1058

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. 1 which is compulsory and selecting one question from each Unit.*

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I.   Attempt the following: -
- (a)   What are reverse Micelles?
- (b)   What is Protein Folding Problem?
- (c)   What is Nerve Conduction?
- (d)   What is isoelectric focusing?
- (e)   What is ultra centrifugation?
- (f)   Explain briefly drug absorption.   (6×2)

UNIT – I

II.   (a)   Explain the bioenergetics of hydrolysis of ATP in detail.

(b)   What are exergonic and endergonic reactions? Explain with examples. What is the role of standard free energy change in a biochemical reaction?

(6+6)

III.   (a)   How macromolecules are distributed statistically in biopolymers? Explain with respect to end to end dimensions.

(b)   Explain polypeptides and protein structure briefly.   (6+6)

UNIT – II

IV.   Explain thermodynamics of: -
- (a)   osmotic pressure
- (b)   Molecular contractions
- (c)   Membrane equilibrium   (3×4)

V.   (a)   What do you know about ion transport through cell membrane? Explain properly.

(b)   Explain irreversible thermodynamic treatment of membrane transport.

(6+6)

UNIT – III

VI.   Explain: -
- (a)   Fick's law of diffusion

(b)   Relation of viscosity to geometry of a biopolymer

(c)   Frictional coefficient

(d)   Sedimentation equilibrium   (4×3)

VII.   (a)   Explain the general principles of electrophoresis.

(b)   Differentiate moving boundary electrophoresis and zonal electrophoresis.

(c)   How can you measure molecular man and geometry from osmotic pressure data?   (3×4)

UNIT – IV

VIII.   (a)   Explain fundamental concepts of Rayleigh scattering.

(b)   How can you make solutions of polyelectrolytes?

(c)   Explain applications of protein purification.   (5+3+4)

IX.   (a)   Explain significance of colorimetry to pharmacy field in detail.

(b)   What is denaturation and stabilization of biomolecules in solution? Explain.   (6+6)

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