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: 90024

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. 2026
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.	Write the single letter and three letter codes, and structures of any two hydrophobic amino acids.	2	K2	CO1
2.	Define isoelectric point of a protein.	2	K1	CO1
3.	Write about helix breaker with example.	2	K2	CO2
4.	Comment on "loop regions appear always at the surface of a protein".	2	K2	CO2
5.	Explain the significance of Ramachandran plot.	2	K2	CO3
6.	Write the short note on Quaternary structure of protein.	2	K1	CO3
7.	Illustrate the structure of Helix-turn motif.	2	K1	CO4
8.	Define transcription factor.	2	K1	CO4
9.	Explain the importance of protein-protein interaction.	2	K2	CO5
10.	List out the applications of proteomics.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Draw and illustrate the structure of 20 amino acids with its single and three letter codes.	13	K2	CO1
		(OR)			
	b)	Explain the importance of Vanderwaal's and hydrophobic interaction in protein folding.	13	K2	CO1
12.	a)	Outline the different types of super secondary structures existing in proteins with suitable examples.	13	K3	CO2
		(OR)			
	b)	Describe the principle behind Edman degradation.	13	K2	CO2
13.	a)	Explain the protein architecture of primary, secondary, tertiary and quartnary structures with suitable examples.	13	K2	CO3
		(OR)			
	b)	Elaborate in detail about the Ramachandran plot.	13	K2	CO3
14.	a)	Discuss about the transcription factors involved in DNA binding proteins.	13	K4	CO4
		(OR)			
	b)	Write short note on the following:		K2	CO4
		i. Zn fingers	6		
		ii. Leucine zippers	7		
15.	a)	Enumerate the importance of proteomics in biological functions.	13	K4	CO5
		(OR)			
	b)	What is yeast hybrid system? Explain how this system is used in interaction study.	13	K4	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Discuss in detail on the role of different non-covalent interactions in protein structure and function.	15	K3	CO1
		(OR)			
	b)	Construct a pentapeptide with a combination of aliphatic, aromatic, positive charged, polar and disulphide bond forming residues. Mark the peptide bonds, dihedral angles, amino and carboxyl terminals, and name the amino acids.	15	K3	CO1