**I.P.S.Sr.Sec.School**

**Max Time : 1 hr** **Class : 12th Chemistry Max Marks : 30**

**Unit Test**

1. Define activation energy of a reaction. [ 1 ]
2. Identify the order of reaction from the following unit for its rate constant: litre mol – 1 sec – 1  [ 1 ]
3. Why do pieces of wood burn faster than a log of wood of the same mass? [ 1 ]
4. For a reaction, A + B → Product, the rate law is given by : r = k . What is the order of the reaction? [ 1 ]
5. In a reaction, 2 A → Product, concentration of A decreases from 0.5 mol/L to 0.4 mol/L in 10 minutes. Calculate rate during this interval. [ 1 ]
6. 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. [ 2 ]
7. A first order reaction has a specific rate of 10 – 3 s – 1. How much time will it take for 10 g of the reactant to reduce 2.5 g? [ 2 ]
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. [ 2 ]
9. A first order reaction takes 40 minutes for 30 % decomposition. Calculate [ 2 ]
10. At what pH of HCl solution will hydrogen gas electrode show electrode potential of – 0.118 V? H2 gas is passed at 298 K and 1 atm pressure. [ 2 ]
11. Calculate the half-life of a first order reaction from their rate constants given below : [ 3 ]

(i) 200 s – 1 (ii) 2 min – 1 (iii) 4 years – 1

1. A zinc rod is dipped in 0.1 M solution of ZnSO4. The salt is 95 % dissociated at this dilution at 298 K. Calculate the electrode potential ( = 0.76 V) [ 3 ]
2. Define molar conductivity and cell constant. [ 3 ]
3. Conductivity of 2.5 x 10 – 4 M methanoic acid is 5.25 x 10 – 5 S cm – 1. Calculate its molar conductivity and degree of dissociation. [ 3 ]

Given : (H+) = 349.5 S cm2 mol – 1 and (HCOO – ) = 50.5 S cm2 mol – 1

1. Resistance of a conducting cell filled with 0.1 mol/L KCl solution is 100 Ω If the resistance of the same cell when filled with 0.02 mol/L KCl solution is 100 Ω, calculate the conductivity and molar conductivity of 0.02 mol/L KCl solution. The conductivity of 0.1 mol/L KCl solution is 1.29 x 10 – 2 ohm – 1 cm – 1. [ 3 ]