

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS-2022

B.Tech-IV Semester (BI)

COURSE CODE (CREDITS): 18B11BI413 (3)

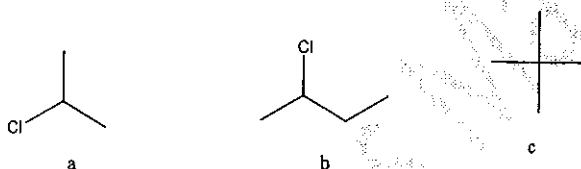
MAX. MARKS: 35

COURSE NAME: Structural Biology

COURSE INSTRUCTORS: Dr. Raj Kumar & Dr. Gopal Singh Bisht MAX. TIME: 2 Hours

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

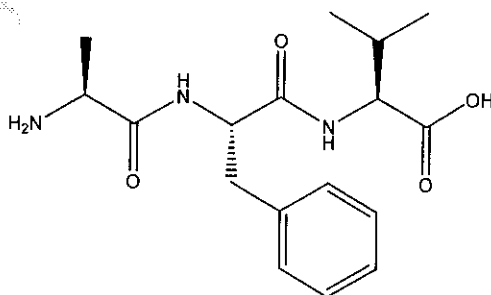
Q1. How many signal would you expect in the ^1H NMR spectrum of each of the following compounds. [3] (CO-3)



Q2. "Hydrogen bonding is very important in stabilizing secondary structure of protein" justify the statement by taking suitable example. [2.5](CO-4)

Q3. How CD spectrum is used in studying conformational change due to external factors in protein. [2.5](CO-3)

Q4. Ionization of molecule is important in mass spectroscopy why? Predict the mass spectrum of the following tripeptide. [4](CO-4)



Q5. Several molten globule structures are observed during protein folding. Discuss the characteristics of molten globule. [2](CO-4)

Q6. Can all proteins fold simultaneously into their 3D structures? Justify your answer. [2](CO-4)

Q7. Proteins may form non-specific interactions with the DNA. How can coiled coils help DNA binding? [3](CO-5)

Q8. How topology diagrams can be used to compare protein domains in 2D? [2](CO-5)

Q9. What is a paradox? Discuss with one example in context to protein folding. [3](CO-5)

Q10. 2D visual representation can be used to illustrate the properties of alpha helices in proteins. What is the basis of these representations? [3] (CO-4)

Q11. A single point mutation in proteins may lead to drastic changes in structure and function. Justify this statement with help of an example. [4](CO-3)

Q12. How urea and beta-mercaptoethanol can be used to understand protein folding? Which inferences will you draw from above experiment? [4](CO-5)