

## Quiz for Video 3 – Reaction Coordinates and Catalysis

1. What does a reaction coordinate diagram represent?

- a) The amount of product formed over time
- b) The pH change during a reaction
- c) The concentration of reactants at equilibrium
- d) The energy changes as a reaction progresses

2. What does the peak of a reaction coordinate diagram correspond to?

- a) The formation of the final product
- b) The point where reactants have their lowest energy
- c) The activation energy barrier or transition state
- d) The equilibrium position of the reaction

3. How does a catalyst affect a reaction coordinate diagram?

- a) It increases the energy of the reactants
- b) It lowers the activation energy barrier
- c) It changes the overall enthalpy
- d) It decreases the energy of the products

4. What happens to the rate of a reaction when a catalyst is added?

- a) It remains the same
- b) It slows down
- c) It speeds up by lowering the activation energy
- d) It stops the reaction

5. Which of the following statements is true about catalysts?

- a) Catalysts increase the energy of the transition state
- b) Catalysts are consumed in the reaction
- c) Catalysts do not affect the equilibrium position of a reaction
- d) Catalysts provide energy to the reaction

6. What is the transition state in a reaction?

- a) An unstable, high-energy arrangement of atoms
- b) The stable form of the product
- c) The point where the reaction stops
- d) The lowest energy state of the system

7. What is the effect of a catalyst on the reverse reaction?

- a) It only speeds up the forward reaction
- b) It has no effect on the reverse reaction
- c) It speeds up both the forward and reverse reactions equally
- d) It prevents the reverse reaction from occurring

8. Why do catalysts not change the overall energy change ( $\Delta H$ ) of a reaction?

- a) Because they only affect the activation energy, not the reactant and product
- b) Because they add energy to the system
- c) Because they remove energy from the reaction
- d) Because they shift equilibrium

9. What does a reaction coordinate diagram for an exothermic reaction look like?

- a) The energy of the products is higher than that of the reactants
- b) The energy of the reactants is equal to that of the products
- c) The energy of the products is lower than that of the reactants
- d) The activation energy is zero

10. What is the effect of increasing reactant concentration on reaction rate, assuming a catalyst is present?

- a) It decreases the reaction rate
- b) It has no effect on reaction rate
- c) It increases the reaction rate because more collisions occur
- d) It changes the activation energy