

International Islamic University Chittagong
Department of Electronic & Telecommunication Engineering
Final Examination

Program: B.Sc. Engg. (ETE)
Course Code: CHEM-2321/2301
Time: 2 hours 30 minutes

Semester: Autumn-2018
Course Title: Chemistry
Full Marks: 50

Part A

[Answer any two questions from the followings; figures in the right margin indicate full marks.]

- 1(a). What is molar conductance? 1.5
1(b). The resistance of N/100 solution of an electrolyte was found to be 210 ohm at 25°C. Calculate equivalent conductance of the solution at 25°C. (Cell constant = 0.88) 5
1(c). Express a relation between specific conductance and equivalent conductance. 3.5
- 2(a). Write the biological importance of isotonic solution. 2
2(b). An aqueous solution has a mass of 490 grams containing 8.5×10^{-3} grams of calcium ions. What is concentration of calcium ions in ppm unit? 4
2(c). What is molarity and molality? Which one is dependent on temperature and why? 4
- 3(a). State Raoult law of elevation of boiling point of a solvent. 3
3(b). Explain solubilities of gas in a given amount of solvent by Henry's law and mention its limitations. 4
3(c). Distinguish between electrolyte and non-electrolyte substances. 23

Part B

[Answer any three questions from the followings; figures in the right margin indicate full marks.]

- 4(a). Derive the relation: $K_p = K_c (RT)^{\Delta n}$ 4
4(b). Write the expressions of K_p and K_c for the reaction: $N_{2(g)} + O_{2(g)} \leftrightarrow 2NO_{(g)}$ 2
4(c). One mole of H_2 and one mole of I_2 were heated in a 1.5 litre sealed glass box at 490°C till the equilibrium was reached. Assuming that the equilibrium constant is 45.9, find the final concentrations of H_2 , I_2 , and HI . 4
- 5(a). Compare between order and molecularity. 2
5(b). During hydrolysis of cane sugar, cane sugar reacts with water but the reaction is considered as first order reaction. Why? 3
5(c). State the rate law. If a unimolecular reaction is one quarter completed in 100 minutes. What is the specific rate constant (k) and period of half life? 5

- 5(a). What are colloids? How did you prepare the colloidal solution of gold?
6(b). What are lyophilic colloids? Why are they called reversible colloids?
6(c). Define micelles? Give examples.

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7.

Write short notes on: (Any two of the following three)

- (a) Zero order reaction.
(b) Law of mass action.
(c) Dialysis of colloids.

5×2

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