International Islamic University Chittagong
Department of Pharmacy
Final Examination

Program: B. Pharm (Honours) | Spring Semester 2018
Course Title: **Physical Pharmacy-I** | Course Code: **Pharm-1105**
Full Marks: **50** | Duration: **2** hour and **30** minutes

Part-A (Answer any two of the following questions)

a) Define colligative properties. Differentiate between osmosis and diffusion. 1+2
b) Define boiling point constant (K_b). Derive the relationship between elevation of boiling point and boiling point constant. 1+3
c) Calculate the vapour pressure lowering caused by the addition of 100g of sucrose (mol. Mass= 342) to 1000g of water if the vapour pressure of pure water at 25^0C is 23.8 mmHg. 3

2. a) Derive the equation of Raoult's law. 3
b) What is hypotonic solution? What happen when RBC is suspended in 3% NaCI solution? Explain. 1+3
c) Derive the relationship between depression of freezing point and freezing point constant. 3

3. a) Define buffer and buffer capacity. 2
b) How does buffer neutralizes acids or bases? 3
c) Discuss the preparation of pharmaceutical buffer. 3
d) Differentiate between pharmaceutical and biological buffer. 2

Part-B (Answer any three of the following questions)

4. a) Define reversible reaction and heterogeneous equilibrium with example.. 2
b) State Le Chateliers principle. Discuss the effect of change of temperature on equilibrium. 1+3
c) Discuss the optimum condition for maximum yield of ammonia in industrial process. 4

5. a) Explain the law of mass action based on molecular collision theory. 4
b) Derive the relation between Kc and Kp. 3
c) At 500^0 C the reaction between N_2 and H_2 to form ammonia has Kc= 6.0X 10^{-2} . What is the value of Kp for the reaction? 3

6. a) The hydrogen ion concentration of fruit juice is 3.3×10^2M.What is the P^H of the juice?Is it acidic or basic? 3
b) Prove that $P^H+p^{OH}=14$. 4
c) Draw different acid base tritration curve with suitable indicator. 3

7. a) Define phase, component and degrees of freedom . Give example. 3
b) Briefly describe the phase diagramme of water system. 2
c) Draw and explain the phase diagram of sulpher system. 5