

**FACULTY OF PHARMACY****B. Pharmacy 3/4 Year I-Semester (Main) Examination, November 2013****Subject : Physical Pharmacy – I****Time: 3 Hours****Max.Marks: 70****Note: Answer all questions. All questions carry equal marks.**

- 1.(a) Explain the methods to achieve liquefaction of gases. 6  
(b) Define refractive index. What is molar refraction? 4  
(c) Write about liquid crystalline state and its applications. 4  
**OR**  
(d) What is polymorphism? Explain its applications giving suitable examples. 8  
(e) Write the principle and applications of differential scanning calorimetry. 6
- 2.(a) State second law of thermodynamics. How do you calculate efficiency of steam engine? 8  
(b) Define and explain enthalpy and entropy. 6  
**OR**  
(c) State and explain Hess's law of constant heat summation. 7  
(d) Define free energy. Write about free energy functions and its applications. 7
- 3.(a) Define Raoult's law. Explain deviations from Raoult's law. 7  
(b) Explain the concept of activity and activity coefficients. 7  
**OR**  
(c) What are colligative properties? How do you determine freezing point depression? 7  
(d) Derive the equation for ionization of a weak acid. 4  
(e) Write about Sorenson's pH scale. 3
- 4.(a) Explain class II methods for calculation of isotonicity. 8  
(b) What is common ion effect? Derive buffer equation for a weak acid. 6  
**OR**  
(c) How do you prepare pharmaceutical buffer? Give examples. 7  
(d) Write the equations for buffer capacity and maximum buffer capacity and explain the terms therein. 4  
(e) Write a note on physiological buffers. 3
- 5.(a) Explain different types of electrodes. 10  
(b) Write Nernst equation and explain the terms therein. 4  
**OR**  
(c) How do you measure pH using glass electrode. 7  
(d) Explain ion sensitive electrodes. 7

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