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Question Paper Code: U4D04

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Biotechnology

21UBT404-PROTEIN ENGINEERING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the levels of protein and mention its structure and functional properties? CO1- U
2. State "The weak forces that are essential for the stability of protein structure" CO2-App
3. Write the difference between peptide mapping and peptide sequencing CO1- U
4. Highlight the important steps involved in Protein sequencing CO3-Ana
5. Specify the methods to predict the substrate binding sites? CO1- U
6. List out the importance of the Molecular Chaperons. CO1- U
7. Write a short notes on Transcription factors of Protein structure CO1- U
8. Justify the statement "Proteinases are widely distributed in nature" with examples CO2- App
9. Write a note on Protein Microarray and its types? CO1- U
10. Discuss about the principles of Yeast Two hybrid system? CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Aliphatic amino acids are the versatile building blocks of generating the protein structure". Justify and explain in detail about those amino acids with structures CO3-Ana (16)
Or
(b) "The bond interaction is necessary to determine the 3D structure of protein ". Justify and illustrate in detail about these different types of bonds with structure. CO3-Ana (16)

12. (a) Discuss in detail about the observation of the super secondary structure with neat diagram and structure quantification method used in laboratory CO2- App (16)
- Or
- (b) Explain in detail about the super secondary structural model with variation in motif. CO2- App (16)
13. (a) Elucidate the tertiary Protein structure prediction using modern technique of x-ray crystallography with neat diagram. CO1- U (16)
- Or
- (b) Determine the denaturation steps involved in quaternary structure and also explain about its geometric characteristics CO1- U (16)
14. (a) Explain the chemistry and molecular mechanism of Substrate Assisted Catalysis with neat diagram. CO3-Ana (16)
- Or
- (b) Elaborate in detail about the protocol of the super secondary structures involved in transcription factors CO3-Ana (16)
15. (a) Elaborate the yeast- two hybrid system involved in the interaction of protein analysis CO1- U (16)
- Or
- (b) Describe the concept of glycomics and glycoproteomics with chemical and enzymatic treatment CO1- U (16)