Exam Code: 0431
Sub. Code: 3443

2022

M.Sc. (Applied Chemistry/Pharmaceutical)

First Semester

Paper – 103: Physical 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.*

x-x-x

I. Answer the following:-

a) How can you measure activity coefficient of electrolytes? Explain.

b) What do you know about Hash Photolysis and magnetic resonance method?

c) Explain B.E.T. theorem in detail. (3x4)

UNIT – I

II. a) Compare Box Einstein and Fermi-Dirac statistics.

b) Explain the different laws of thermodynamics with proper examples. (2x6)

III. Describe the following:-

a) Distribution law

b) Partition function

c) Fugacity and Activity (3x4)

UNIT – II

IV. a) Explain solid-liquid equlibria in detail with proper examples.

b) Explain phase diagram of three liquid system having one partially miscible pair. (2x6)

V. a) Explain three component system in detail.

b) How can you apply phase rule in crystallization of pure components? Explain. (2x6)

UNIT – III

VI. Explain the following in detail:-

a) Stopped flow techniques

b) Relaxation method

c) Temperature jump method (3x4)

P.T.O.

VII. a) Discribe polymorphism of drugs.

b) Explain physical and chemical properties of polymorphs. (2x6)

UNIT – IV

VIII. a) Explain Harkins-Jura equation of sorphen.

b) Explain Kelvin equation in detail. (2x6)

IX. a) How surface reactions can be performed? Explain in detail.

b) Explain salient features of Slygin-Frumkin and Langmuir isotherm. (2x6)

x-x-x