Date Planned : __ / __ / __	Daily Tutorial Sheet-1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Advanced (Archive)	Exact Duration :_____

1. The rate constant of a reaction depends on : **(1981)**

(A) temperature **(B)** initial concentration of the reactants

(C) time of reaction **(D)** extent of reaction

2. Rate of reaction, $A + B \rightarrow$ products is given below as a function of different initial concentration of A and B. **(1982)**

[A] mol/L	[B] mol/L)	Initial rate (mol L^{-1} min^{-1})
0.01	0.01	0.005
0.02	0.01	0.010
0.01	0.02	0.005

Determine the order of the reaction with respect to A and B. What is the half-life of A in the reaction?

3. A first order reaction is 20% complete in 10 min. Calculate (i) the specific rate constant of the reaction, and (ii) the time taken for the reaction to go to 75% completion. **(1983)**

4. The specific rate constant of a first-order reaction depends on the : **(1983)**

(A) concentration of the reactant **(B)** concentration of the product

(C) time **(D)** temperature

5. A catalyst is a substance which : **(1983)**

(A) Increases the equilibrium concentration of the product

(B) Changes the equilibrium constant of the reaction

(C) Shortens the time to reach equilibrium

(D) Supplies energy to the reaction

***6.** A catalyst : **(1984)**

(A) Increases the average kinetic energy of reacting molecules

(B) decreases the activation energy

(C) alters the reaction mechanism

(D) Increases the frequency of collisions of reacting species

7. While studying the decomposition of gaseous N_2O_5, it is observed that a plot of logarithm of its partial pressure versus time is linear. What kinetic parameters can be obtained from this observation? **(1985)**

8. The rate of chemical change is directly proportional to _____ . **(1985)**

9. For a first order reaction, the rate of the reaction doubles as the concentration of the reaction (s) doubles. **(1986)**

10. The hydrolysis of ethyl acetate in _____ medium is a _____ order reaction. **(1986)**

11. A first order gas reaction has $k = 1.5 \times 10^{-6}$ per second at 200°C . If the reaction is allowed to run for 10 h, what percentage of the initial concentration would have change in the product? What is the half-life of this reaction? **(1987)**

12. A first-order reaction is 50% complete in 30 minutes at 27°C and in 10 minutes at 47°C. Calculate the reaction rate constant at 27°C and the energy of activation of the reaction in kJ/mole. **(1988)**

13. In Arrhenius equation for a certain reaction, the value of A and E_a (activation energy) are $4 \times 10^{13} s^{-1}$ and 98.6 kJ mol^{-1} respectively. If the reaction is of first order, at what temperature will its half-life period be 10 min? **(1990)**

14. The decomposition of N_2O_5 according to the equation, $2N_2O_5(g) \longrightarrow 4NO_2(g) + O_2(g)$ is a first order reaction. After 30 min from the start of the decomposition in a closed vessel, the total pressure developed is found to be 284.5 mm of Hg. On complete decomposition, the total pressure is 584.5 mm of Hg. Calculate the rate constant of the reaction. **(1991)**

15. Two reactions (i) $A \rightarrow$ products (ii) $B \rightarrow$ products, follows first order kinetics. The rate of the reaction (i) is doubled when the temperature is raised from 300 K to 310 K. The half- life for this reaction at 310 K is 30 min. At the same temperature B decomposes twice as fast as A. If the energy of activation for the reaction (ii) is half that of reaction (i), calculate the rate constant of the reaction (ii) at 300 K. **(1992)**