

CBSE Class 12 Biotechnology 2022 - Set 99 - Compartment



Question Paper

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 2 Hours

Maximum Marks: 35

General Instructions

- (i) This question paper contains 13 questions. All questions are compulsory.
- (ii) This question paper has three sections – Section A, B and C.
- (iii) Section A contains 6 questions of 2 marks each. Section B contains 6 questions of 3 marks each and Section C has 1 case-based question of 5 marks.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. Only one of the choices in such questions has to be attempted.

Section A

1(a). Name any two database retrieval tools and mention one application of each.

OR

1(b). Name any two databases used for Bioinformatics other than NCBI. Mention the information (type of sequence) that can be retrieved from each.

2. Distinguish between cryopreservation and lyophilization method of preservation of microbial cells.

3. Differentiate between zygotic and somatic embryo.

4. What is the role of the following components of a microbial culture medium ? (a) Glucose (b) Ammonium salts (c) Agar (d) Vitamin

5(a). Why is sub-culturing of animal cell culture needed ?

OR

5(b). What are the limitations of animal cell culture ? (Any two)

6(a). What is the importance of osmolality in a cell culture medium ?

OR

6(b). What is the role of therapeutic OKT3 in the reversal of acute renal allograft rejection ?

Section B

7. What does BLAST stand for ? How is this tool used to analyze sequence information ?

8. Briefly describe with the help of a schematic diagram, the steps needed for isolation of Streptomycin (antibiotic) produced by microbial fermentation.

9(a). Give an example of biodegradable plastic.

9(b). What is the drawback of bacterial plastic over synthetic plastic ?

9(c). Name a transgenic plant used for synthesis of biodegradable plastic.

10(a). What are stem cells ?

10(b). Differentiate between embryonic stem cells and adult stem cells.

11. Compare Finite and Continuous animal cell lines.

12(a). Draw a labelled diagram of a Fermentor, showing its basic features.

12(a)-VI. What is downstream processing ? Why should it have fewer steps ?

12(b). Mention two methods by which medium is aerated in a Fermentor.

OR

13(a). Secondary Metabolites :

Plants produce thousands of sophisticated molecules which are needed for basic metabolic processes like sugars, lipids, amino acids and nucleic acids. Some other products like alkaloids, resins, tannins, etc. are also produced, which are secondary metabolites. These secondary metabolites have been exploited as they have immense use in medicine.

13(a)(i). Mention one use each of the following industrially important secondary metabolites produced through cell and tissue culture : (A) Quinine (B) Taxol (C) Shikonin (D) Codeine

13(a)(ii). Briefly describe two techniques used in plant biotechnology which can be used to improve production of secondary metabolites.

13(a)(iii). Why is rDNA technique not the preferred method to improve production of secondary metabolites.

13(b). Pest Resistance :

All crop plants are affected by variety of pests like insects and nematodes, which decrease their quality and yield. To minimize the loss, the farmer uses synthetic pesticides which pollute both soil and water resources, leading to biomagnification. But the transgenic technology provided a better, ecofriendly, effective and sustainable way by creating plants like Bt-cotton, Bt-brinjal etc.

13(b)(i). Name the bacterium and gene isolated from it to make Bt-cotton resistant to bollworm pest.

13(b)(ii). Bt-genes are specific to a particular group of insects. How is this helpful to farmers ?

13(b)(iii). How are viral resistance plants raised ? Name a viral resistant plant that has been commercialised.

- End of Question Paper -