

Model Question Paper

Electro Chemistry I - Part I

12th Standard

Chemistry

Reg.No. :

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I. Answer all the questions.

II. Use blue pen only.

III. Question number 19 is compulsory.

Time : 01:00:00 Hrs

Total Marks : 70

5 x 1 = 5

Part-A

- 1) The process in which chemical change occurs on passing electricity is termed as
(a) neutralisation (b) hydrolysis (c) electrolysis (d) ionisation
- 2) The laws of electrolysis were enunciated first by
(a) Dalton (b) Faraday (c) Kekule (d) Avogadro
- 3) When one coulomb of electricity is passed through an electrolytic solution, the mass deposited on the electrode is equal to
(a) equivalent weight (b) molecular weight (c) electrochemical equivalent (d) one gram
- 4) Faraday's laws of electrolysis are related to
(a) atomic number of the cation (b) atomic number of the anion (c) equivalent weight of the electrolyte (d) speed of the cation
- 5) The specific conductance of a 0.01 M solution of KCl is $0.0014 \text{ ohm}^{-1} \text{ cm}^{-1}$ at 25°C . Its equivalent conductance is.....
(a) $14 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$ (b) $140 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$ (c) $1.4 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$ (d) $0.14 \text{ ohm}^{-1} \text{ cm}^2 \text{ eq}^{-1}$

Part-B

5 x 3 = 15

- 6) Differentiate between electrolytic conductor and metallic conductor.
- 7) Define Faraday
- 8) Define electrochemical equivalent. What is its unit
- 9) What are insulators? Give examples.
- 10) State Ostwald's dilution law

Part-C

5 x 5 = 40

- 11) If 50 milli ampere of current is passed through copper coulometer for 60 minutes, calculate the amount of copper deposited.
- 12) 0.1978 g of copper is deposited by a current of 0.2 ampere in 50 minutes. What is the electrochemical equivalent of copper?
- 13) pH of a solution is 5.5 at 25°C . Calculate its $[\text{OH}^-]$.
- 14) Calculate the pH of 0.001 M HCl solution
- 15) What current strength in amperes will be required to liberate 10g of iodine from potassium iodide solution in one hour?
- 16) An electric current is passed through three cells in series containing respectively solutions of copper sulphate, silver nitrate, and potassium iodide. What weights of silver and iodine will be liberated while 1.25 g of copper is being deposited?
- 17) Equivalent conductivity of acetic acid at infinite dilution is 390.7 and for 0.1M acetic acid the equivalent conductance is $5.2 \text{ mho.cm}^2 \text{ gm.equiv}^{-1}$. Calculate degree of dissociation. H^+ ion concentration and dissociation constant of the acid.
- 18) Ionic conductances at infinite dilution of Al^{3+} and SO_4^{2-} are $189 \text{ mho.cm}^2 \text{ gm.equiv}^{-1}$ and $160 \text{ mho.cm}^2 \text{ gm.equiv}^{-1}$. Calculate equivalent and molar conductance of the electrolyte at infinite dilution

Part-D

1X10=10

- 19) a) The resistance of a 0.01N solution of an electrolyte was found to be 210 ohm at 25°C using a conductance cell with a cell constant 0.88 cm^{-1} . Calculate the specific conductance and equivalent conductance
b) Find the degree of dissociation of HF in 1 M aqueous solution. The value of K for the ionic equilibrium $\text{HF} \rightleftharpoons \text{H}^+ + \text{F}^-$ is 7.2×10^{-4} .

(OR)

- b) a) The hydrogen ion concentration of a fruit juice is $3.3 \times 10^{-2} \text{ M}$. What is the pH of the juice? Is it acidic or basic?
b) If a solution has a pH of 7.41, determine its H^+ concentration.
