Exam. Code: 433
Sub. Code: 2964

1115

M.Sc. (Applied Chemistry / Pharmaceutical) Third Semester

Paper – 302: Physical Pharmacy

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. Attempt the following:-

a) Write the expression for Kelvin equation.

b) Explain the term Zeta Potential. Discuss its role in the flocculation of colloidal systems.

c) Discuss the role of hydrogen bonding in solubility.

d) Explain the use of dialysis in the purification of colloidal systems.

e) What do you understand by the term Kinematic Viscosity?

f) Write an account on the determination of shelf life using Arrchenius plot. (6x2)

**UNIT – I**

II. a) Derive Young-Laplace equation and explain its significance in surface chemistry.

b) Classify surface active agents and discuss their pharmaceutical applications. (6,6)

III. a) Derive thermodynamically the Cribbs adsorption isotherm for the adsorption of a solute on the surface of a liquid.

b) Explaining the surface phenomenon, discuss the concept of surface tension and interfacial tension.

c) Describe any two methods of determining HLB values of surfactants. (3x4)

**UNIT – II**

IV. a) Discuss in detail the various electrical and electrokinetic properties of hydrophobic colloidal systems.

b) Discuss solute-solvent interactions. What are the various techniques that can be used to enhance the solubility of solids in liquids? (6,6)

V. a) Discuss the various solubility parameters.

b) Explain the various types of solubility waves. (6,6)

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## UNIT – III

VI. a) With the help of labelled diagram, explain the principle and working of red wood viscometer.

b) Define viscosity and elaborate the concept, establishing relationship between shear rate and shear stress. (6,6)

VII. a) Discuss the principle and working of Brookfield viscometer. Also give its advantages and disadvantages.

b) Explain the applications of rheology in the field of pharmaceuticals. (6,6)

## UNIT – IV

VIII. a) Discuss the influence of temperature, heat and catalytic species on the stability of drugs.

b) How do you predict the stability of common pharmaceutical substances? (6,6)

IX. Discuss mechanism of formation and analysis of metal complexes. (12)

*x-x-x*