PG Even Semester Exam, May 2025

Biotechnology

4th Semester

COURSE NO. BTYCC - 651

[Advanced Techniques in Biological Chemistry, Molecular Biology, Genomics and Proteomics]

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer five questions, taking one from each Unit

UNIT-I

1. a. Discuss the principle and applications of ion-exchange chromatography. 10

   b. Differentiate between strong and weak ion exchangers. 4

2. Write short notes on: 7+7=14

   a. Gel permeation chromatography

   b. MALDI-TOF

Turn over

UNIT-II

3. a. Differentiate between agarose gel electrophoresis and PFGE 10

   b. Discuss Si-RNA mediated RNA interference 4

4. a. Discuss the applications of radioisotopes for the analysis of biological samples. 10

   b. Describe the emission of negatrons, positrons, alpha particles and gamma rays. 4

UNIT-III

5. Discuss the technique of NMR and its applications. 14

6. How are proteins and nucleic acids sequenced? 7+7=14

UNIT-IV

7. What is next-generation sequencing (NGS)? Explain NGS with its applications and limitations. 4+10=14

8. What is metabolite engineering? Explain the technique citing two examples. 4+10=14

UNIT-V

9. What is proteomics? Discuss the applications of proteomics in drug discovery. 2+12=14

10. Write short notes on : 5+5+4=14

    a. Protein microarray

    b. Yeast two hybrid technique

    c. Phage display

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