DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : CHEMISTRY
DPP No. : 9

Topic :- Electro Chemistry

1 **(c)**

1 mole of monovalent metal ion means charge of N electrons

i.e., 96500 C or 1 faraday.

2 **(a)**

For strong electrolytes $\Lambda\ vs\ \sqrt{c}$ plots are straight line.

3 **(d)**

The metal should be capable of adsorbing H (*e*.g., Pt).

4 **(b)**

Laws of electrolysis were proposed by Michael Faraday in 1833.

1. **Faraday's first law** "The mass of any substance deposited or liberated at any electrode is directly proportional to the quantity of electricity passed".

   i.e., $w \propto Q$

   where, w = mass of ions liberated in gram

   Q = quantity of electricity passed in coulombs.

2. **Faraday's second law** "When the same quantity of electricity is passed through different electrolytes, the masses of different ions liberated at the electrodes are directly proportional to their chemical equivalents."

   i.e., $\frac{w_1}{w_2} = \frac{E_1}{E_2}$ or $\frac{Z_1 it}{Z_2 it} = \frac{E_1}{E_2}$.

5 **(d)**

Strong electropositive metals (I group, II group and Al) cannot be obtained at cathode by electrolysing their aqueous salt solutions.

6 **(b)**

$$\frac{\text{Weight of Cu}}{\text{Weight of } H_2} = \frac{\text{Eq.wt.of Cu}}{\text{Eq.wt.of } H_2}$$

$$\frac{\text{Weight of Cu}}{0.504} = \frac{63.6/2}{1}$$

$\therefore$ Weight of Cu $= 15.9$ g

7 **(b)**

In presence of Hg electrode preferential discharge of Na^+ (in comparison to H^+) occurs.

8 **(b)**

Specific conductivity of a solution decreases with dilution.

9 **(b)**

Passage of current in electrolytic solution is due to migration of ions towards opposite electrodes.

10 **(c)**

$E_{\text{cell}} = E_{OP_L} + E_{RP_R} = -E_{RP_L} + E_{RP_R}$.

11 **(a)**

$E° = E$, when $[Zn^{2+}] = 1M$;

Also process is $Zn^{2+}(aq) + 2e \longrightarrow Zn(s)$.

12 **(d)**

$AgI\ (s) + e^- \rightleftharpoons Ag\ (s) + I^-$; $E^\circ = 0.152$ V

$Ag\ (s) \longrightarrow Ag^+ + e^-$ $E^\circ = -0.8$ V

$AgI\ (s) \longrightarrow Ag^+ + I^-$ $E^\circ = -0.952$

$$E^\circ_{\text{cell}} = \frac{0.059}{n}\log K_{sp}$$

$$-0.952 = \frac{0.059}{1}\log K_{sp}$$

$$\log K_{sp} = \frac{-0.952}{0.059} = -16.135$$

13 **(a)**

$\Lambda^\infty_{CH_3COOH} = \Lambda^\infty_{CH_3COONa} + \Lambda^\infty_{HCl} - \Lambda^\infty_{NaCl}$

14 **(a)**

At cathode : $Cu^{2+} + 2e \longrightarrow Cu$;

At anode : $Cu \longrightarrow Cu^{2+} + 2e$

15 **(d)**

$$\frac{\text{Wt.of Cu deposited}}{\text{Wt.of } H_2 \text{ produced}} = \frac{\text{eq.wt.of Cu}}{\text{eq.wt.of H}}$$

$$\frac{0.16}{\text{wt.of } H_2} = \frac{64/2}{1} = \frac{32}{1}$$

Wt. of $H_2 = \frac{0.16}{32} = 5 \times 10^{-3}$ g

Volume of H_2 liberated at STP

$$= \frac{22400}{2} \times 5 \times 10^{-3} cc$$

$= 56$ cc

16 **(a)**

Faraday's laws are independent of external factors.

17 **(a)**

E°_{OP} for Li is more,

$Li \longrightarrow Li^+ + e$

Thus, Li is strong oxidant.

18 **(d)**

All are electrolytic cells.

19 **(a)**

96500 C or $1F$ will liberate 1 eq. of O_2 or $1/4$ mole O_2 or 5.6 litre O_2 at NTP.

20 **(a)**

96500C or 1 Faraday charge is required for the deposition of 1 g-equivalent of a substance.

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**C**	**A**	**D**	**B**	**D**	**B**	**B**	**B**	**B**	**C**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**A**	**D**	**A**	**A**	**D**	**A**	**A**	**D**	**A**	**A**