

**I B.Pharmacy I Semester Regular Examinations, February 2013  
PHYSICAL PHARMACY-I**

**Time: 3 hours**

**Max Marks: 75**

**Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Claude's process is more efficient than Linde's process for liquefaction of gases. Explain.  
(b) What is meant by liquefaction of gases? Write its significance [8+7]
2. Define CST and miscibility temperature. Write about its significance. [15]
3. Explain and derive an expression for the maximum work done when an ideal gas expands isothermally and reversibly. [15]
4. Describe the characteristics of a spontaneous reaction with examples. Explain the thermodynamic state functions for such processes. [15]
5. Describe the below optical properties in the elucidation of the chemical structure with two examples.  
(a) Refractive index.  
(b) Optical rotation. [8+7]
6. (a) Define refractive index. Write their applications and factors influencing.  
(b) Define Dipole moment. Explain the mathematical treatment and write its applications. [7+8]
7. (a) Derive an expression for calculation of molecular weight of non-volatile solute by freezing point depression method.  
(b) A sample of camphor used in the RAST camphor method has a melting point of  $176.5^{\circ}\text{C}$ . the melting point of a solution containing 0.522gm of camphor and 0.0386gm of unknown substance was  $158.8^{\circ}\text{C}$ . find the molecular weight of the unknown substance. Kf of camphor is 37.7. [7+8]
8. (a) Explain how molecular mass is determined from freezing point depression method?  
(b) Define Osmosis, Semipermeable membrane and explain laws of osmotic pressure. [7+8]

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