ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

WORKSHEET-24(CLASS-12)

TOPIC- CHEMICAL KINETICS

SUBTOPIC-RATE RATE KINTICS

SUBJECT – CHEMISTRY **F.M. - 15**

DURATION – 30 mins **DATE -19.06.20**

1.1 **The half-life period of first order reaction is 1386 seconds. The specific rate constant of the reaction is-**

a) $0.5 \times 10^{-2}\ s^{-1}$ b) $0.5 \times 10^{-3}\ s^{-1}$ c) $5.0 \times 10^{-2}\ s^{-1}$ d) $5.0 \times 10^{-3}\ s^{-1}$

1.2 **The rate constant of a reaction A → B is 0.6×10^{3} mole per second. If the concentration of [A] is 5 M, then what will be concentration of [B] after 20 months?**

(a) 0.36 M (b) 0.72 M (c) 1.08 M (d) 3.60 M

1.3 **A first order reaction has specific reaction rate $10^{-2}s^{-1}$. How much time it will take for 20g of reactant to reduce to 5g?**

a) 138.6 s b) 346.5 s c) 693.0 s d) 238.6 s

1.4 **The rate of first order reaction is 0.04 mol L^{-1} s^{-1} at 10 sec. and 0.03 mol L^{-1} at 2C seconds after initiation of the reaction. $t_{1/2}$ of reaction is-**

(a) 44.1 s (b) 54.1 s (c) 24.1 s (d) 34.1 s

1.5 **If the initial concentration of reactant is doubled, $t_{1/2}$ is also doubled, the order of reaction is-**

a) 0 b) 1 c) 2 d) 3

1.6 **If cone, of reactant 'A' is increased 10 times and rate of reaction becomes 100 times. What is order with respect to 'A'?**

a) 1 b) 2 c) 3 d) 4

1.7 **In the first order reaction the concentration of reactant decreases from 0.6 M to 0.3 M in 30 minutes. The time taken for the concentration to change from 0.1 M to 0.025 M:**

(a) 60 min (b) 30 min (c) 15 min (d) 50 min

1.8 **A first order reaction is 50% completed in $1.26 \times 10_{14}$ s. How much time would it take for 100% completion?**

a) 1.26×10^{15} s b) 2.52×10^{14} s c) 2.52×10^{28} s d) Infinite

1.9 **For the reaction $N_2 + 3H_2 \rightarrow 2NH_3$ if $\frac{\Delta[NH_3]}{\Delta t} = 2 \times 10^{-4}$ mol $L^{-1}s^{-1}$, the value of $\frac{-\Delta[H_2]}{\Delta t}$ would be-**

a) 1×10^{-4} mol $L^{-1}s^{-1}$ b) 3×10^{-4} mol $L^{-1}s^{-1}$ c) 4×10^{-4} mol $L^{-1}s^{-1}$ d) 6×10^{-4} mol $L^{-1}s^{-1}$

1.10 **The rate of a certain hypothetical reaction: A + B + C → products is given by r = $\frac{-d[A]}{dt} = K[A]^{1/2}[B]^{1/3}[C]^{1/4}$. The order of the reaction is-**

a) 13/11 b) 13/14 b) 12/13 d) 13/12

1.11 **In the formation of $S0_2$ by contact process; $2SO_2 + O_2 \rightarrow 2SO_3$, the rate of reaction was measured as- $\frac{-d[O_2]}{dt} = 2.5 \times 10^{-4}$ mol $L^{-1}s^{-1}$. The rate of formation of $S0_3$ will be-**

a) -5.0×10^{-4} mol $L^{-1}s^{-1}$ (b) -1.25×10^{-4} mol $L^{-1}s^{-1}$ (c) 3.75×10^{-4} mol $L^{-1}s^{-1}$ (d) 5.00×10^{-4} mol $L^{-1}s^{-1}$

1.12 **For a chemical reaction A→B, it is found that the rate of reaction doubles when the concentration of A is increased four times. The order of reaction is-**

a) 2 b) 1 c) Half d) Zero

1.13 **Which among the following is a false statement?**

a) Rate of zero order reaction is independent of initial concentration of reactant.

b) Half-life of a third order reaction is inversely proportional to square of initial concentration of the reactant.

c) Molecularity of a reaction may be zero or fraction

d) For a first order reaction: $t_{1/2} = 0.693/K$

1.14 $RCOOR' + H_2O \xrightarrow{HCl} RCOOH + R'OH$ **What type of reaction is this?**

a) Second order b) Unimolecular c) Pseudo-unimolecular d) Third order

1.15 **The half-life of the first order reaction having rate constant K = 1.7 x $10^{-5}s^{-1}$ is-**

a) 12.1 h b) 9.7 h c) 11.3 h d) 1.8 h

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