CBSE Class 12 Biology 2016 - Set 057-1

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

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

3. What is biopiracy?

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

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

Section B

6. A single pea plant in your kitchen garden produces pods with viable seeds, but the individual papaya plant does not. Explain.

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

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

8. Suggest four important steps to produce a disease resistant plant through conventional plant breeding technology.

9. Name a genus of baculovirus. Why are they considered good biocontrol agents?

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

OR

10. Why are sacred groves highly protected?

Section C

11. (a) Name the organic material exine of the pollen grain is made up of. How is this material advantageous to pollen grain?

(b) Still it is observed that it does not form a continuous layer around the pollen grain. Give reason.

(c) How are 'pollen banks' useful?

OR

11. (a) Mention the problems that are taken care of by Reproduction and Child Health Care programme.

(b) What is amniocentesis and why there is a statutory ban on it?

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

13. (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.

14. Differentiate between homology and analogy. Give one example of each.

15. (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.

16. (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.

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

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

18. (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?

19. (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.

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

21. Name and explain the type of interaction that exists in mycorrhizae and between cattle egret and cattle.

22. Differentiate between primary and secondary succession. Provide 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) 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

24. (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.

25. Describe Meselson and Stahl's experiment that was carried in 1958 on *E. coli*. Write the conclusion they arrived at after the experiment.

OR

25. (a) Describe the process of transcription in bacteria.

(b) Explain the processing the hnRNA needs to undergo before becoming functional mRNA in eukaryotes.

26. (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

26. (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.

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