Chemical Kinetics

1. What will be the fraction of molecules having energy equal to or greater than activation energy, Ea?
(a) K
(b) A
(c) $Ae^{-Ea/Rt}$
(d) $e^{-Ea/Rt}$

▼ **Answer**

Answer: d

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2. $RCOOR' + H_2O \xrightarrow{HCl} RCOOH + R'OH$
What type of reaction is this?
(a) Second order
(b) Unimolecular
(c) Pseudo-unimolecular
(d) Third order

▼ **Answer**

Answer: c

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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

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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

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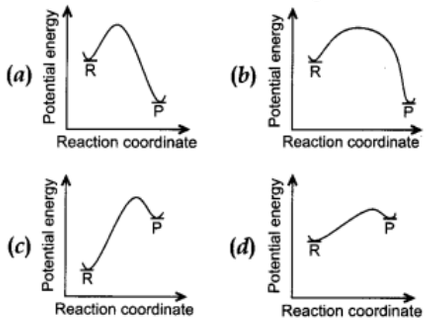
5. An endothermic reaction with high activation energy for the forward reaction is given by the diagram.



▼ **Answer**

Answer: c

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6. 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 $L^{-1}s^{-1}$

▼ **Answer**

Answer: b

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7. The rate of a certain hypothetical reaction
A + B + C → products
is given by $r = \frac{-d[A]}{dt} \mathbf{K}[\mathbf{A}]^{1/2}[\mathbf{B}]^{1/3}[\mathbf{C}]^{1/4}$. The order of the reaction is
(a) 13/11
(b) 13/14
(c) 12/13
(d) 13/12

▼ **Answer**

Answer: d

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8. In the formation of S02 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 $L^{-1}s^{-1}$. at
The rate of formation of of S03 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 $L^{-1}s^{-1}$

▼ **Answer**

Answer: d

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9. 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) Two
(b) One
(c) Half
(d) Zero

▼ **Answer**

Answer: c

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10. 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

▼ **Answer**

Answer: c