

CBSE
Class XII Biology
Sample Paper 5

Time: 3 Hours

Total Marks: 70

General Instructions:

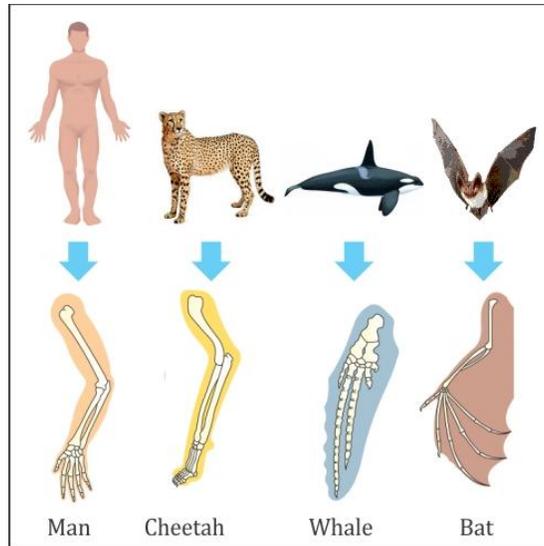
1. All questions are compulsory.
 2. This question paper consists of five sections A, B, C and D. Section **A** contains **5** questions of **one** mark each, Section **B** is of **7** questions of **two** marks each, Section **C** is of **12** questions of **three** marks each and Section **D** is of **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 tubectomy? [1]
2. What role do macrophages play in providing immunity in humans? [1]
3. Name the organism commercially used for the production of single cell protein. [1]
4. What are molecular scissors? [1]
5. Name the genetically engineered human insulin. [1]

Section B

6. What is the utility of the mitochondria in the middle piece of sperm? [2]
7. What are the differences between monohybrid cross and reciprocal cross? [2]
8. (a) What phenomenon is depicted in the given figure? [2]



- (b) What is its evolutionary significance?
9. What is a gene gun? Give its utility. [2]
10. What are the various routes by which transmission of the human immunodeficiency virus takes place? [2]

OR

Which part of the plant is best suited for making virus-free plants and why?

11. Explain any two methods of vectorless gene transfer. [2]
12. The gradual and predictable change in the species composition of a given area is called ecological succession. What do you understand with the pioneer and climax communities in this context? [2]

Section C

13. Describe the post-fertilisation changes in a flower. [3]
14. What is the significance of oogenesis? [3]
15. What are the functions of t-RNA in protein synthesis? [3]
16. In snapdragon, tall (DD) is dominant over dwarf (dd) and red flowers (RR) are incompletely dominant over white flowers (rr), the hybrid being pink flowers. A pure tall white is crossed with a pure dwarf red, and the F₁ is self-fertilised. Give the expected genotype and phenotype in the F₁ and F₂ generations. [3]
17. How are the structural genes inactivated in the lac operon in *E. coli*? Explain. [3]
18. Give the pathogen, mode of transmission, symptoms and prevention of the disease Amoebiasis. [3]
19. Why are chemical pesticides not preferred by farmers in controlling pests? [3]
20. *Agrobacterium tumefaciens* is used in natural genetic engineering of plants. How is it so? [3]
- 21.
- (a) Why are transgenic animals so called?
 - (b) With the help of an example, explain the role of transgenic animals in
 - (i) Vaccine safety
 - (ii) Biological products [3]
22. How does succession differ in terrestrial and aquatic systems? Give salient points. [3]
23. How do animals adapt to water scarcity in arid regions? [3]
24. What is population interaction? Name the various types of interactions. [3]

Section E

25. Name the scientists who proved experimentally that DNA is the genetic material. Describe their experiment. [5]

OR

Write the symptoms of haemophilia and sickle cell anaemia in humans. Explain how the inheritance pattern of the two diseases differs from each other.

26. Write the function of the following: [5]

- (a) Corpus luteum
- (b) Endometrium
- (c) Acrosome
- (d) Sperm tail
- (e) Fimbriae

OR

- (a) Draw a diagram of a mature embryo sac of an angiosperm and label its following parts:

- (i) Filiform apparatus
- (ii) Synergids
- (iii) Central cell
- (iv) Egg cell
- (v) Polar nuclei
- (vi) Antipodals

- (b) Write the fate of the egg cell and polar nuclei after fertilisation.

27.

- (a) Name the pioneer species on a bare rock. How do they help in establishing the next type of vegetation? Mention the type of climax community which will ultimately get established.

- (b) Differentiate between a detritivore and a decomposer giving an example of each. [5]

OR

- (a) What is global warming? Discuss the causes and effects of global warming.

- (b) What measures need to be taken to control global warming?