

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- APRIL-2023

COURSE CODE(CREDITS): 18B11BI413 (3)

MAX. MARKS: 25

COURSE NAME: Structural Biology

COURSE INSTRUCTORS: Dr. Raj Kumar

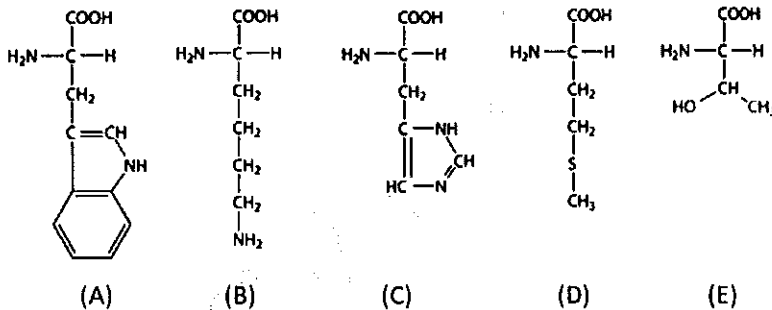
MAX. TIME: 1 Hour 30 Minutes

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

Q. Several genetic diseases are associated with quaternary structure of protein. What causes haemoglobin tetramers to polymerize into long fibrils in sickle cell haemoglobin? (CO-2) [2]

Q. How heptad repeats facilitate interactions of alpha helices to guide nucleic acids binding? Explain with help of an example. (CO-3) [2]

Q1. Identify the following amino acids and mention their single letter and three letter codes: (CO-2) [3]



Q2. Loops are important components of protein structure which may join secondary structure elements. Discuss their important characteristics in relevance to structure and function. (CO-3) [3]

Q. Motif is an intermediate structure between secondary and tertiary structures of proteins. Discuss how a HTH motif may differ from a HLH motif? (CO-4) [3]

Q. TOPS is a program for topology diagrams that are useful for classification of protein structures. Discuss how a protein structure is represented in a topology diagram by TOPS. (CO-4) [3]

Q. The amino-acid sequence of a protein determines the 3D fold. Give an example of a classical experiment to demonstrate the above statement. (CO-4) [3]

Q. Answer/explain the followings: (CO-3) [2 × 3 = 6]

- a) Newman Projections
- b) Type-I and Type-II turns
- c) EF hand