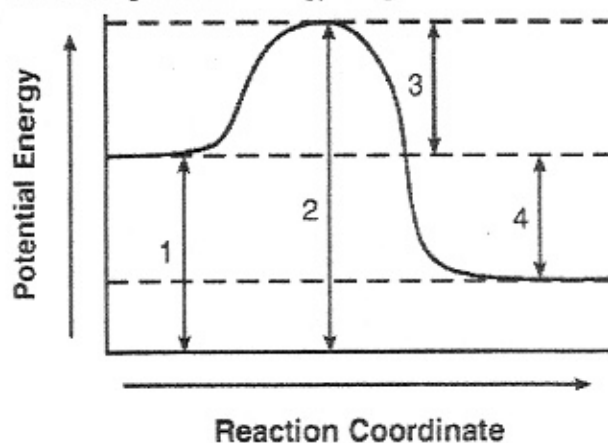
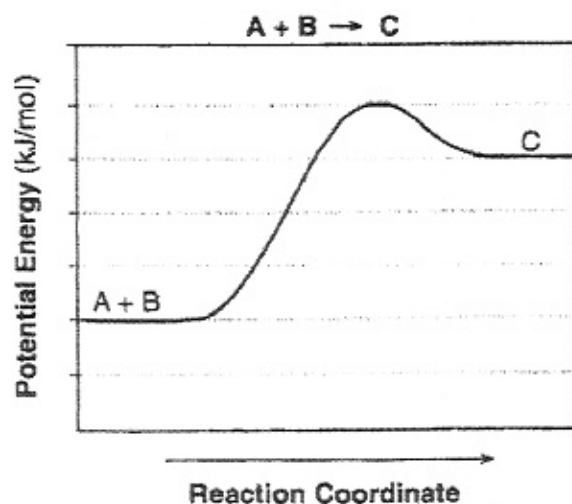


1. Given the potential energy diagram for a reaction:



- Which interval on this diagram represents the difference between the potential energy of the products and the potential energy of the reactants?
- A) 1 B) 2 C) 3 D) 4
2. Which information about a chemical reaction is provided by a potential energy diagram?
- A) the oxidation states of the reactants and products
B) the average kinetic energy of the reactants and products
C) the change in solubility of the reacting substances
D) the energy released or absorbed during the reaction
3. In a chemical reaction, the difference between the potential energy of the products and the potential energy of the reactants is equal to the
- A) activation energy
B) entropy of the system
C) heat of fusion
D) heat of reaction

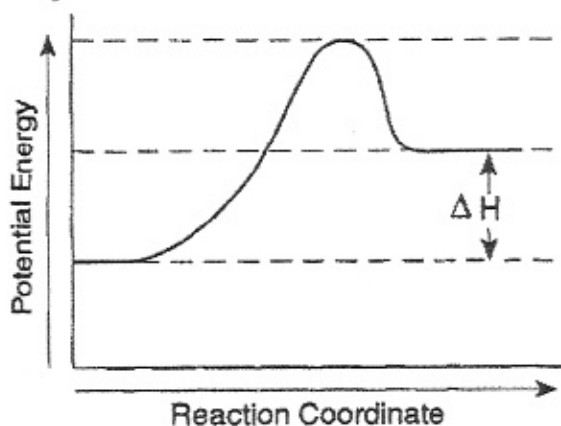
4. Given the equation and potential energy diagram representing a reaction:



- If each interval on the axis labeled "Potential Energy (kJ/mol)" represents 10. kJ/mol, what is the heat of reaction?
- A) +60. kJ/mol B) +20. kJ/mol
C) +30. kJ/mol D) +40. kJ/mol
5. The activation energy required for a chemical reaction can be *decreased* by
- A) increasing the surface area of the reactant
B) increasing the temperature of the reactant
C) adding a catalyst to the reaction
D) adding more reactant

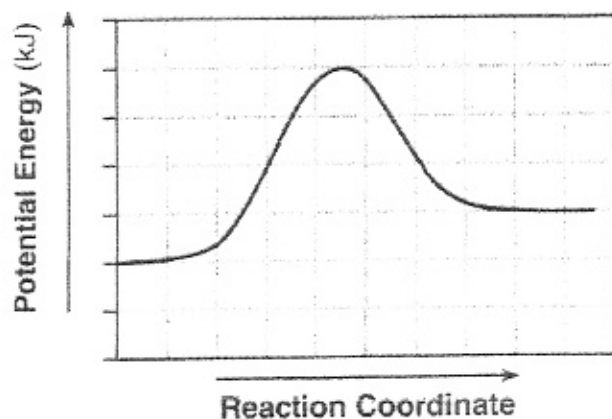
PE Diagrams

6. The diagram below represents the energy changes that occur during the formation of a certain compound under standard conditions.



According to Reference Table I, the compound could be

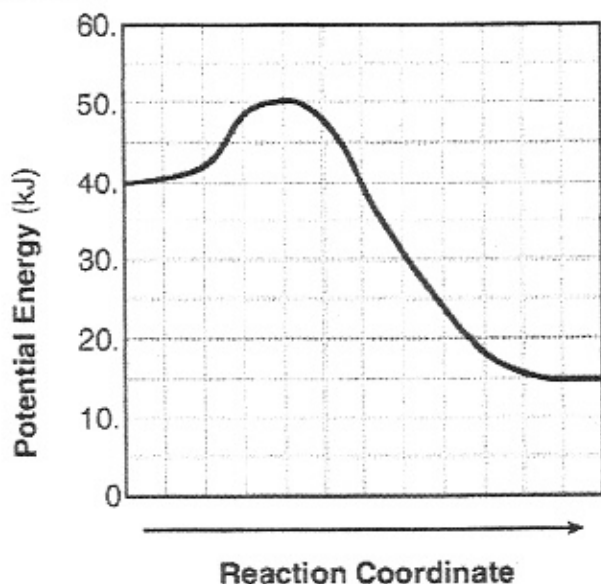
- A) $C_2H_6(g)$ B) $CO_2(g)$
C) $HI(g)$ D) $NH_3(g)$
7. The potential energy diagram for a chemical reaction is shown below.



Each interval on the axis labeled "Potential Energy (kJ)" represents 40 kilojoules. What is the heat of reaction?

- A) -120kJ B) -40kJ
C) $+40\text{kJ}$ D) $+160\text{kJ}$
8. Changes in activation energy during a chemical reaction are represented by a
- A) cooling curve
B) heating curve
C) ionization energy diagram
D) potential energy diagram

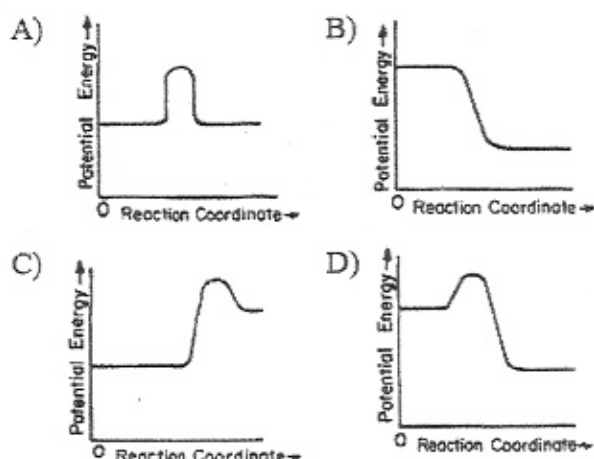
9. Given the potential energy diagram for a chemical reaction:



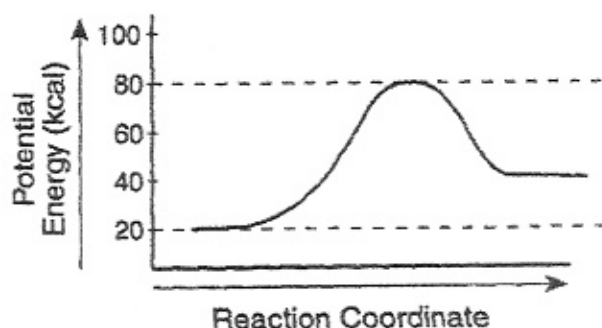
Which statement correctly describes the energy changes that occur in the forward reaction?

- A) The activation energy is 10. kJ and the reaction is endothermic.
B) The activation energy is 10. kJ and the reaction is exothermic.
C) The activation energy is 50. kJ and the reaction is endothermic.
D) The activation energy is 50. kJ and the reaction is exothermic.

10. Which graph represents an endothermic reaction?



11. A potential energy diagram of a chemical reaction is shown below.



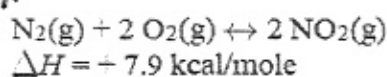
What is the difference between the potential energy of the reactants and the potential energy of the products?

- A) 20. kcal B) 40. kcal
C) 60. kcal D) 80. kcal

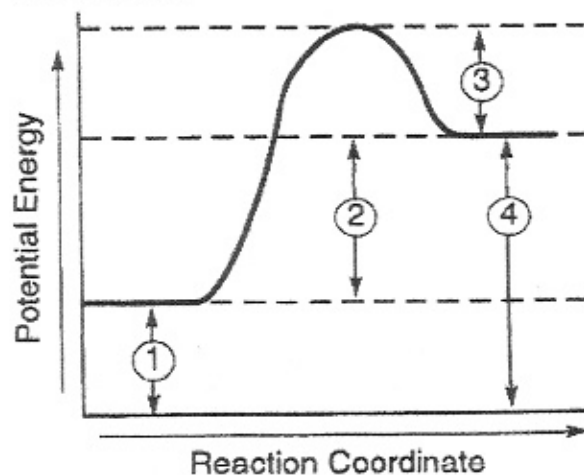
12. In a potential energy diagram, the difference between the potential energy of the products and the potential energy of the reaction is equal to the

- A) heat of reaction
B) entropy of the reaction
C) activation energy of the forward reaction
D) activation energy of the reverse reaction

13. Given the reaction:



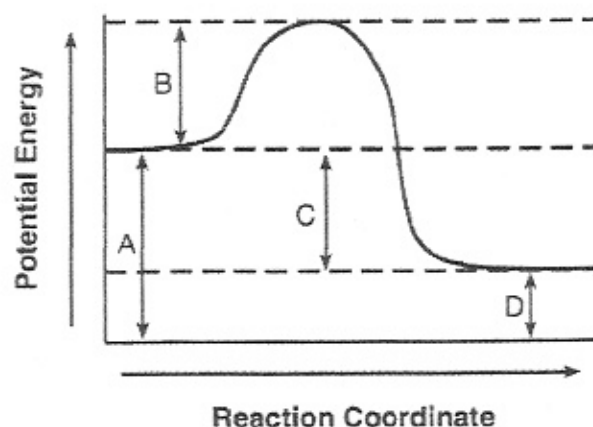
The potential energy diagram of the reaction is shown below.



Which arrow represents the heat of reaction (ΔH) for the reverse reaction?

- A) 1 B) 2 C) 3 D) 4

14. Given the potential energy diagram representing a reversible reaction:

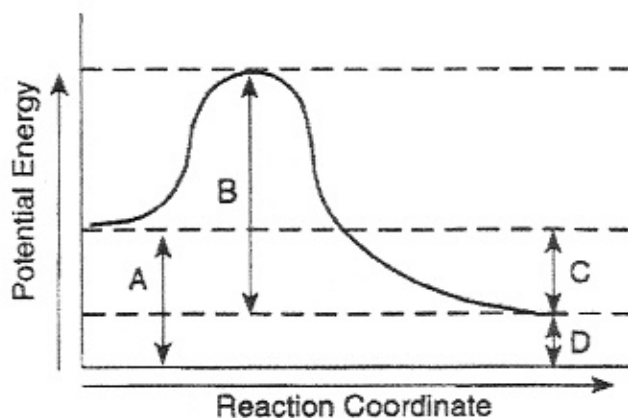


The activation energy for the reverse reaction is represented by

- A) $A + B$ B) $B + C$
C) $B + D$ D) $C + D$

PE Diagrams Continued

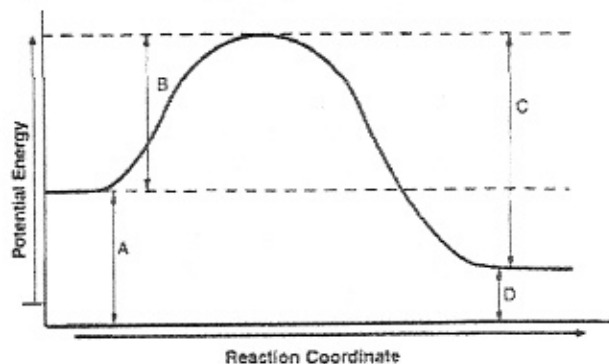
15. The potential energy diagram of a chemical reaction is shown below.



Which arrow represents the part of the reaction most likely to be affected by the addition of a catalyst?

- A) A B) B C) C D) D

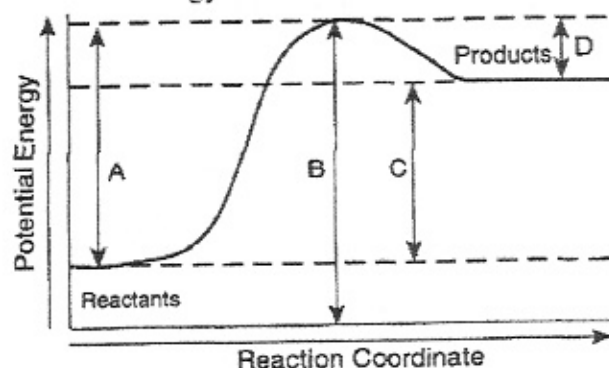
16. A potential energy diagram is shown below.



Which letters represent the activation energy of the forward and reverse reactions, respectively?

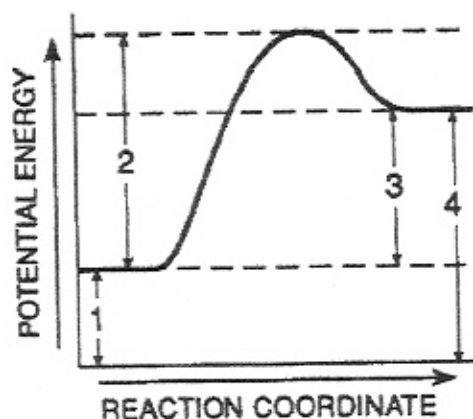
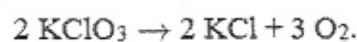
- A) A and C B) A and D
C) B and C D) B and D

17. In the diagram below, which letter represents the activation energy for the reverse reaction?



- A) A B) B C) C D) D

18. The potential energy diagram below represents the reaction



Which numbered interval on the diagram would change when a catalyst is added?

- A) 1 B) 2 C) 3 D) 4