

(3 Hours)

Total Marks: 80

- NB: (1) Question No.1 is compulsory  
(2) Attempt any three questions out of remaining five questions  
(3) Each question carries equal marks  
(4) Illustrate answers with sketches wherever required

1. Write Short Notes on:  
a) PAM (20)  
b) DDBJ  
c) PDB  
d) CLASTAL W
2. a) Explain homology modelling and fold recognition (10)  
b) Describe the applications of Bioinformatics. (10)
3. a) Explain different 3D- protein structure viewers. (08)  
b) Explain Needleman - Wunsch algorithm with an example (12)
4. a) Explain dot matrix alignment with example. (10)  
b) Explain Markov chains and Hidden Markov models. (10)
5. a) Explain the different classification databases based on the type of data. (10)  
b) Explain amino acid substitution matrices. (10)
6. Explain the following in detail (20)  
a) KEGG  
b) TrEMBL  
c) BLOSUM  
d) Types of Biological data