Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec– 2018**

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| **Code :** | **14BI2005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **STRUCTURAL BIOLOGY AND BIOPHYSICAL TECHNIQUES** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| 1. | a. | Explain briefly about various technicalchallenges in structural bioinformatics. | CO1 | 7 |
| b. | List the various steps involvedin high throughput structure determination. Explain in detail about data analysis and map interpretation. | CO1 | 9 |
| c. | Discuss briefly about the understanding of structural basis for biological phenomenon. | CO1 | 4 |
| (OR) | | | |  |
| 2. | a. | Explain the protein primary structure and justify – most of the amino acids are chiral in nature. | CO2 | 5 |
| b. | Describe the geometries of polypeptide chain with its approximate bond length and bond angles. | CO2 | 7 |
| c. | Explain in detail about α helix, β sheets, domains and π helix. | CO2 | 8 |
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| 3. | a. | Explain the conformation of alanine residue using Ramachandran map. | CO2 | 7 |
| b. | Explain the associations ofmultiple polypeptide chains. | CO2 | 5 |
| c. | Discuss about the types of molecular graphics and molecular visualization software. | CO2 | 8 |
| (OR) | | | |  |
| 4. | a. | Explain the base-pair geometry in DNA and ribose puckering. | CO1 | 10 |
| b. | Briefly explain about DNA duplexes. | CO1 | 5 |
| c. | Draw the polynucleotide chain and explain the geometry | CO1 | 5 |
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| 5. | a. | Draw the cloverleaf structure of RNA and explain its importance and functions | CO1 | 5 |
| b. | Explain the transfer, mismatched and bulged RNA | CO1 | 10 |
| c. | Briefly explain about Ribozymes. | CO1 | 5 |
| (OR) | | | |  |
| 6. | a. | List out the functions of carbohydrates in cell. | CO1 | 5 |
| b. | Why glycogen is called storage polysaccharide? Justify. | CO1 | 5 |
| c. | Define polysaccharide. Explain about structural polysaccharides with examples and structures | CO1 | 10 |
|  |  |  |  |  |
| 7. | a. | Draw the structure of plasma membrane of fluid mosaic model | CO2 | 7 |
| b. | What is the role of glycoprotein in cell? Explain. | CO2 | 6 |
| c. | How synthesized lipid molecules are packaged inside the cell? Illustrate with schematic explanations. | CO2 | 7 |
| (OR) | | | |  |
| 8. | a. | What is the important role of liposomes? Explain about its advantages. | CO2 | 6 |
| b. | Give detail description on classification of lipid. | CO2 | 9 |
| c. | List out the structural importance of glycolipid. | CO2 | 5 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Define X ray diffraction. How will you determine the structure of crystallized biomolecules through X ray crystallography? | CO3 | 8 |
| b. | How biological macromolecules are identified and characterized through electron microscopy. | CO3 | 7 |
| c. | Give detail description on importance of NMR spectroscopy in structural determination of biological molecules. | CO3 | 5 |