CBCS SCHEME

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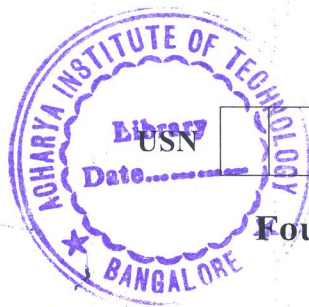
Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Structural Biology

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Discuss the formation of a peptide bond and the forces that stabilize protein structure.
                                                                             (10 Marks)
    b. Write a note on i) Cofactors   ii) Vitamins   **(10 Marks)**

OR

2   a. Explain Ramachandran plot in detail.   **(10 Marks)**
    b. Discuss in detail the factors that contribute to kinetics of protein folding with Gibb's free energy curve.   **(10 Marks)**

Module-2

3   a. What are nucleic acids? Explain the constituents of the principle chain of a nucleic acid with necessary structural formula.   **(10 Marks)**
    b. What is ribose puckering? Explain.   **(10 Marks)**

OR

4   a. Explain in explain various transport mechanism in cell membrane with examples. **(10 Marks)**
    b. Explain signal transduction with suitable example.   **(10 Marks)**

Module-3

5   a. Explain Rayleigh scattering technique to determine the size and shape of the bimolecular.
                                                                             (10 Marks)
    b. Explain Differential scanning calorimetry.   **(10 Marks)**

OR

6   a. Explain the principle, instrumentation and application of ultracentrifugation. **(10 Marks)**
    b. Explain fluorescence and phosphorescence.   **(10 Marks)**

Module-4

7   a. Explain in detail the instrumental factors and steps involved in single X-ray diffraction technique to determine the structure of bimolecules.   **(10 Marks)**
    b. Explain the principle instrumentation and application of uv-spectrophotometer. **(10 Marks)**

OR

8   a. Explain the principle, instrumentation and application of IR spectroscopy. **(10 Marks)**
    b. Explain the principle of circular dischroism and its utility as an important biophysical tool.
                                                                             (10 Marks)

Module-5

9   a. What are supramolecular interactions? Explain with examples.   **(10 Marks)**
    b. Explain protein nucleic acid interactions.   **(10 Marks)**

OR

10 a. Discuss with relevant mathematical foundation the importance of molecular dynamics calculations towards functional assignment of bimolecule.   **(10 Marks)**
    b. Explain protein – priotein interactions.   **(10 Marks)**

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