

M.Sc. (Part-I) Semester-I (C.B.C.S. Scheme) Examination**PHARMACEUTICAL CHEMISTRY****(Physical Chemistry)****Paper-1 SA 3**

Time : Three Hours]

[Maximum Marks : 80

Note :— (1) All questions are compulsory and carry equal marks.

(2) Use of calculator or log table is allowed.

1. (a) How fugacity can be determined experimentally ? Explain in brief. 8
- (b) Explain activity coefficient of electrolyte and mean ionic activity coefficient. 8

OR

- (p) Explain partial molar properties and how these properties can be determined. 8
- (q) Explain Debye Huckle treatment of dilute electrolyte solution. 8
2. (a) Explain electronic and vibrational partition function. 8
- (b) Explain Bose Einstein Statistics. 8

OR

- (p) Discuss theories of specific heat for solids. 8
- (q) How equilibrium constant calculates from partition function ? 8
3. (a) Explain partially miscible three-liquid system with suitable example. 8
- (b) Explain effect of temperature on two and three partially miscible pair. 8

OR

- (p) Explain system composed of two salt and water and their applications in crystallization. 8
- (q) Derive Gibb's phase rule. What is reduced phase rule ? 8

4. (a) Explain molecular collision theory. 8
(b) Write note on quantum yield in photochemical reactions. What are the reasons for high and low quantum yield ? 8

OR

- (p) Explain rate constants of fast reaction. Discuss temperature jump method and stopped flow technique used in fast reactions. 8
(q) Explain the kinetics of consecutive reaction. 8
5. (a) Explain pressure difference across a curved phase boundary. 8
(b) Derive BET equation and explain salient features of it. 8

OR

- (p) Explain acid base and homogenous catalysis with examples. 6
(q) Explain Harkins-Jura equation of sorption. 4
(r) Derive Kelvin equation. 6