

FACULTY OF PHARMACY**B. Pharmacy 3/4 I-Semester (Main) Examination, November 2015****Subject : Physical Pharmacy - I****Time : 3 Hours****Max. Marks: 70****Note: Answer all questions. All questions carry equal marks.**

- 1 (a) How do you liquefy gases? Write its application in the formulation of aerosols. (9)
(b) Define the terms refractive index and molar refraction. Write their applications. (5)
OR
(c) Write Gibb's phase rule. Explain phase diagram for a system containing one component. (7)
(d) Write a short note on XRD. (4)
(e) Write the Vander Waals equation for real gases and explain the terms therein. (3)
- 2 (a) State and explain first law of thermodynamics. (6)
(b) State and explain second law of thermodynamics. Write its applications with relevant equations and graphs. (8)
OR
(c) Define :
(i) Specific heat (ii) Latent heat (iii) Enthalpy (iv) entropy (v) Sensible heat (5)
(d) State laws of thermodynamics. (3)
(e) Explain Hess's law with relevance to heat of formation and heat of combustion. (6)
- 3 (a) Define Raoult's law. What are ideal and real solutions. (Explain with vapor pressure curves). (7)
(b) Write the Debye Huckel's equations for determining activity coefficient. (3)
(c) What are ampholytes. Explain their ionization. (4)
OR
(d) How do you determine elevation of boiling point? Explain the choice of colligative properties in molecular weight determination. (7)
(e) An aqueous solution of FeSO_4 was prepared by adding 41.5 g of FeSO_4 to enough water to make 1000 ml. Density of solution – 1.0375 mol. Wt of FeSO_4 – 151.9. Calculate (i) Molarity (ii) Molality (iii) mole fraction of FeSO_4 and water and percentage by weight of FeSO_4 . (5)
(f) What is mean by ionic strength of a solution? (2)
- 4 (a) Derive Henderson – Hassebach equation for a weak acid. (5)
(b) What is the pH of 0.1M acetic acid solution. $\text{PKa}=4.76$? What is the pH after addition of 0.1M sodium acetate. (4)
(c) Describe the applications of pH and buffer solution with examples. (5)
OR
(d) Explain various methods to adjust isotonicity and pH. (9)
(e) Write a note on pH indicators. (3)
(f) Write the equation for buffer capacity. (2)
- 5 (a) Explain Daniell cell. (5)
(b) How do you determine PKa using potentiometry? (5)
(c) Explain any two oxidation reduction reaction in pharmacy. (4)
OR
(d) How do you determine pH using glass electrode? (7)
(e) Write a note on catalyst. (7)
