



Sri Sainath Nagar, Tirupati – 517 102

Holiday Homework (19-08-2018 to 26-08-2018)

Class: XII

Subject: CHEMISTRY

1. The electrical resistance of a column of 0.05 mol L^{-1} NaOH solution of diameter 1 cm and length 50 cm is 5.55×10^3 ohm. Calculate its resistivity, conductivity and molar conductivity.
2. Calculate Λ_m° for CaCl_2 and MgSO_4 from the data given in Table 3.4 (Text book).
3. A solution of CuSO_4 is electrolysed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at the cathode?
4. Predict the products of electrolysis in each of the following:
 - (a) An aqueous solution of AgNO_3 with silver electrodes.
 - (b) A dilute solution of H_2SO_4 with platinum electrodes.
 - (c) An aqueous solution of CuCl_2 with platinum electrodes.
5. Using the standard electrode potentials given in Table 3.1 (Text book), predict if the reaction between the following is feasible:
 - (i) $\text{Fe}^{3+}(\text{aq})$ and $\text{I}^{-}(\text{aq})$, (ii) $\text{Ag}^{+}(\text{aq})$ and $\text{Cu}(\text{s})$, (iii) $\text{Fe}^{3+}(\text{aq})$ and $\text{Br}^{-}(\text{aq})$, (iv) $\text{Ag}(\text{s})$ and $\text{Fe}^{3+}(\text{aq})$.
6. Write the Nernst equation and *emf* of the following cells at 298 K:
 - (a) $\text{Fe}(\text{s})|\text{Fe}^{2+}(0.001 \text{ M})||\text{H}^{+}(1 \text{ M})|\text{H}_2(\text{g})(1 \text{ bar})|\text{Pt}(\text{s})$
 - (b) $\text{Pt}(\text{s})|\text{Br}_2(\text{l})|\text{Br}^{-}(0.010 \text{ M})||\text{H}^{+}(0.030 \text{ M})|\text{H}_2(\text{g})(1 \text{ bar})|\text{Pt}(\text{s})$.
7. A reaction is second order with respect to a reactant. How is the rate of reaction affected if the concentration of the reactant is (i) doubled (ii) reduced to half?
8. For a first order reaction, show that time required for 99% completion is twice the time required for the completion of 90% of reaction.
9. During nuclear explosion, one of the products is ^{90}Sr with half-life of 28.1 years. If $1 \mu\text{g}$ of ^{90}Sr was absorbed in the bones of a newly born baby instead of calcium, how much of it will remain after 10 years and 60 years if it is not lost metabolically?
10. A first order reaction takes 40 min for 30% decomposition. Calculate $t_{1/2}$.
11. The rate constant for the decomposition of hydrocarbons is $2.418 \times 10^{-5} \text{ s}^{-1}$ at 546 K. If the energy of activation is 179.9 kJ/mol, what will be the value of pre-exponential factor?
12. The rate constants of a reaction at 500 K and 700 K are 0.02 s^{-1} and 0.07 s^{-1} respectively. Calculate the values of E_a and A .