
20. Name and describe the technique which helps in separating the DNA fragments formed by using restriction endonuclease. [3]
21. How are endothermic animals advantageous over other organisms? [3]
22. Write important features of the sedimentary cycle in an ecosystem. [3]
23. List any three preventive strategies to control air pollution. [3]
24. It is established that RNA is the first genetic material. Explain giving three reasons. [3]

Section D

25. Describe briefly the structure of human sperm. [5]
- OR**
- Name the various types of foetal membranes and explain briefly each of them.
26. Who proposed the chromosome theory of inheritance? Give the salient features of this theory. [5]
- OR**
- Describe briefly the process of DNA fingerprinting.
27. Describe the process of decomposition of detritus under the following heads: Fragmentation leaching; catabolism; humification and mineralisation [5]

OR

- (a) What are negative interactions in a biotic community? Give their kinds.
- (b) What is predation? Give an example.
- (c) What is the role of the predator–prey relationship?
- (d) Define cannibalism.