

5. (a) What is Yeast two hybrid (Y2H) technique? What are its advantages?
- (b) What is Computer Aided Drug Design (CADD)? Explain Lipinsky's Rule of five, (6,9)
6. Write short notes on the following :
- (i) Role of AI in Genomics
 - (ii) Human Genome Project
 - (iii) Mass spectrometry (5,5,5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7916 I

Unique Paper Code : 2493010008

Name of the Paper : In-silico Tools in Proteomics and Genomics (GE)

Name of the Course : **B.Sc. (Hons.) Biochemistry**

Semester : V

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are 6 questions in all.
3. Attempt any 4 questions.
4. Question no. 1 is compulsory.
5. All questions carry equal marks.

1. (a) Expand and briefly explain the following terms
(Any five) :

- (i) NCBI
- (ii) OMIM
- (iii) BLAST
- (iv) SRS
- (v) PDB
- (vi) PIR

- (b) Name the following :

- (i) An operating system
- (ii) A gene prediction tool
- (iii) A genome browser
- (iv) A protein visualization software
- (v) Multiple-sequence alignment tool (10,5)

2. (a) Differentiate the following :

- (i) Prokaryotic and eukaryotic genome organization

- (ii) Functional and comparative genomics
- (iii) Ab-initio and homology modeling methods of protein structure prediction
- (iv) Pairwise sequence alignment and global sequence alignment

- (b) What are protein disordered regions? (12,3)

3. (a) Describe Next Generation Sequencing (NGS).
What are its advantages and disadvantages?

- (b) What are file formats? What are the different types of file formats used for *in-silico* analysis?

- (c) Describe Ramachandran Plot. How is it useful in protein modeling? (6,5,4)

4. (a) What are biological databases? What are the important features of a databases? What are the various types of databases? Give examples?

- (b) Describe the secondary structures found in proteins. Discuss any two methods of secondary structure prediction. (7,8)