Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 11

M.Sc. (Physics)EL-II (2018 Batch) (Sem.-3)

STRUCTURES, SPECTRA AND PROPERTIES OF BIOMOLECULES

Subject Code : MSPH-538-18

M.Code : 76757

Time : 3 Hrs. **Max. Marks : 70**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SEVEN questions carrying FIVE marks each and students have to attempt any SIX questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a. What is difference between conformation and configuration?

b. How do you describe the structure of starch?

c. How the hard-sphere approximation be calculated? Explain.

d. Differentiate between negative electrostatic potential and positive electrostatic potential.

e. How laser Raman spectroscopy is useful for the determination of structure of proteins?

f. Discuss the photochemical reaction of nucleic acids.

g. How do hydrogen bonds affect the structure/shape of a molecule?

h. What is the significance of Ramachandran plot?

i. Write the advantages of lock and key model.

j. How do you determine molecular charge distributions of homonuclear diatomic molecules?

SECTION-B

2. Write a short note on the structure of polynucleotides.

3. Differentiate between Semi-emipirical and Ab initio quantum theoretical methods.

4. How fluorescence spectroscopy is useful for the determination of structure of proteins?

5. Explain with suitable diagram for Induced fit model for drug interactions.

6. What are the 4 types of polysaccharides? Explain the structures of any two.

7. Explain in detail the secondary structure of proteins.

8. What is the principle of photoacoustic spectroscopy? Illustrate the use of photoacoustic spectroscopy for structure elucidation of biomolecules.

SECTION-C

9. How NMR and IR spectroscopy are used for determination of structures of biomolecules. Explain with suitable examples.

10. How the ligands fit into the lipophilic pockets present in receptors? Which forces are responsible for their interactions?

11. a) Illustrate the use of molecular electrostatic field.

    b) What types of bonds are responsible for a polypeptide primary and secondary structures? Explain.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.