Assignment -1

Chemical kinetics

(1) 75% of a first order was completed in 32 minutes. When was 50% reaction completed?

(a) 4 min   (b) 8 min   (c) 24 min   (d) 16 min

(2) The unit of rate constant for zero order reaction is

(a) Mol time^{-1} (b) L time^{-} (c) mol L^{-1} time^{-1} (d) L mol^{-1} time^{-1}

(3) If the concentration is expressed in mole per litre and time in second, the unit of rate constant for a first order reaction is:

(a)mol L^{-1} sec^{-1} (b) sec^{-1} (c) mol L^{-1} (d) mol^{-1}

(4) For which of the following, the units of rate and rate constant are equal

(a) First order reaction   (b) zero order reaction
(c) second   order reaction   (d) fractional order reaction

(5) The half life period of a first order reaction is:

(a)$\dfrac{0.693}{a}$
(b)$\dfrac{0.693}{k}$
(c)$\dfrac{0,693}{t}$
(d)$\dfrac{0.693}{ak}$

(6) The specific rate constant of a first order reaction depends on:

(a) Concentration of reactants

(b) concentration of products

(c) Time

(d) temperature

(7) The rate of reaction $A + B \rightarrow Products$. is given by the equation $r = k[A][B]$. If B is taken in large excess, the order of reaction would be

(a) 2
(b) 1
(c) zero
(d) unpredictable

(8) For a chemical reaction, $A \rightarrow E$, It is found that rate of reaction is doubled when concentration of A is increased four times. The order of reaction is:

(a) 1
(b) 2
(c) 1/2
(d) zero

(9) For the reaction $A \rightarrow B$, the rate of reaction is quadrupled when the concentration of A is doubled; the rate of reaction $r = k[A]^n$; the value of n is:

(a) 1　　　　　　　(b) zero　　　　(c) 3　　　　　　　　　　(d) 2
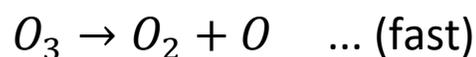

(10) Which of the following is a first order reaction?

(a)$2HI \rightarrow H_2 = I_2$　　　　　　　　　　(b) $2NO_2 \rightarrow 2NO + O_2$

(c)$2NO + O_2 \rightarrow 2NO_2$　　　　　　　　(d) $NH_4NO_2 \rightarrow N_2 + 2H_2O$

(11) The molecularity of a reaction:

(a) Same as its order　　　　　　(b) different from order
(c) may be same or different as compared to order
(d) always zero

(12) The chemical reaction $2O_3 \rightarrow 3O_2$ proceeds as follows:

$$O_3 \rightarrow O_2 + O \quad \text{... (fast)}$$

$$O + O_3 \rightarrow 2O_2 \text{ ... (slow)}$$

The rate law expression should be:

(a) $r = k[O_3]^2$　　　　　　　　　　(b) $r = k[O_3]^2[O_2]^{-1}$

(c) $r = k[O_3][O_2]$　　　　　　　　　(d) $r = k[O_3][O_2]^2$

(13) The time required to decompose half of the substance for n^{th} order reaction is inversely proportional to:

(a) a^{n+1} (b) a^{n-1} (c) a^{n+2} (d) a^n

(14) If we plot a graph between log k and $\frac{1}{T}$ by Arrhenius equation, the slope is:

(a) $\frac{E_a}{R}$ (b) $\frac{+E_a}{R}$ (c) $\frac{-E_a}{2,303R}$ (d) $+\frac{E_a}{2.303R}$

(15) The order of a reaction can be deduced from

(a) Experiment   (b) chemical equation
(c) rate equation   (d) thermo-chemical equation