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M.Sc. (Applied Chemistry/ Pharmaceutical) 2nd Semester

Paper-204: Biophysical Chemistry

Time Allowed: 3 hours Max. Marks: 60

*Note: Attempt **five** questions in all, including Question No. I which is compulsory and selecting one question from each Unit I-IV.*

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I. a) What is denaturation of proteins?
b) What is problem of Protein folding?
c) What are functions of Cell membrane?
d) What is diffusion coefficient?
e) Define second virial coefficient.
f) What is Fick's Law of diffusion? (6x2)

UNIT-I

II. a) What are Exergonic and Endergonic reactions? Explain with respect to standard free energy change.
b) Explain Hydrolysis of ATP in detail. (6,6)

III. a) Give a detailed account of Polypeptides and structure of proteins.
b) How can you calculate average dimensions for various structures of proteins? (6,6)

UNIT-II

IV. Explain thermodynamics of:
a) Osmolic Pressure
b) Muscular contraction
c) Membrane Equilibrium (3x4)

V. a) What do you know about ion-transport through cell membrane? Explain with examples.
b) Explain Nerve Conduction thermodynamically. (8,4)

UNIT-III

VI. a) Discuss the measurement of viscosity. How it is related to geometry and hydrodynamic properties?
b) How can you determine molecular mass of Biopolymers experimentally? (6,6)

VII. a) What do you know about different types of Electrophoresis? Explain in detail.
b) Discuss drug absorption briefly. (8,4)

UNIT-IV

VIII. Explain the following with example:
a) Rayleigh Scattering
b) Debyl Huckel theory for Polyelectrolytes.
c) Applications of Debyl Huckel theory to Protein Purification. (3x4)

IX. Describe the following:
a) Applications of Colorimetry in Pharmacy.
b) Micelles and Reverse Micelles.
c) Methods of stabilization of Biomolecules. (3x4)

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