Question Paper 2015 Outside Delhi set 4
CBSE Class 12 Biotechnology

General Instructions:

- All questions are compulsory.
- There is no overall choice. However, an internal choice has been provided in one question of two marks and two questions of five marks. You have to attempt only one of the choices in such questions. Question paper contains four sections ¾ A, B, C and D.
- Questions No. 1 to 6 are very short answer questions, carrying 1 markeach.
- Questions No. 7 to 14 are short answer questions, carrying 2 marks each.
- Questions No. 15 to 25 are also short answer questions, carrying 3 marks each.
- Questions No. 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. What is the relationship between specific activity and purity of a protein ?

2.Metagenomic approach is of immense use to scientists. How?

3. How can one produce large amounts of one of the strands of double stranded DNA using natural mechanism?

4. A farmer wants to produce hybrid of mustard plants in his field. As a biotechnologist, what would you suggest to him to ensure successful pollination or fertilization?

5. In isolating recombinant interferons from a culture of E. coli, the filtrate was subjected to purification processes, but no interferons were obtained. Suggest a possible reason

6. Relationship between the number of genes and proteins is not linear. Why ? Give two reasons.

SECTION B

7. What is the importance of maintaining pH while culturing animal cells? How is the pH maintained in a culture media?

8. On a large-scale culturing of microbes, the sources of nutrients used in the medium are different from that of a small scale culture. Why? Name any two sources of nutrients for a large-scale culture.

9. What is the difference between a defined and a serum-supplemented medium?

10. r-HuEPO is preferred over blood transfusion in persons with blood loss. Why?

11. Differentiate between Batch and Continuous culture.

12. Why is inverted microscopes used instead of compound microscope in observing animal cells in culture?

13. Karyotype determination of animal cell culture is important. Why? What factors affect its stability?

OR

Why is it difficult to culture animal cells as compared to plant cells? Why is it essential to supplement animal cell culture media with serum?

14. Interspecific cross leads to formation of sterile seeds. What could be the reasons for the same and how can the embryo rescue be achieved?

SECTION C

15. Name three enzymes used in cloning and write one function of each

16. Explain with an example, how proteins can be engineered to improve their properties.

17. Differentiate between structural and functional genomics.

18. Describe how Agrobacterium tumefaciens can be used to introduce foreign gene into plants.

19. What are edible vaccines? How are they better than conventional vaccines?

20. There are several concerns being raised in accepting transgenic crops. List any six of

them.

21. What is Molecular Pharming? Write any four advantages of expressing transgenic proteins in milk.

22. Schematically depict the steps involved in FISH technique and write its one application.

23. What is insertional activation? Describe a visual method of screening the transformed host cells.

24. Gene Prediction by computers is different from number of genes identified by experimental methods. Why is it so? Is there any correlation between the complexity of an organism and the total number of genes in its genome? Justify

25. Describe the important parts of a mass spectrometer with diagram. Why has this technique become important in studying proteins?

SECTION D

26. Explain with suitable diagram, the principle and steps involved in Sanger's method of DNA sequencing.

27. What do you mean by aqueous two-phase partition process for separation of proteins ? What precautions should be taken to maximise protein stability during purification steps ?
OR
What are nutraceutical proteins ? Why is curd considered pro-biotic? Whey is a nutraceutical protein. Justify.

28. Define SNPs. Describe a possible use of this technique in medicine. How do the physicians decide our susceptibility or resistance to a particular disease through this technique ? Explain with the help of an example.
OR
Name four major databases for bioinformatics with their respective information contents. Name any database retrieval tool and its application.