**KSHITIJ TUTORIALS**

**(**Shop no. 15, First Floor Tropical lagoon shopping center, Anand Nagar, Thane West**)**

**Electrochemistry**

 Standard :- XII (CBSE Board) Marks :- 20 Time:- 45 minutes

I). Choose the correct option 5 Marks

1. Fused NaCl on electrolysis gives ………….. on cathode.
(a) Chlroine
(b) Sodium
(c) Sodium amalgam
(d) Hydrogen

2. The standard electrode potentials for the half cell reactions are:
Zn → Zn2-– 2e– E° = 0.76 V
Fe → Fe2- + 2– E° = -0.41 V
The emf of the cell reaction
Fe2- + Zn → Zn2- + Fe is
(a) -0.35 V
(b) +0.35 V
(c) -1.17 V
(d) +1.17 V

3. How many coulombs are required for the oxidation of 1 mole of H2O to O2?
(a) 1.93 × 105 C
(b) 9.65 × 104 C
(c) 3.86 × 105 C
(d) 4.825 × 105 C

4. The standard reduction potentials of X, Y, Z metals are 0.52, -3.03, -1.18 respectively. The order of reducing power of the corresponding metals is:
(a) Y > Z > X
(b) X > Y > Z
(c) Z > Y > X
(d) Z > X > Y

5. The half-cell reactions for rusting of iron are
2H+ + 12 O2 + 2e¯ ? H2O, E° = + 1.23 V
Fe2+ + 2e¯ ? Fe (s), E° = – 0.44 V
?G° (in kj) for the reaction is
(a) -76
(b) -322
(c) -122
(d) -176

II). Answer the following questions 10 Marks

Q1. 
calculate HOAc using appropriate molar conductance of the electrolytes listed above at infinite dilution of H2O at 25°C.

Q2. Write the name of the cell which is generally used in transistors. Write the reactions taking place at the anode and the cathode of this cell.

Q3. Using the E° values of A and B, predict which one is better for coating the surface of iron [E°(Fe2+/Fe) = – 0.44V] to prevent corrosion and why?
Given: E°(A2+|A) = -2.37 V and E°(B2+|B) = – 0.14 V

Q4. E° values for Fe3+/Fe2+ and Ag+/Ag are respectively 0.771 V and 0.800 V. Is the reaction:
Fe3+ + Ag → Fe2+ + Ag+ spontaneous or not?

Q5. The resistance of a conductivity cell containing 0.001 M KCI solution at 298 K is 1500 Ω. What is the cell constant if the conductivity of 0.001 M KCl solution at 298 K is 0.146 × 10-3 S cm-1?

III). Answer in brief 5 Marks

Q1. Resistance of a conductivity cell filled wIth 0.1 M KCl solution is 100. If the resistance of the same cell when filled with 0.02 M KCl solution is 520Ω, calculate the conductivity and molar conductivity of 0.02 M KCl solution. (The conductivity of 0.1 M KCl solution is 1.29 S m-1.) 3M

Q2. Write anode and cathode reactions that occur in dry cell. How does a dry cell differ from a mercury cell? 2 M