Electrochemistry

1.While heating one end of a metal plate, the other end gets hot because of

(a) the resistance of the metal

(b) mobility of atoms in the metal

(c) energised electrons moving to the other end

(d) minor perturbation in the energy of atoms.

Answer: (c) energised electrons moving to the other end

2.The EoM3+/M2+ values for Cr, Mn, Fe and Co are -0.41, +1.57, + 0.77 and +1.97 V respectively. For which one of the metals, the change in oxidation state from +2 to +3 is easiest?

(a) Cr

(b) Mn

(c) Fe

(d) Co

Answer: (a) Cr

3.Fused NaCl on electrolysis gives ..... on cathode.

(a) Chlroine

(b) Sodium

(c) Sodium amalgam

(d) Hydrogen

Ans. (b) Sodium

4.The highest electrical conductivity out of the following aqueous solutions is of?

(a) 0.1 M acetic acid

(b) 0.1 M chloro acetic acid

(c) 0.1 M fluoroacetic acid

(d) 0.1 M difluoro acetic acid

Answer: (d) 0.1 M difluoro acetic acid

5.The amount of electricity required to deposit 1 mol of aluminium from a solution of AlCl3 will be

(a) 0.33 F

(b) 1 F

(c) 3 F

(d) 1 ampere

Answer: (c) 3 F

6.Which of the following is supplied to the cathode of a fuel cell?

(a) Hydrogen

(b) Nitrogen

(c) Oxygen

(d) Chlorine

Answer: (c) Oxygen

7.The reaction, $3ClO^-(aq) \rightarrow ClO_3(aq) + 2Cl^-(aq)$ is an example of

(a) Oxidation reaction

(b) Reduction reaction

(c) Disproportionation reaction

(d) Decomposition reaction

Answer: (c) Disproportionation reaction

8.Molar conductivity of 0.15 M solution of KCl at 298 K, if its conductivity is 0.0152 S cm-1 will be

(a) 124 Ω-1 cm2 mol-1

(b) 204 Ω-1 cm2 mol-1

(c) 101 Ω-1 cm2 mol-1

(d) 300 Ω-1 cm2 mol-1

Answer: (c) 101 Ω-1 cm2 mol-1

9.How long would it take to deposit 50 g of Al from an electrolytic cell containing Al2O3 using a current of 105 amperes?

(a) 1.54 h

(b) 1.42 h

(c) 1.32 h

(d) 2.15 h

Answer: (b) 1.42 h

10.How many coulombs of electricity is required to reduce 1 mole of Cr2O72- in acidic medium?

(a) 4 × 96500 C

(b) 6 × 96500 C

(c) 2 × 96500 C

(d) 1 × 96500 C

Answer: (b) 6 × 96500 C

11.The equivalent conductance of Ba2+ and Cl– are respectively 127 and 76 ohm−1 cm2 eq−1 at infinite dilution. The equivalent conductance of BaCl2 at infinite dilution will be

(a) 139.5 ohm−1 cm2 eq−1

(b) 203 ohm−1 cm2 eq−1

(c) 279 ohm−1 cm2 eq−1

(d) 101.5 ohm−1 cm2 eq−1

Answer: (a) 139.5 ohm−1 cm2 eq−1

12.Standard solution of KNO3 is used to make a salt bridge because

(a) Velocity of K+ is greater than that of NO3−

(b) Velocity of NO3− is greater than that of K+

(c) Velocity of both K+ and NO3− are nearly same

(d) KNO3 is highly soluble in water.

Answer: (c) Velocity of both K+ and NO3− are nearly same

13.The standard reduction potentials of Cu2+/Cu and Cu2+/Cu+ are 0.337 and 0.153 respectively.

The standard electrode potential of Cu+/Cu half cell is

(a) 0.184 V

(b) 0.827 V

(c) 0.521V

(d) 0.490 V

Answer: (c) 0.521V

14.Without losing its concentration ZnCl2 solution cannot be kept in contact with

(a) Au

(b) Al

(c) Pb

(d) Ag

Answer: (b) Al

15.The standard reduction potentials of X, Y, Z metals are 0.52, -3.03, -1.18 respectively. The order of reducing power of the corresponding metals is:

(a) Y > Z > X

(b) X > Y > Z

(c) Z > Y > X

(d) Z > X > Y

Answer: (a) Y > Z > X