GUJCET CRASH COURSE

SEM- 3 - Ch- 3 electrochemistry (Answers)

(1) **Ans:** (d)

Ans: (b)

(2) **Ans:** (c)

(3) **Ans:** (d)

(4) **Ans:** (c)

(5) **Ans:** (d)

(6) **Ans:** (c)

(7) **Ans:** (b)

(8) **Ans:** (d)

(9) **Ans:** (c)

(10) **Ans:** (a)

(11) In the

(12) **Ans:**(c) Concentration cell

(13) **Ans:** (a)

(14) **Ans:** (b)

(15) **Ans:** (b)

(16) **Ans:** (c)

(17) **Ans:** (a)

(18) **Ans:** (c)

(19) **Ans:** (a)

(20) **Ans:** (b)

(21) **Ans:** (b)

(22) **Ans:** (d)

(23) **Ans:** (6)

(24) **Ans:** (d)

(25) **Ans:** (c)

(26) **Ans:** (b)

(27) **Ans:** (a)

(28) **Ans:** (b)

(29) **Ans:** (a)

(30)
Ans: (b)

- n = 1
  F = 96500
  E = 1.02 V

$$\Delta G = -nFE$$

$$= -1 \times 96500 \times 1.02$$

$$= -98430 \text{ J}$$

(31) **Ans:** (a)

(32) **Ans:** (a)

(33) **Ans:** (a)

(35) **Ans:** (b)

- $E^o_{cell} = \frac{0.059}{2} \log K_C = 0.46$

$$\therefore \log K_C = \frac{0.46 \times 2}{0.059}$$

$$\therefore \log K_C = 15.593$$

$$\therefore K_C = \text{Anti}\log 15.593$$

$$\therefore K_C = 3.92 \times 10^{15}$$

(36)
Ans: (d)

- $\Lambda^o{}_m CH_3COOH = \lambda^o H^+ \lambda^o CH_3COO^-$

$$= \Lambda^o H^+ + \lambda^o Cl^- + \lambda^o CH_3COO^- + \lambda^o Na^+ - \lambda^o Na^+ \lambda^o Cl^-$$

$$= \Lambda^o{}_m HCl + \Lambda^o{}_m CH_3COONa - \Lambda^o{}_m NaCl$$

$$= [(425.9 + 91.0) - 126.4]$$

$$\Lambda^o{}_m CH_3COOH = 390.5 \text{ S cm}^2\text{mol}^{-1}$$

(37) **Ans:** (d)

- $Q = I \times t$

$$= 7.5 \times 200$$

$$= 1500$$

$$\frac{1500}{96500} = 0.0155 \text{ F}$$

Cathode:

$$Ag^+{}_{(aq)} + e^- \rightarrow Ag_{(s)}$$

1 Faraday = 1 mole Ag

$$\therefore 0.0155 \text{ F} = 0.0155 \text{ mole Ag}$$

$$= 0.0155 \times 108$$

$$= 1.674$$

gm. Silver

This value is obtained from calculators so it is considered as a thermotical value. During electrolysis 1.08 g Ag is deposited. So it an experimental value.

Now Efficiency of cell = $\frac{\text{Practical value}}{\text{Theoritical value}} \times 100$

$$= \frac{1.08 \times 100}{1.674} = 64.51\%$$

(38) What **Ans:** (a)

- Here, (Fe) becomes anode as its std. potential is low.

$$^{\ominus}Fe \mid Fe^{2+}{}_{(1M)} \parallel Cu^{2+}{}_{(1M)} \mid Cu^{\oplus}$$

Cathode:

$$Cu^{2+}{}_{(aq)} + 2e^- \rightarrow Cu_{(s)}$$

(R)

Anode:

$$Fe_{(s)} \rightarrow Fe^{2+}{}_{(aq)} + 2e^- \text{ (O)}$$

$$\therefore n = 2$$

$$E^o{}_{cell} = E^o{}_{red(cathode)} - E^o{}_{red(anode)}$$

$$= E^o{}_{Cu^{2+}|Cu} - E^o{}_{Fe^{2+}|Fe}.$$

$$= 0.34 - (-0.45)$$

$$= 0.34 + 0.45$$

$$E^o{}_{cell} = 0.79 \text{ V}$$

$$\Delta G^o = -nFE^o{}_{cell}$$

$$\therefore \Delta G^o = -2 \times 96500 \times 0.79$$

$$\therefore \Delta G^o = -152470 \text{ V}$$

$$\therefore \Delta G^o = -152470 \text{ J}$$

(39) **Ans:** (a)

(40) **Ans:** (c)

- $Cu^{2+} + 2e^- \rightarrow Cu_{(s)}$

2F

$$= \frac{1}{2} \text{ mole} = (40 \text{ gram})$$

$$\therefore 1F \rightarrow 1 \text{ mole}$$

$$1F \rightarrow (?)$$

$$1F \rightarrow 20 \text{ gram Ca}$$