

CBSE Class 12 Biotechnology 2013 - Set 99/1



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) There is no overall choice. However, an internal choice has been provided in one question of three marks and two questions of five marks. You have to attempt only one of the choices in such questions. Question paper contains four sections – A, B, C and D.
- (iii) Question numbers 1 to 5 are very short answer questions, carrying 1 mark each.
- (iv) Question numbers 6 to 15 are short answer questions, carrying 2 marks each.
- (v) Question numbers 16 to 25 are also short answer questions, carrying 3 marks each.
- (vi) Question numbers 26 to 28 are long answer questions, carrying 5 marks each.
- (vii) Use of calculators is not permitted. However, you may use log tables, if necessary.

Section A

1. With an example, indicate what are adherent cells ?

2. Define Secondary Metabolites with an example.

3. Name one carbon source and one nitrogen source in microbial media.

4. In assessing the effect of growth factors on animal cell cultures, which phase of growth is more suitable and why ?

5. Do viruses and bacteria grow similarly ?

Section B

6. Expand MALDI and give its principle.

7. What are SNPs and indicate one use of these ?

8. Citing an example, explain the benefits of a transgenic plant.

9. Distinguish between cDNA and genomic DNA libraries.

10. Why is it necessary to preserve a microbial species ? Give one method of its preservation.

11. Indicate the basic steps with principles (starting from an explant) involved in obtaining a regenerated plant.

12. Differentiate between continuous and finite cell lines.

13. In altering the stability of subtilisin in laundry detergent, why is Met 222 selectively substituted using protein engineering ?

14. It has been decided to clone a DNA fragment of size 300 kbp. Indicate with reasons, a suitable cloning vector and host.

15. What is organogenesis ? In this process, what would happen if either auxins or cytokinins are high in the medium ?

Section C

16. List three safety features to be observed in downstream processing of proteins.

17. What are RFLPs and indicate how these can be used in DNA fingerprinting ?

18. Plot a graph of the variation of cell density [X], concentration of substrate [S] and cell-specific substrate turnover rate [QS] vs time for a batch culture.

19. Indicate two conditions, which are important in maximizing the stability of proteins, with the reason involved.

20. Mention any three methods used for selecting transformed cells in an rDNA experiment.

OR

20. In a recombinant DNA experiment, the transformed cells are sensitive to an antibiotic A and resistant to another antibiotic B. How can these cells be selectively grown ? Explain diagrammatically.

21. What is a pilot plant ? Why is it important to validate a process in a pilot plant before commercial scale production in a bioprocess industry ?

22. Indicate how intergenetic somatic hybrids can be made ? Give an example. What are cybrids ?

23. How can aeration be improved in large and laboratory scale animal cell culturing ?

24. In biological language, what are the equivalents of the following ? (a) Letters (b) Words (c) Sentence (d) Punctuation (e) Chapter In which area of biology would these equivalents appear ?

25. Why are B-lymphocytes fused with myeloma cells in hybridoma technique ? Give an important application of this technique.

Section D

26. Highlight the various steps of PCR technique. Give its two applications.

OR

26. Describe the technique of Southern hybridization with the help of a well labelled diagram. Suggest an application of this technique.

27. Chymotrypsin is an effective digestive enzyme. Justify this by describing its mechanism of action on proteins.

OR

27. How can 2-D gel electrophoresis be used to analyse proteins derived from RBC ?

28. Chromosomal translocations can lead to diseases. Describe a suitable technique to detect such translocations in a patient.

- End of Question Paper -