Reg. No. : | | | | | | | | | | | | |

Question Paper Code: 95D04

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Fifth Semester

Biotechnology

19UBT504- PROTEIN ENGINEERING

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	How pH and Pak are related to each other and mention it's importance in amino acid structure	CO3- Ana
2.	Inhibitory neurotransmitters list contain one amino acid. Identify that and mention its properties	CO3- Ana
3.	Analyze the properties of basic amino acids	CO3- Ana
4.	Unfolded proteins have high content of PPII helices identified by spectroscopic methods. Comment on the helix geometry of poly proline helices	CO4- E
5.	Write down the cationic , anionic and zwitter ionic form of amino acid structure separately	CO1- U
6.	Both Myoglobin and hemoglobin stores oxygen .But their mechanism is different. How is it possible?	CO1- U
7.	Interpretation of NMR spectra differ with low resolution NMR spectrum from high Resolution NMR spectra .How does this Interpretation vary among them?	CO3- Ana
8.	Identify the Library based methods for the global analysis of binary interactions .Highlight the important points	CO3- Ana
9.	Think and Apply down the various examples under DNA binding domain and protein-protein Interaction domain	CO2- App
10.	Figure out the various techniques for determining the secondary and tertiary structure of protein	CO2- App

PART – B (5 x 16= 80Marks)

11.	(a)	Make a report on Essential amino acids with illustrations and complete details	CO3- Ana	(16)
		Or		
	(b)	A person was doing a research with acidic and basic amino acids to produce a novel Deep Eutectic solvent (DES).He studied thermodynamic and physico-chemical properties of DES but he couldn't interpret the results since he lack the knowledge on chemistry behind acidic and basic amino acids. Help him out	CO3- Ana	(16)
12.	(a)	Analyze the biological role of amino acid catabolism and summarize current knowledge on amino acid degradation pathways and their regulation in the context of cellular physiology.	CO3- Ana	(16)
		Or		
	(b)	To facilitate peptide formation with minimal side reactions, chemical groups have been developed that bind to the amino acid reactive groups and block, or protect, the functional group from nonspecific reaction. Analyze the peptide bond details including confirmation of peptide bond and geometry of peptide linkage	CO3- Ana	(16)
13.	(a)	The crude paper electrophoresis system has shown transition to today's modern automated electrophoresis system, the development of electrophoresis systems have been driven by the advancement of technology such as miniaturization, precision engineering, biochemistry, electrical and electronics. These advancements were introduced to meet the requirement for faster and better resolution of results. Discuss the various types in detail and also explain its changes	CO3- Ana	(16)
		Or		
	(b)	High Energy compounds are versatile and mandatory in metabolism. Analyze its details and bring about the concept of Adenylate Energy Charge	CO3- Ana	(16)
14.	(a)	Bacteriorhodopsin is the focus of much interest and has become a paradigm for membrane proteins in general. How the structure function relationship of bacteriorhodopsin and membrane proteins occur generally	CO3- Ana	(16)
		Or		

	(b)	“Substrate Assisted Catalysis are the versatile mechanism inchemical biology”. Justify and explain its chemistry and molecularmechanism with structures	CO3- Ana	(16)
15.	(a)	"The protein is being shipped to different locations inside the cell after the translation ".Elucidate and Discuss in detail	CO2- App	(16)
		Or		
	(b)	Proteomics has undergone tremendous advances over the past few years, and technologies have noticeably matured. Discuss in detail	CO2- App	(16)