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OBJECTIVE TEST-1

Topic – Chemical Kinetics

Time – 1 Hr. **M.M.-100**

Q,1. The formation of ammonia involves following reaction-

$$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$$

Which of the following does not give the rate of formation of ammonia-

(a) $-\frac{d[N_2(g)]}{dt}$ (b) $-\frac{d[H_2(g)]}{dt}$

(c) $+\frac{1}{2}\frac{d[NH_3(g)]}{dt}$ (d) None

Q. 2. Which of the following is incorrect about the molecularity of the reactions-

(a) It is the number of reactant molecules which collide simultaneously to lead the reaction

(b) It cannot exceed 3

(c) It cannot be fractional or zero

(d) It is determined experimentally

Q. 3.Which of the following is incorrect about the order of the reactions-

(a) It is the number of reactant molecules which collide simultaneously to lead the reaction

(b) It is the sum of the powers of the molar conc. of different reactants represented in experimental rate expression of a chemical reaction

(c) It can be fractional or zero

(d) It is determined experimentally

Q. 4. The rate expression of a reaction-

$$aA + bB \rightarrow \text{Products}$$

is as follows- $\frac{dx}{dt} = k[A]^m[B]^n$

The order of the reaction is-

(a) (a + b) (b) (m + n)

(c) (a - b) (d) Unpredictable

Q. 5. Which of the following is a fractional order reaction-

(a) $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$

(b) $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$

(c) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

(d) $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$

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Q. 6. Which of the following is a pseudo first order reaction-

(a) $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$

(b) $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$

(c) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

(d) None of these

Q,7. The photosynthesis of HCl involves following reaction-

$$H_2(g) + Cl_2(g) \xrightarrow{h\upsilon} 2HCl(g)$$

The order of this reaction is-

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.8. Consider following reaction-

$$C_{12}H_{22}O_{11}(s) + H_2O(l) \rightarrow C_6H_{12}O_6 + C_6H_{12}O_6$$

The rate expression of this reaction is- -

(a) $\frac{dx}{dt} = k[C_{12}H_{22}O_{11}]^2 [H_2O(l)]$ (b) $\frac{dx}{dt} = k[C_{12}H_{22}O_{11}] [H_2O(l)]$

(c) $\frac{dx}{dt} = k[C_{12}H_{22}O_{11}] [H_2O(l)]^0$ (d) $\frac{dx}{dt} = k[C_{12}H_{22}O_{11}] [H_2O(l)]^2$

Q.9. Which of the following relation gives half life period for a first order reaction-

(a) $t_{\frac{1}{2}} = \frac{0.693}{k}$ (b) $t_{\frac{1}{2}} = \frac{2.303}{k} \log 2$

(c) Both (d) None

Q.10. For a reaction, half life period, $t_{\frac{1}{2}} \alpha \frac{1}{a_0}$

The order of the reaction is-

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.11. For a reaction, the temperature coefficient is 2. If temperature of the reaction is increased from 400K to 430K, then the rate of the reaction would become-

(a) Twiced (b) Thriced (c) 4-times (d) 8-times

Q.12. The half life period of a first order reaction is 20 min. How much time will be required for 75% completion of the reaction-

(a) 40 min (b) 60 min (c) 80 min (d) None

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Q.13. Radioactivity is the process of following order-

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.14. The rate expression of a reaction-

$$aA + bB \rightarrow \text{Products}$$

is as follows- $\frac{dx}{dt} = k[A]^2[B]$

If the conc. of reactant B is twiced, the rate of the reaction will become-

(a) Twiced (b) Thriced (c) 4-times (d) 8-times

Q.15.- For the reaction-

$$aA + bB \rightarrow \text{Products}$$

If the conc. f reactant A is twiced, the rate of the reaction becomes 4-times but if the conc. of reactant B is twiced, the rate of the reaction remains unchanged. The order of reaction will be-

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

Q.16.- Consider the reaction of first order-

$$2N_2O_5(g) \rightarrow 2N_2O_4(g) + O_2(g)$$

The plot of the rate against which of the following will give straight line-

(a) $[N_2O_5(g)]$ (b) $[N_2O_5(g)]^2$ (c) $\frac{1}{[N_2O_5(g)]}$ (d) $\frac{1}{[N_2O_5(g)]^2}$

Q.17.- Which of the following gives the expression of the rate constant for a zero order reaction-

(a) $k = \frac{0.693}{t_{\frac{1}{2}}}$ (b) $k_0 = \frac{[A]_0 - [A]}{t}$

(c) $k_0 = \frac{[A]_0}{t}$ (d) None

Q.18.- For a zero order reaction, if [A] is plotted against time t, then the slope of the straight line obtained will be-

(a) k_0 (b) $-k_0$ (c) [A] (d) $\frac{1}{k_0}$

Q.19.- For a first order reaction, if $\ln[A]_t$ is plotted against time t, then the intercept of the straight line obtained will be-

(a) k (b) – k (c) $\ln [A]_0$ (d) $-\ln [A]_0$

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Q.20.- For the reaction-

$$aA + bB \rightarrow \text{Products}$$

If the conc. f reactant A is twiced, the rate of the reaction becomes 2-times but if the conc. of reactant B is twiced, the rate of the reaction remains unchanged. The rate expression of the reaction will be-

(a) $r = k[A]^2[B]$ (b) $r = k[A][B]^2$

(c) $r = k[A]^2[B]^2$ (d) $r = k[A][B]^0$

Q.21.- The unit of specific rate constant for a n^{th} order reaction is given by the expression-

(a) $mol^{1-n} L^{n-1} sec^{-1}$ (b) $(mol\ L^{-1})^{1-n} sec^{-1}$

(c) Both (d) None

Q.22. For an endothermic reaction, where ΔH represents the enthalpy of reaction, the minimum value of activation energy will be-

(a) Less than Δ H (b) More than Δ H

(c) Equal to Δ H (d) Zero

Q.23. For the reaction-

$$aA + bB \rightarrow \text{Products}$$

The experimental data are as follows-

Exp. No.	[A]	[B]	Rate
1.	0.02 mol L^{-1}	0.02 mol L^{-1}	r
2.	0.04 mol L^{-1}	0.02 mol L^{-1}	2r
1.	0.02 mol L^{-1}	0.04 mol L^{-1}	2r

The rate expression of the reaction will be-

(a) $r = k[A]^2[B]$ (b) $r = k[A][B]^2$

(c) $r = k[A]^2[B]^2$ (d) $r = k[A][B]$

Q.24. For the reaction-

$$aA + bB \rightarrow \text{Products}$$

The experimental data are as follows-

Exp. No.	[A]	[B]	Rate
1.	0.02 mol L^{-1}	0.02 mol L^{-1}	r
2.	0.04 mol L^{-1}	0.02 mol L^{-1}	2r
1.	0.02 mol L^{-1}	0.04 mol L^{-1}	4r

The order of the reaction will be-

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

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Q.25. The mechanism of a reaction is as under-

$A_2(g) + B_2(g) \rightarrow X(g)$ -----(Slow)

$X(g) \rightarrow Z(g) + C(g)$ ------(Fast)

The order of the reaction will be-

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

ANSWERS

1. (b)	2. (d)	3. (a)	4. (b)	5. (b)
6. (d)	7. (a)	8. (c)	9. (c)	10. (c)
11. (d)	12. (a)	13. (b)	14. (a)	15. (c)
16. (a)	17. (b)	18. (b)	19. (c)	20. (a)
21. (c)	22. (c)	23. (d)	24. (d)	25. (c)

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