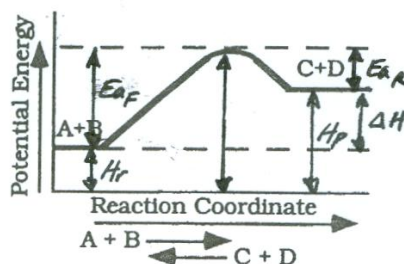


Questions VI-1

Base the answers to the following questions, 1 and 2, on the potential diagram and reaction shown.



- Compared to the activation energy of the forward reaction, the activation energy of the reverse reaction is:
 - less
 - greater
 - the same
- Compared to the potential energy of the activated complex of the forward reaction, the potential energy of the activated complex of the reverse reaction is
 - less
 - greater
 - the same
- As the temperature of a chemical reaction increases, the rate of reaction:
 - decreases
 - increases
 - remains the same
- Which diagram shows the potential energy of an exothermic reaction?

(1) Reaction Coordinate

(2) Reaction Coordinate

(3) Reaction Coordinate

(4) Reaction Coordinate

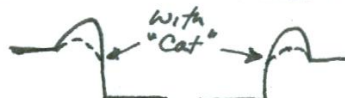
- Which will occur if a catalyst is added to a reaction mixture?
 - the activation energy will be changed
 - only the rate of the forward reaction will be increased
 - only the rate of the reverse reaction will be increased
 - the energy change (ΔH) of the reaction will be decreased

$$\{ \Delta H = H_p - H_r = E_{aF} - E_{aR} \} \text{ Refer to DIAG for Q1}$$

- In a reversible reaction, the difference between the activation energy of the forward reaction and the activation energy of the reverse reaction is equal to the
 - activation complex
 - heat of reaction (ΔH)
 - potential energy of reactants
 - potential energy of products

- If the concentration of one of the reactants in a chemical reaction is increased, the rate of the reaction usually:
 - decreases
 - increases
 - remains the same

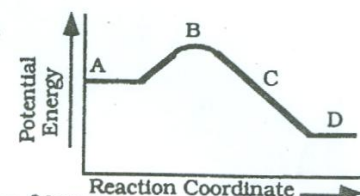
- In a chemical reaction, the use of a catalyst usually results in a decrease in the:
 - activation energy (E_a)
 - potential energy of the reactants
 - heat of reaction
 - amount of products



- In a gaseous system, temperature remaining constant, an increase in pressure will:
 - increase activation energy
 - decrease activation energy
 - increase reaction rate
 - decrease reaction rate

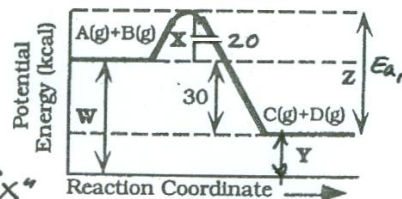


- The graph on the right represents the potential energy changes that occur in a chemical reaction. Which letter represents the activated complex?
 - A
 - B
 - C
 - D



A = REACTANTS C = NOTHING D = PRODUCTS
Base your answer to questions 11 and 12 on the potential energy diagram at the right.

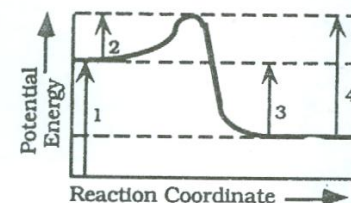
- The reaction $A(g) + B(g) \rightarrow C(g) + D(g) + 30 \text{ kcal}$ has a forward activation energy of 20 kcal. What is the activation energy for the reverse reaction?
 - 10 kcal
 - 20 kcal
 - 30 kcal
 - 50 kcal



- The potential energy of the activated complex is equal to the sum of:
 - X + Y
 - X + W
 - X + Y + W
 - X + W + Z

Base your answers to the following questions, 13 (below) and 14 (next page), on the diagram at the right.

- The activation energy for the reverse reaction is represented by
 - 1 = H_r
 - 2 = E_{aF}
 - 3 = ΔH
 - 4 = E_{aR}



- The heat of reaction (ΔH) is represented by:
 - 1
 - 2
 - 3
 - 4
- The effect of a catalyst on a chemical reaction is to change the:
 - activation energy
 - heat of reaction
 - potential energy of the product
 - potential energy of the reactant
- Consider the reaction: $H_2O(l) \xrightarrow{\text{energy}} H_2(g) + \frac{1}{2}O_2(g)$. Which phrase best describes this reaction?
 - exothermic, releasing energy
 - exothermic, absorbing energy
 - endothermic, releasing energy
 - endothermic, absorbing energy