

2018

## BIOTECHNOLOGY

(Theory)

Full Marks : 70

Pass Marks : 21

Time : Three hours

*For Question Nos. 1 to 4, the questions are objective type questions carrying 1 mark each. Select the most appropriate one from the given alternatives A, B, C and D and rewrite the same.*

1. Recombinant DNA Technology helped develop the Vaccine for Hepatitis 'B' from 1  
(A) E. coli  
(B) Saccharomyces cerevisiae  
(C) Tobacco plant  
(D) Cotton plant
  
2. Linear order of covalently linked amino acid sequence is distinguished as 1  
(A) Primary Structure  
(B) Secondary Structures  
(C) Tertiary Structures  
(D) Quarternary Structures

P.T.O.

3. According to IUPAC Nomenclature, in Bioinformatics Sentences are denoted by 1

- (A) Genes
- (B) Chromosomes
- (C) Operons
- (D) Nucleotide bases

4. Who established the first human cell line (Hela)? 1

- (A) Goltlieb Haberlandt
- (B) George Gay
- (C) Frederick Sanger
- (D) Louis Pasteur

*Question Nos. 5 to 14 are of very short answer type carrying 1 mark each.*

5. What are Plasmids? 1

6. Why are viruses used as ideal transfer vehicles to transfer foreign DNA into eukaryotic cells? 1

7. What do you mean by the term Proteome? 1

8. Not all genetic variations are beneficial. Why? 1

9. What are Prions? 1

10. How does subtilisin help in improving quality of laundry detergents? 1

11. What are Cybrids? 1

12. How can fruit ripening be delayed? 1

13. What is Erythropoietin? 1

14. While culturing mammalian cells, why is the temperature maintained at 37°C? 1

*Question Nos. 15 to 24 are of short answer type - II carrying 2 marks each.*

15. What do you mean by Restriction Fragment Length Polymorphism (RFLP) ? Give *one* application of this technique. 2
16. Write *one* point of difference between Structural Genomics and Functional Genomics. 2
17. What is the Homologene Database ? Write its importance. 2
18. How are monoclonal antibodies produced ? Write their properties. 2
19. Whey and Curd have therapeutic properties - Justify the statement. 2
20. State the difference between Lipofection and Microinjection. 2
21. Name any *two* blood products manufactured through Recombinant DNA Technology and write their applications. 2
22. How are artificial seeds produced ? 2
23. Draw a neat diagram of Plasmid pBR322 and label the following sites : 2
  - (i) Bam H1
  - (ii) Eco R1
24. Draw a neat diagram of a Bioreactor and label the following : 2
  - (i) Culture broth
  - (ii) Motor

*Question Nos. 25 to 31 are of Short answer type - I carrying 3 marks each.*

25. Write about the *three* methods of Strain Preservation. 3
26. Explain the *three* steps involved in a single PCR Amplification Cycle. 3
27. What is meant by Triploid production ? State its role in plant improvement. 3
28. Explain *three* important non - covalent forces which contribute towards protein folding. 3

29. How can virus - free plants be produced from virus - infected plants? 3
30. Do you think 'in silico' based gene prediction techniques are accurate and reliable? Support your answer with reasons. 3
31. Write *three* points of difference between Embryonic Stem cells (ES) and Adult Stem cells. 3

*Question Nos. 32 to 34 are of Long answer type and carry 5 marks each.*

32. Write about *five* procedures which are commonly used to introduce rDNA into a suitable host. 5
33. Why are Biosafety measures a major issue in the field of Microbial Technology? Give five points. 5
34. A powerful proteolytic enzyme is synthesized in the pancreas but it does not cut or destroy cellular proteins within the pancreas. Name the enzyme and give reasons to justify the statement along with a brief description of its structure. 5