CBSE Board	**PARISHRAM PUBLICATIONS** **PUNE** **NAME of Student : _____** **Subject : Chemistry** **Class : XII** **Topic : Electrochemistry** **Max. Marks :- 30**	

SECTION – A (10 Marks)

Select the appropriate and answer the following [1 × 5 = 5]

Q. 1. When electricity is passed through a solution of $AlCl_3$, 13.5 g of Al is discharged. The amount of charge passed is
(a) 1.5 F (b) 0.5 F (c) 1.0 F (d) 2.0 F

Q. 2. Degree of ionisation does not depend on :
(a) nature of the solvent (b) nature of the electrolyte (c) dilution (d) molecular mass of the electrolyte

Q. 3. In increasing the dilution, the specific conductance :
(a) increases (b) decreases (c) remains constant (d) none of these

Q. 4. Which of the following is a strong electrolyte?
(a) $Ca(NO_3)_2$ (b) HCN (c) H_2SO_4 (d) NH_4OH

Q. 5. The main factors which affect corrosion are
(a) Position of metal in electrochemical series (b) Presence of CO_2 in water
(c) Presence of impurities in metals (d) All of these

Answer the following [1 × 5 = 5]

Q. 6. How much charge is required for the following reduction 1 mol of Al^{3+} to Al.

Q. 7. Calculatestandard electrode potentials of $K^+/K = -2.93V$, $Ag^+/Ag = 0.80V$,

Q. 8. Arrange the following metals in the order in which they displace each other from the solution of their salts. Al, Cu, Fe, Mg and Zn

Q. 9. Write note on salt bridge.

Q. 10. The conductivity of 0.20 M solution of KCl at 298 K is 0.0248 S cm^{-1}. Calculate its molar conductivity

SECTION – B (8 Marks)

Attempt the following

Q. 11. State and explain Kohlrausch's law?

Q. 12. The molar conductivities at zero concentration of NH_4Cl, NaOH and NaCl are respectively 149.7 $\Omega^{-1}cm^2\ mol^{-1}$, 248.1 $\Omega^{-1}cm^2\ mol^{-1}$ and 153.1 $\Omega^{-1}cm^2\ mol^{-1}$What is the molar conductivity of NH_4OH at zero concentration?

Q.13. State and explain faradays first and second law of electrolysis?

Q. 14. Write the cell reaction and calculate the standard potential of the cell.
$Ni(s)\ |Ni^{2+}(1M)||Cl^-(1M)\ |\ Cl_2(g,1atm)\ |\ Pt$ E^0_{Cl2}–1.36 V and E^0_{Ni} = –0.25 V

OR

State how conductivity varies with variation in the concentration?

SECTION – C (12 Marks)

Attempt any the following

Q. 15. How long will it take to produced 2.415 g of Ag metal from its salt solution by passing a current of 3A? How many moles of electron are required? Molar mass of Ag is 107.9 g mol^{-1}.

Q. 16. In a certain electrolysis experiment 1.55 g of Ag where deposited in one cell containing aqueous $AgNO_3$ solution. Calculate the mass deposited in another cell containing aqueous $ZnSO_4$ solution in series with $AgNO_3$ cell. Molar mass of Zn and Ag are 65.4 g mol^{-1} and 107.9 g mol^{-1} respectively.

Q. 17. Consider the following cell $Pb(s)|Pb^{2+}(0.5M)\ ||\ Cu^{2+}(0.015M)|Cu$
(a) Write the cell reaction (b) calculate E_{cell} and E^0_{cell} at 25^0 C (c) Calculate G and G^0 for the cell reaction.

Q. 18. Explain the construction and working of dry cell

OR

How potentiometer is used to compare emf of cell.