CBSE Class 12 Biology 2016 - Set 057-3

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. Mention two advantages for preferring CNG over diesel as an automobile fuel.

2. What are transgenic animals? Give an example.

3. Write the probable differences in eating habits of *Homo habilis* and *Homo erectus*.

4. Mention the role of 'genetic mother' in MOET.

5. A male honeybee has 16 chromosomes whereas its female has 32 chromosomes. Give one reason.

Section B

6. Name a free-living and a symbiotic bacterium that serve as bio-fertilizer. Why are they so called?

7. Name the cells HIV (Human Immunodeficiency Virus) gains entry into after infecting the human body. Explain the events that occur in these cells.

8. Explain the relationship between CFC's and Ozone in the stratosphere.

OR

8. Why are sacred groves highly protected?

9. Following are the features of genetic codes. What does each one indicate?

Stop codon; Unambiguous codon; Degenerate codon; Universal codon.

10. Out of many papaya plants growing in your garden, only a few bear fruits. Give reason.

Section C

11. (a) Write the two limitations of traditional breeding technique that led to promotion of micro propagation.

(b) Mention two advantages of micro propagation.

(c) Give two examples where it is commercially adopted.

12. (a) It is generally observed that the children who had suffered from chicken-pox in their childhood may not contract the same disease in their adulthood. Explain giving reasons the basis of such an immunity in an individual. Name this kind of immunity.

(b) What are interferons? Mention their role.

13. How do homologous organs represent divergent evolution? Explain with the help of a suitable example.

14. Name two hormones that are constituents of contraceptive pills. Why do they have high and effective contraceptive value? Name a commonly prescribed non-steroidal oral pill.

OR

14. (a) How are parthenocarpic fruits produced by some plants and apomictic seeds by some others? Explain.

(b) When do farmers prefer using apomictic seeds?

15. (a) What do 'Y' and 'B' stand for in 'YAC' and 'BAC' used in Human Genome Project (HGP). Mention their role in the project.

(b) Write the percentage of the total human genome that codes for proteins and the percentage of discovered genes whose functions are known as observed during HGP.

(c) Expand 'SNPs' identified by scientists in HGP.

16. Explain enzyme-replacement therapy to treat adenosine deaminase deficiency. Mention two disadvantages of this procedure.

17. What is a test cross? How can it decipher the heterozygosity of a plant?

18. (a) How do organic farmers control pests? Give two examples.

(b) State the difference in their approach from that of conventional pest control methods.

19. (a) Name the selectable markers in the cloning vector pBR322? Mention the role they play.

(b) Why is the coding sequence of an enzyme β-galactosidase a preferred selectable marker in comparison to the ones named above?

20. Differentiate between primary and secondary succession. Provide one example of each.

21. (a) Why must a cell be made 'competent' in biotechnology experiments? How does calcium ion help in doing so?

(b) State the role of 'biolistic gun' in biotechnology experiments.

22. Explain parasitism and co-evolution with the help of one example of each.

Section D

23. A large number of married couples the world over are childless. It is shocking to know that in India the female partner is often blamed for the couple being childless.

(a) Why in your opinion the female partner is often blamed for such situations in India? Mention any two values that you as a biology student can promote to check this social evil.

(b) State any two reasons responsible for the cause of infertility.

(c) Suggest a technique that can help the couple to have a child where the problem is with the male partner.

Section E

24. (a) What is polygenic inheritance? Explain with the help of a suitable example.

(b) How are pleiotropy and Mendelian pattern of inheritance different from polygenic pattern of inheritance?

OR

24. (a) Name the stage in the cell cycle where DNA replication occurs.

(b) Explain the mechanism of DNA replication. Highlight the role of enzymes in the process.

(c) Why is DNA replication said to be semiconservative?

25. (a) Name the two growth models that represent population growth and draw the respective growth curves they represent.

(b) State the basis for the difference in the shape of these curves.

(c) Which one of the curves represent the human population growth at present? Do you think such a curve is sustainable? Give reason in support of your answer.

OR

25. (a) Taking an example of a small pond, explain how the four components of an ecosystem function as a unit.

(b) Name the type of food chain that exists in a pond.

26. (a) Explain the menstrual phase in a human female. State the levels of ovarian and pituitary hormones during this phase.

(b) Why is follicular phase in the menstrual cycle also referred as proliferative phase? Explain.

(c) Explain the events that occur in a graafian follicle at the time of ovulation and thereafter.

(d) Draw a graafian follicle and label antrum and secondary oocyte.

OR

26. (a) As a senior biology student you have been asked to demonstrate to the students of secondary level in your school, the procedure(s) that shall ensure cross-pollination in a hermaphrodite flower. List the different steps that you would suggest and provide reasons for each one of them.

(b) Draw a diagram of a section of a megasporangium of an angiosperm and label funiculus, micropyle, embryosac and nucellus.

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