MODEL QUESTION PAPER

SIXTHSEMESTER B.TECH DEGREE

BRANCH: BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING

13.604: PROTEOMICS AND PROTEIN ENGINEERING

Time: 3 Hours Max. Marks:100

PART A

(Answer all questions, each carries 2 marks)

1) Define the terms: genome and proteome.
2) What are functional protein families?
3) Give the structure of proteasomes.
4) How are first dimension protein separation strategies different from second dimension?
5) What are reverse stains?
6) Explain any one method for image analysis of 2-D gels.
7) What are: phosphoproteins and glycoproteins?
8) Write any three applications of proteomic analysis.
9) What is DNA shuffling?
10) Write any two methods to increase enzyme stability and specificity.

PART B

(Answer any one question from each module)

MODULE I

11) (i) Give a detailed account on protein folding
    (ii) What are the challenges of proteomics? **(10+10)**

OR

12) (i) Give the importance of Hsp 70 chaperone system.
    (ii) How does prion proteins replicate?
    (iii) Write a short note on the different types of prion disease. **(10+5 +5)**

MODULE II

13) Explain the methods for detection of proteins in polyacrylamide gels. **(20)**

OR

14) (i) How to apply liquid chromatography in proteomics for protein separation?

(ii) Write a short note on the second dimension strategies for protein separation. (**10+10)**

MODULE III

15) Give the method, importance and identification using mass spectrometry. **(20)**

OR

16) (i) How to detect and quantify proteins bound to protein chips.

(ii) Elaborate on different types of protein chips.

(iii) What are the techniques to identify protein-protein interactions? (**10+5+5)**

MODULE IV

17) (i) Elaborate on the different strategies for addition of disulphide bonds.

(ii) Give the methods to change asparagine to other amino acids. (**10+10)**

OR

18) (i) What are the basic principles of protein engineering?

(ii) Explain any two procedures for directed mutagenesis. (**10+10)**