CBSE Class 12 Biology 2012 - Set 57/1/1

Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 3 Hours **Maximum Marks: 70**

General Instructions

(i) All questions are compulsory.

(ii) The question paper consists of four sections: A, B, C and D. Section A contains 8 questions of 1 mark each; Section B contains 10 questions of 2 marks each; Section C contains 9 questions of 3 marks each; and Section D contains 3 questions of 5 marks each.

(iii) There is no overall choice. An internal choice is provided in one question of 2 marks, one question of 3 marks and all three questions of 5 marks. Attempt only one alternative in such questions.

(iv) Draw neat and properly labelled diagrams wherever necessary.

Section A

1. Mention the unique flowering phenomenon exhibited by *Strobilanthus kunthiana* (neelakuranji).

2. How does smoking tobacco in humans lead to oxygen deficiency in their body?

3. A garden pea plant (A) produced inflated yellow pods, and another plant (B) of the same species produced constricted green pods. Identify the dominant traits.

4. Why is *Eichhornia crassipes* nicknamed as "Terror of Bengal"?

5. Write the location and function of the sertoli cells in humans.

6. Name the following : (a) The semi-dwarf variety of wheat which is high-yielding and disease-resistant. (b) Any one inter-specific hybrid mammal.

7. Write the similarity between the wing of a butterfly and the wing of a bat. What do you infer from the above with reference to evolution?

8. Write what do phytophagous insects feed on.

Section B

9. Draw a neat labelled sketch of a replicating fork of DNA.

10. Where is sporopollenin present in plants? State its significance with reference to its chemical nature.

11. (a) Highlight the role of thymus as a lymphoid organ. (b) Name the cells that are released from the above mentioned gland. Mention how they help in immunity.

12. Explain the work carried out by Cohen and Boyer that contributed immensely in biotechnology.

13. Why do clown fish and sea anemone pair up? What is this relationship called?

14. (a) State the difference between meiocyte and gamete with respect to chromosome number. (b) Why is a whiptail lizard referred to as parthenogenetic?

15. Name the plant source of the drug popularly called "smack". How does it affect the human body?

OR

15. Why is *Rhizobium* categorized as a 'symbiotic bacterium'? How does it act as a biofertiliser?

16. (a) State the role of DNA ligase in biotechnology. (b) What happens when *Meloidegyne incognitia* consumes cells with the RNAi gene?

17. Some organisms suspend their metabolic activities to survive in unfavourable conditions. Explain with the help of any four examples.

18. (a) Name the Protozoan parasite that causes amoebic dysentery in humans. (b) Mention two diagnostic symptoms of the disease. (c) How is this disease transmitted to others?

Section C

19. It is established that RNA is the first genetic material. Explain giving three reasons.

OR

19. (a) Name the enzyme responsible for the transcription of tRNA and the amino acid the initiator tRNA gets linked with. (b) Explain the role of initiator tRNA in initiation of protein synthesis.

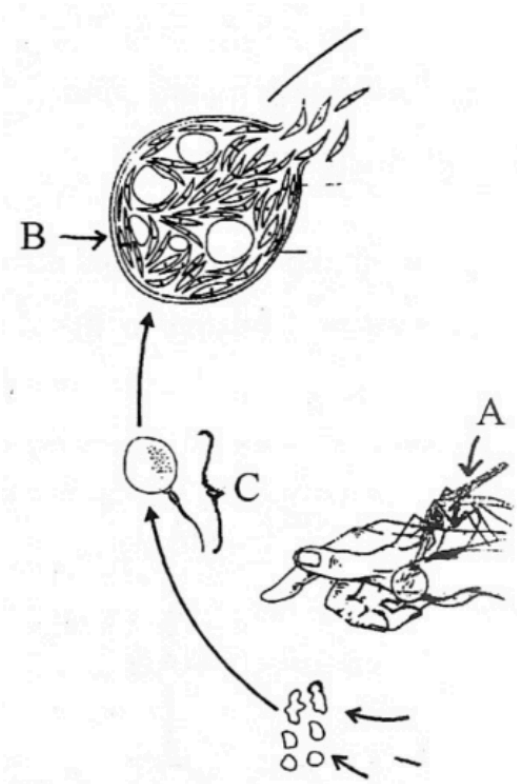
20. State the theory of Biogenesis. How does Miller's experiment support this theory?

21. Name the two different categories of microbes naturally occurring in sewage water. Explain their role in cleaning sewage water into usable water.

22. Write the function of each of the following : (a) (Oviducal) Fimbriae (b) Coleoptile (c) Oxytocin

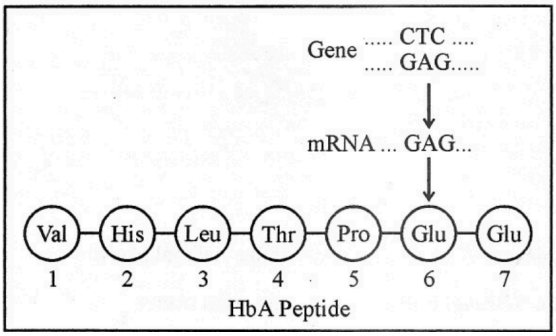
23. Name the genes responsible for making Bt cotton plants resistant to bollworm attack. How do such plants attain resistance against bollworm attacks? Explain.

24. Study a part of the life cycle of malarial parasite given below. Answer the questions that follow:



(a) Mention the roles of 'A' in the life cycle of the malarial parasite. (b) Name the event 'C' and the organ where this event occurs. (c) Identify the organ 'B' and name the cells being released from it.

25. Given below is the representation of amino acid composition of the relevant translated portion of β-chain of haemoglobin, related to the shape of human red blood cells.



(a) Is this representation indicating a normal human or a sufferer from certain related genetic disease? Give reason in support of your answer. (b) What difference would be noticed in the phenotype of the normal and the sufferer related to this gene? (c) Who are likely to suffer more from the defect related to the gene represented – the males, the females or both males and females equally? And why?

26. 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.

27. Draw a schematic sketch of pBR 322 plasmid and label the following in it : (a) Any two restriction sites. (b) Ori and rop genes. (c) An antibiotic resistant gene.

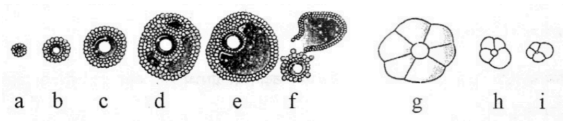
Section D

28. Explain the carbon cycle with the help of a simplified model.

OR

28. Explain how does : (a) a primary succession start on a bare rock and reach a climax community? (b) the algal bloom eventually choke the waterbody in an industrial area?

29. The following is the illustration of the sequence of ovarian events 'a' to 'i' in a human female.



(i) Identify the figure that illustrates ovulation and mention the stage of oogenesis it represents. (ii) Name the ovarian hormone and the pituitary hormone that have caused the above mentioned event. (iii) Explain the changes that occur in the uterus simultaneously in anticipation. (iv) Write the difference between 'c' and 'h'. (v) Draw a labelled sketch of the structure of a human ovum prior to fertilization.

OR

29. How does the megaspore mother cell develop into 7-celled, 8-nucleate embryo sac in an angiosperm? Draw a labelled diagram of a mature embryo sac.

30. What is the inheritance pattern observed in the size of starch grains and seed shape of *Pisum sativum*? Work out the monohybrid cross showing the above traits. How does this pattern of inheritance deviate from that of Mendelian law of dominance?

OR

30. State the aim and describe Meselson and Stahl's experiment.

- End of Question Paper -