Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 9006

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024
Sixth Semester
Biotechnology
U19BT621 – PROTEIN ENGINEERING
(Regulation 2019)

Time: Three Hours Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Classify amino acids based on their structure.	2	K1	CO1
2.	Why do most of the peptide backbones assume *trans*-configuration?	2	K2	CO1
3.	Write the salient features of loop structures.	2	K1	CO2
4.	Name the software used to predict ligand binding sites.	2	K2	CO2
5.	State Levinthal's paradox.	2	K1	CO3
6.	Differentiate motif from domains.	2	K2	CO3
7.	What is substrate assisted catalysis?	2	K1	CO4
8.	Mention the function of Trp repressor.	2	K1	CO4
9.	How valuable is proteomics research?	2	K2	CO5
10.	List the types of proteomics.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Discuss the significant features of various forces involved in the protein structure.	13	K2	CO1
		(OR)			
	b)	Enlist and describe the molecular properties of amino acids.	13	K1	CO1

12.	a)	Illustrate the steps involved in the Edman method of peptide sequencing.	13	K2	CO2
		(OR)			
	b)	Write a short note on:		K1	CO2
		i. TIM Barrels	7		
		ii. Alpha Helix	6		
13.	a)	i. Draw a Ramachandran plot and highlight alpha and beta regions.	5	K3	CO3
		ii. Correlate the structure of Haemoglobin with their functions.	8		
		(OR)			
	b)	Discuss the influence of temperature and PH on protein stability.	13	K2	CO3
14.	a)	Describe the supersecondary structures involved in the eukaryotic transcription factors.	13	K2	CO4
		(OR)			
	b)	With the proper diagram, elucidate the structure of bacteriorhodopsin.	13	K2	CO4
15.	a)	Outline the principle of yeast hybrid system on protein interaction studies.	13	K1	CO5
		(OR)			
	b)	Explain the second-dimension strategies for protein separation.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Compare and Contrast NMR and X-Ray Crystallography techniques for protein structure determination.	15	K4	CO3
		(OR)			
	b)	How protein engineering helps in improving the stability and activity of a protein. Discuss with an example.	15	K4	CO3