Test Record for the Month of .....XII.....Science....April 2025

12th – Chemistry Weekly Test

Chapter – Electrochemistry

Time :– 1 hour

M.Marks :– 28

1. A soln. is placed in two different cells having cell constant 0.1 and 0.5 cm^{-1} respectively. Which of the two will have greater value of specific conductance? (1)

2. Arrange the following solutions in decreasing order of specific conductance (1)

(i) 0.01M NaCl (ii) 0.05M NaCl (iii) 0.1M NaCl (iv) 0.5M NaCl

3. X and Y are two electrolytes. On dilution molar conductivity of X increases 9.5 times while that of Y increases 25 times which of the two is a weak electrolyte and why? (1.5)

4. Calculate the electrode potential of iron electrode dipped in 0.01M Fe^{2+} ions solution at 298K. [$E^\circ_{Fe^{2+}/Fe} = -0.45V$] (1.5)

5. Calculate the reduction potential of the following electrode at 298K :–

$Pt, Cl_2(2.5atm) \mid HCl(0.01M)$; $E^\circ_{Cl_2/2Cl^-} = 1.36V$ (2)

6. Calculate e.m.f. of the following cell at 298K :–

$2Cr_{(s)} + 3Fe^{2+}(0.1M) \longrightarrow 2Cr^{3+}(0.01M) + 3Fe_{(s)}$

Given :– $E^\circ_{(Cr^{3+}/Cr)} = -0.74V$, $E^\circ_{(Fe^{2+}/Fe)} = -0.44V$ (2)

7. Consider the following cell :– (2)

$2Fe_{(s)} + O_{2(g)} + 4H^+_{(aq)} \longrightarrow 2Fe^{2+}_{(aq)} + 2H_2O_{(l)}$

$E^\circ_{cell} = 1.67V$. When $[Fe^{2+}] = 1 \times 10^{-3}M$, $P(O_2) = 0.1$ atm, emf of the cell is 1.57V. Calculate the pH of solution.

8. Calculate the equilibrium constant for the reaction :– (2)

$Cd^{2+}_{(aq)} + Zn_{(s)} \longrightarrow Zn^{2+}_{(aq)} + Cd_{(s)}$