International Islamic University Chittagong
Department of Electrical and Electronic Engineering

Final Assignment On

Course Code: CHEM-2301 | Course Title: Chemistry
Autumn-2019 | Program: B.Sc. Engg. (EEE)
Time: 12 hours | Full Marks: 40
Date: 24/06/2020

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

1(a).	How cell constant is determined experimentally?	**R**	**CO1**	**2**
1(b).	Equivalence conductance on dilution of strong electrolyte differs from that of a weak electrolytes, why is it?	**An**	**CO1+CO2**	**3**
1(c).	Two electrolytic cells, one containing silver nitrate solution and the other copper sulphate solution as electrolytes were connected in series. A steady current of 1.50 A was passed through them until 0.00145 kg of silver was deposited at the cathode of the first cell. How long did the current flow? What mass of copper was deposited in the second cell?	**Ap**	**CO2**	**3**
2(a).	Explain partition co-efficient.	**U**	**CO1**	**1**
2(b).	Drive a relation between molarity and normality. Compare the molar and molal volumes of 1 mol of a solute dissolved in 250 ml CCl_4 (d = 1.59/mL).	**Ev**	**CO2**	**4**
2(c).	Which of the following solution 0.50 M NaCl or 0.25 M $SrCl_2$ has the larger concentration when expressed in μg/mL?	**C**	**CO2**	**3**
3(a).	Why chemical equilibrium is always a dynamic equilibrium?	**R**	**CO1**	**2**
3(b).	Write down the expressions for the equilibrium constants for the reaction: $4NH_{3(g)} + 5O_{2(g)} \longleftrightarrow 4NO_{(g)} + 6H_2O_{(g)}$; What are the units of these constant?	**U**	**CO1+CO2**	**3**
3(c).	For the reaction: $2NO_{2(g)} + O_{2(g)} \longleftrightarrow 2NO_{3(g)}$ at 923^0C , K_p is 42.5. if 0.0500 mole of $NO_{2(g)}$, 0.122 mole of $O_{2(g)}$, and 0.300 mole of $NO_{3(g)}$ are mixed in a 1.00 liter container, in what direction will reaction proceed? (Show you calculation in a prove that your answer is not a guess).	**Ap**	**CO2**	**3**

4(a).	Plot a graph of i) conc. vs time. ii) rate of reaction vs concentration for a zero order reaction.	**An**	**CO1+CO2**	**3**
4(b).	Inversion of cane sugar is treated as a pseudo order reaction,-why?	**U**	**CO1**	**3**
4(c).	For the reaction **"2A $\longrightarrow$ Product",** show that half-life depends upon initial concentration of reactants.	**Ev**	**CO1**	**2**
5(a).	What do you mean by adsorption isotherm?	**U**	**CO1**	**2**
5(b).	Draw typical adsorption graph for unimolecular and multimolecular layer.	**R**	**CO1**	**3**
5(c).	Derive the mathematical equation relating the pressure and the extent of adsorption (x/m) of a gas on a metal surface.	**Ev**	**CO2**	**3**