SHIKSHA CLASSES

Subject : Chemistry | **BOARD QUESTION PAPER** | **Total Marks : 20**

Class : XII | **Topic : 5. Electrochemistry** | **Time : 1 Hr.**

Section (A)

Q. 1 : Select and write the most appropriate answer from the following alternatives of each sub question. **5**

i) The SI unit of molar conductivity is

a) S $cm^2 mol^{-1}$ b) S $dm^2 mol^{-1}$

c) S m^2 d) S $m^2 mol^{-1}$

ii) The number of electrons that have a total charge of 965 coulomb is

a) 6.022×10^{23} b) 6.022×10^{22}

c) 6.022×10^{21} d) 3.011×10^{23}

iii) For Daniell Cell which is correct.

a) Zn is anode b) Cu is anode

c) Ag is anode d) Fe is anode

iv) Kohlrausch law used to determine molar conductivity at zero concentration of following electrolyte.

a) NaCl b) $CuSO_4$

c) HCl d) CH_3COOH

v) On diluting the solution of an electrolyte

a) Both ^ and k increase b) Both ^ and k decrease

c) ^ increases and k decreases d) ^ decreases and k increases

Q. 2 : Very short answer type Question. **2**

i) What is sign of cathode and anode in galvanic cell?

ii) What is relation of molar conductivity with concentration?

Section (B)

: Answer the following questions. (Any Three) **6**

Q. 3 : The molar conducivity of 0.05 M $BaCl_2$ Solution at 25° C is 223 $\Omega^{-1} cm^2 mol^{-1}$. What is it's conductivity?

Q. 4 : How many faradays would be required to plate out 1.00 mole of free metal from following cations?

(i) Mg^{2+} (ii) Cu^{+}

Q. 5 : What is cell constant? What is its unit? Write its relation with resistance and conductivity.

Q. 6 : Differentiate between electrolytic Cell and Voltaic Cell.

Section (C)

: Answer the following question. (Any One) **3**

Q. 7 : Calculate mass of copper produced during passage of 2.5 A of current through a solution of $CuSO_4$ for 40 minutes molar mass of Cu is 63.5g mol^{-1} ?

Q. 8 : Explain the elctrolysis of molten NaCl

Section (D)

: Answer the following question. (Any One) **4**

Q. 9 : i) Write Nernst equation for the following reactions

a) $Cr(s) + 3Fe^{3+}(aq) \rightarrow Cr^{3+}(aq) + 3Fe^{2+}(aq)$

b) $Al^{3+}(aq) + 3e^{(-)} \rightarrow Al(s)$

ii) Calculate potential of following cell at 25^0 C

Zn/Zn^{2+} (0.6M)// H^{+}(1.2M) / H_2(g, 1atm) / Pt

$E^0Zn = -0.763V$.

Q. 10 : i) Formulate a cell for each of the following reaction

a) $Sn^{2+}(aq) + 2\,AgCl_{(s)} \rightarrow Sn^{+4}(aq) + 2Ag(s) + 2\,Cl^{-}(aq)$

b) $Zn_{(s)} + 2Fe^{+3}{}_{(aq)} \rightarrow 2Fe^{+2}{}_{(aq)} + Zn^{+2}{}_{(aq)}$

ii) From the following pair predict which is better reducing agent, their standard potentials given in bracket. Give reason.

a) $Co^{+3}(aq)$ (1.81V) & I_2 (0.54V)

b) $Ce^{3+}(aq)$ (–2.48V) & Ni^{+2} (–0.25V)

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