CHEMISTRY

Board – CBSE	Class – 12th	Topic – Electrochemistry

1. Explain construction and working of standard Hydrogen electrode?

2. Explain how rusting of iron is envisaged as setting up of an electrochemical cell.

3. Write the Nernst equation and emf of the following cells at 298 K:

   (i) $Mg_{(s)}|Mg^{+2} + (0.001M)||Cu^{+2}(0.0001M)$

   (ii) $Fe_{(s)}|Fe^{+2}(0.001M)||H^{+}(1M)|H_{2(g)}(1\ bar)|Pt_{(s)}$

4. Define conductivity and molar conductivity for the solution of an electrolyte. Discuss their variation with concentration.

5. How would you determine the standard electrode potential of the system Mg2+| Mg?

6. Calculate the emf of the cell in which the following reaction takes place:

   $Ni_{(s)} + 2Ag^{+}(0.002M) \rightarrow Ni^{+2}(0.160M) + 2Ag_{(s)}$

   Given that $E°_{(cell)} = 1.05V$

7. Calculate the potential of hydrogen electrode in contact with a solution whose pH is 10.

8. If a current of 0.5 ampere flows through a metallic wire for 2 hours, then how many electrons would flow through the wire?

9. Write the chemistry of recharging the lead storage battery, highlighting all the materials that are involved during recharging.

10. Consult the table of standard electrode potentials and suggest three substances that can oxidize ferrous ions under suitable conditions.

11. The conductivity of 0.20 M solution of KCl at 298 K is $0.0248\ Scm^{-1}$. Calculate its molar conductivity.

12. Name the cell used for low current devices like hearing aids, watches etc. Also give the half-cell reactions for such a cell?

13. How many g of chlorine can be produced by the electrolysis of molten NaCl with a current of 1 amp. for 15 min?

14. State Faraday's Laws of electrolysis?

15. How is Limiting molar conductivity related to

    i) degree of ionization   and ii) dissociation constant

16. Write an expression relating cell constant and conductivity?