Parishram (2025)

Physical Chemistry

Chemical Kinetics

DPP: 7

Q1 According to collision theory of reaction rates
(A) Every collision between reactants leads to chemical reaction
(B) Rate of reaction is proportional to velocity of molecules
(C) All reactions which occur in gaseous phase are zero order reaction
(D) Rate of reaction is directly proportional to collision frequency.

Q2 Activation energy of a reaction is
(A) The energy released during the reaction
(B) The energy evolved when activated complex is formed
(C) Minimum extra amount of energy needed to overcome the potential barrier of reaction
(D) The energy needed to form one mole of the product

Q3 The minimum energy for molecules to enter into chemical reaction is called.
(A) Kinetic energy
(B) Potential energy
(C) Threshold energy
(D) Activation energy

Q4 The rate constant k_1 of a reaction is found to be double that of rate constant k_2 of another reaction. The relationship between corresponding activation energies of the two reactions at same temperature ($E_1 \& E_2$) can be represented as :
(A) $E_1 > E_2$
(B) $E_1 < E_2$
(C) $E_1 = E_2$
(D) $E_1 = 4E_2$

Q5 If the concentration is reduced by n times then the value of rate constant of first order will
(A) Increases by n times
(B) Decreases by factor of n
(C) Remain constant
(D) Decrease $1/n$ times

Q6 Which is used in the determination of reaction rates?
(A) Reaction Temperature
(B) Reaction Concentration
(C) Specific rate constant
(D) All of these

Q7 The rate constant of a first order reaction depends on the
(A) Concentration of the reactant
(B) Concentration of the product
(C) Time
(D) Temperature

Q8 For the decomposition of $N_2O_5(g)$ it is given that $2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$
activation energy $= E_a$
$N_2O_5(g) \rightarrow 2NO_2(g) + \frac{1}{2}O_2(g)$
activation energy $= E_a$' then
(A) $E_a = 2E_a'$
(B) $E_a > E_a'$
(C) $E_a < E_a'$
(D) $E_a = E_a'$

Q9 For a reaction in which case the activation energies of forward and reverse reactions are equal
(A) $\Delta H = 0$
(B) $\Delta S = 0$
(C) The order is zero
(D) There is no catalyst

Q10 The energy of activation of a forward reaction is $50 kCal$. The energy of activation of its backward

reaction is
(A) Equal to $50 \mathrm{kCal}$
(B) Greater than $50 \mathrm{kCal}$
(C) Less than $50 \mathrm{kCal}$
(D) Either greater or less than $50 \mathrm{kCal}$

Q11 An exothermic reaction $\mathrm{X} \rightarrow \mathrm{Y}$ has an activation energy $30 \mathrm{~kJ} \mathrm{~mol}^{-1}$. If energy change $(\Delta \mathrm{E})$ during the reaction is $-20 \mathrm{~kJ}$, then the activation energy for the reverse reaction is
(A) $10 \mathrm{~kJ}$
(B) $20 \mathrm{~kJ}$
(C) $50 \mathrm{~kJ}$
(D) $-30 \mathrm{~kJ}$

Q12 The activation energy for a chemical reaction depends upon:
(A) Temperature
(B) Nature of reacting species
(C) Concentration of the reacting species
(D) Collision frequency

Answer Key

Q1	(D)	Q7	(D)
Q2	(C)	Q8	(D)
Q3	(C)	Q9	(A)
Q4	(B)	Q10	(D)
Q5	(C)	Q11	(C)
Q6	(D)	Q12	(B)

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Video Solution:

Q2 Video Solution:

Q3 Video Solution:

Q4 Video Solution:

Q5 Video Solution:

Q6 Video Solution:

Q7 Video Solution:

Q8 Video Solution:

Q9 Video Solution:

Q10 Video Solution:

Q11 Video Solution:

Q12 Text Solution:

Activation energy for a chemical reaction depends upon nature of reacting species. It is independent of temperature, concentration and collision frequency.

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Video Solution: