Question Paper Comp.Outside Delhi 2017 set 1

CBSE Class 12 BIO-TECHNOLOGY

General Instructions :

- All questions are compulsory.
- There is no overall choice. However, an internal choice has been provided in questions of three marks and five marks each. You have to attempt only one of the choices in such questions. Question paper contains four sections A, B, C and D.
- Questions number 1 to 6 are very short answer questions, carrying 1 mark each.
- Questions number 7 to 14 are short answer questions, carrying 2 marks each.
- Questions number 15 to 25 are also short answer questions, carrying 3 marks each.
- Questions number 26 to 28 are long answer questions, carrying 5 marks each.
- Use of calculators is not permitted. However, you may use log tables, if necessary.

Section – A

1. For measuring microbial growth, viable plate count is preferred over absorbance of cell suspension in a spectrophotometer. Why ?

2. Can haploid plants be converted to diploid ? How ?

3. How does Herceptin work to treat early stage breast cancer ?

4. What is 'contact inhibition' ?

5. Among the biomolecules, proteins have maximum functional diversity. Why ?

6. c-DNA library contains information about expressed genes only. Justify giving reason.

Section – B

7. What problems make the downstream processing of recombinant proteins difficult and costly ?

8. What are the essential components of a microbial growth media ? Differentiate between synthetic and semi-synthetic medium used for microbial growth.

9. Why is foaming undesirable in microbiological processes ? Name two commonly used antifoams.

10. Suggest two examples of genetic modification for improving nutritional quality in cereals.

11. Enlist four defined steps of micropropagation in plants.

12. Differentiate between zygotic and somatic embryos.

13. Name any two databases commonly used in bioinformatics and the type of information available from each of these database.

14. Why proteome of a given species is larger than its genome ? Give two reasons.

Section – C

15. Differentiate between Batch and Continuous culture.

16. 'Edible vaccines are better than conventional vaccines or recombinant vaccines.' Give three reasons to support the statement.

17. Athletes are disqualified if they test positive for erythropoietin (EPO). What is this substance ? How does it act and under what condition body produces it ?

18. A technician in a tissue culture lab accidently forgot to put tag on petri-dish containing cells from a cancer biopsy. Which features will help him to identify this petri-dish among the others containing normal cells ?

19. What is Molecular Pharming ? What are the advantages of producing desired proteins by this method ?

20. (a) What precautions should be taken to maximize protein stability during its purification steps ? (two only)

(b) State two major factors which determine purification scheme for a given protein.

21. Schematically indicate various steps of Southern hybridization technique.

22. Describe any three method to introduce 'Recombinant DNA' into host cells.

OR

(a) Why viruses are considered as ideal vehicles to transfer foreign genes into eukaryotic cells in culture ? Give two reasons.

(b) Differentiate between YAC and BAC vectors.

23. Give one example and function of each of the following protein based products :
(a) Industrial enzyme (b) Regulatory factors (c) Analytical applications

24. A CML patient has been put on a drug therapy for a month. How can FISH be used to monitor the effect of chemotherapy ? What is the role of NICK translation in this process ?

25. (a) What is the role of DNA ligase and alkaline phosphatase in r-DNA technology ?
(b) 'Co's sites are important sequences in the DNA of λ-phage. Why ?

Section – D

26. (a) Schematically illustrate the technique of 'site-directed mutagenesis'

(b) What physical and chemical properties of naturally occurring enzymes can be changed by site-directed mutagenesis ?

OR

The PCR technique has great importance in modern biology. Briefly highlight the technique and suggest how it can be used to detect pathogenic microbes.

27.(a) Describe the technique developed by O'Farrel to compare similar proteins from different sources.

(b) Who developed the technique of protein fingerprinting ?

28. (a) Expand NCBI. In a genome analysis, are 'in-silico' prediction methods for gene number accurate ? Suggest any two reasons.

(b) How is it useful to search a database to establish the identity of a newly determined DNA sequence ?