

**Q.P. Code : 75753**

Total Marks 60  
Time 2 ½ hrs

**Instructions**

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw diagrams where ever necessary.

- Q. 1. a) Using structures, show the formation of a peptide bond. Enumerate the properties of the peptide bond. 06  
b) Describe the structural features of the alpha helix and the beta sheet. Comments on domain and motifs. 06
- OR
- Q.1 a) Describe the structure of the collagen molecule , explaining the special features of its structure 08  
a) Write briefly on collagen cross link. 04
- Q.2 a) Discuss inter molecular interaction with reference to potential energy diagram and describe deviations from Hooks law. 06  
b) what are protein folding rules? What is propensity 06
- OR
- a) Discus hydrophobicity and its effects. Why it is considered to be an entropy effect rather than entalpic ? 06  
b) Explain the donar acceptor phenomenon in the interactions between water and a polypeptide and role of H bonds 06
- Q.3. a) Discuss macroscopic and microscopic liands binding equilibria 06  
b) Explain Scatechard plot and its applications 06
- OR
- Q.3. a)What are helix coil transition? What is Hill constant 06  
b)Comments on the Random coils 06
- Q.4 a) Chargaff's rules: A student experiment of a chromosomal DNA show, the sample has 20% thymine content. Calculate the percentage of A G and C for the sample. 03  
b.). Discuss: i) Importance of G:C content on DNA stability ii) DNA melting curve as a function of G:C content iii) melting as a function of base sequence (Hint: steepness of melting transition) 09
- OR
- Q.4. Discuss the forms of DNA in relation to charge interaction, base pairing and stacking in triple helices. Compare the three classic double helices A, B and Z. 12
- Q.5 Write notes on *any three* 12
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|---|-----------------------------|
| a) Disulphide bridges and protein stability | d) structure of hemoglobin  |
| b) Interionic attraction and ion-atmosphere | e) Ramchandran plot         |
| c) Co-operative interaction                 | f) Urea as denaturing agent |
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