

Chemical Kinetics

1. What will be the fraction of molecules having energy equal to or greater than activation energy, E_a ?

- (a) K
- (b) A
- (c) $Ae^{-E_a/RT}$
- (d) $e^{-E_a/RT}$

▼ Answer

Answer: d



What type of reaction is this?

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

▼ Answer

Answer: c

3. 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, $t_{1/2} = \frac{0.693}{K}$

▼ Answer

Answer: c

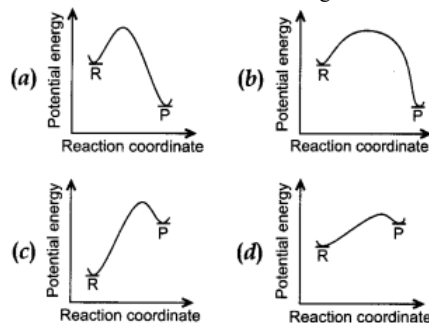
4. Which of the following statements about the catalyst is true?

- (a) A catalyst accelerates the rate of reaction by bringing down the activation energy.
- (b) A catalyst does not participate in reaction mechanism.
- (c) A catalyst makes the reaction feasible by making ΔG more negative.
- (d) A catalyst makes equilibrium constant more favourable for forward reaction.

▼ Answer

Answer: a

5. An endothermic reaction with high activation energy for the forward reaction is given by the diagram.



▼ Answer

Answer: c

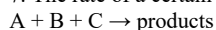
6. For the reaction $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$ if $\frac{\Delta[\text{NH}_3]}{\Delta t} = 2 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$, the value of $-\frac{\Delta[\text{H}_2]}{\Delta t}$ would be

- (a) $1 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$
- (b) $3 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$
- (c) $4 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$
- (d) $6 \times 10^{-4} \text{ mol L}^{-1}\text{s}^{-1}$

▼ Answer

Answer: b

7. The rate of a certain hypothetical reaction



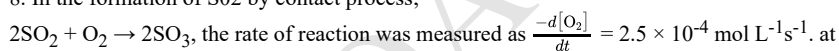
is given by $r = \frac{-d[\text{A}]}{dt} \text{K}[\text{A}]^{1/2}[\text{B}]^{1/3}[\text{C}]^{1/4}$. The order of the reaction is

- (a) 13/11
- (b) 13/14
- (c) 12/13
- (d) 13/12

▼ Answer

Answer: d

8. In the formation of SO_2 by contact process;



The rate of formation of SO_3 will be

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

▼ Answer

Answer: d

9. For a chemical reaction $\text{A} \rightarrow \text{B}$, it is found that the rate of reaction doubles when the concentration of A is increased four times. The order of reaction is

- (a) Two
- (b) One
- (c) Half
- (d) Zero

▼ Answer

Answer: c

10. The half life of the first order reaction having rate constant $\text{K} = 1.7 \times 10^{-5} \text{ s}^{-1}$ is

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

▼ Answer

Answer: c