Class 12 Time : 1 hr.
12-5-2015 First Unit Test in CHEMISTRY M. Marks : 20

1. A cubic solid is made up of two elements P and Q. Atoms of P are present on the corners of the cube and atoms of Q occupy alternate tetrahedral voids. What is the formula of the compound formed between P and Q? (1)

2. What is the reason for conductance in: a) Metals b) Ionic Solids (1)

3. In the following reaction :- $Zn^{++} + 2e \rightarrow Zn(s)$ what mass of zinc ions will be reduced by one mole of electrons? At. mass of zinc is 65. (1)

4. The measured resistance of a conductance cell containing a solution of KCl at 25°C is 1005 ohm. Calculate specific conductance. Given that cell constant = $1.24 cm^{-1}$. (1)

5. Define the following:-
   a) Kohlraush's Law of independent migration b) Limiting molar conductivity.
   c) Doping d) Ferromagnetism (2)

6. Differentiate between the following:- (Two points each)
   a) Amorphous solid and crystalline solids.
   b) Schottky defect and Frenkel defect. (2)

7. Calculate the emf of the cell at 298 K in which the following reaction takes place:-
   $Ni(s) + 2Ag(0.002M) \rightarrow Ni^{2+} + (0.160\ M) + 2Ag(s)$
   Given that $E^{o}_{Cell} = 1.05V$. (2)

8. An element with a molar mass 2.7×10^{-2} Kg/mol forms a cubic unit cell with edge length 405 pm. If its density is 2.7×10^{3} kg/m^3. What is the nature of the cubic unit cell? (Avogadro's no. = 6.023×10^{23}) (3)

9. The cell in which the following reaction occurs :-
   $2Fe^{3+}(aq.) + 2I^{-}(aq.) \rightarrow 2\ Fe^{2+}(aq.) + I_2(s)$ has $E^{o} = 0.236V$ at 298K. Calculate the standard Gibb's energy and the equilibrium constant of the cell.
   (express the K_c value in log form). Faraday's constant = 96500C. R = 8.31 $JK^{-1}mol^{-1}$ (3)

10. a) Only write the reaction involved in Lead storage battery.
    b) Give any two advantages of fuel cells.
    c) What is electrochemical series? Give any one use of it. (3)

-x-x-x-x-x-