...increase in the temperature increases the rate of a chemical reaction because the collisions in this reaction increase in
(1) number only (2) effectiveness, only (3) both number and effectiveness (4) neither number nor effectiveness

The vapor pressure of a liquid at a given temperature is measured when the rate of evaporation of the liquid becomes. (1) less than the rate of condensation (2) greater than the rate of condensation (3) equal to the rate of condensation (4) equal to a zero rate of condensation

In a chemical reaction, the difference between the potential energy of the products and the potential energy of the reactants is the
(1) heat of reaction (2) heat of fusion (3) free energy (4) activation energy

Base your answers to questions 4 and 5 on the potential energy diagram below
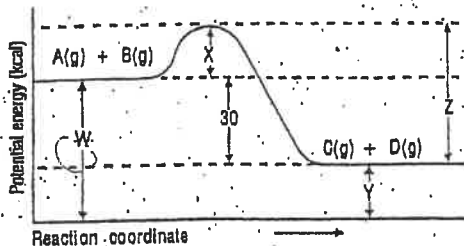
The potential energy of the activated complex is equal to the sum of (1) X + Y (2) X + W (3) X + Y + W (4) X + W + Z
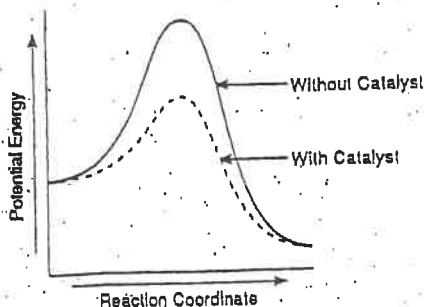
The reaction A(g) + B(g) → C(g) + D(g) + 30 kcal has a forward activation energy of 20 kcal. What is the activation energy for the reverse reaction? (1) 10 kcal (2) 20 kcal (3) 30 kcal (4) 50 kcal

7. The potential energy diagram shown below represents
R + S + energy → T.
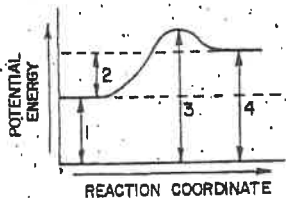
Which numbered interval represents the potential energy of product T? (1) 1 (2) 2 (3) 3 (4) 4

8. A potential energy diagram is shown below.

Which reaction would have the lowest activation energy?
(1) forward catalyzed reaction (2) the forward uncatalyzed rxn
(3) the reverse catalyzed reaction (4) the reverse uncatalyz
reaction

Which conditions will increase the rate of a chemical reaction?
(1) decreased temperature and decreased concentration of reactants
(2) decreased temperature and increased concentration of reactants
(3) increased temperature and decreased concentration of reactants
(4) increased temperature and increased concentration of reactants

As the number of moles per liter of a reactant in a chemical reaction increases, t number of collisions between the reacting particles
(1) decreases (2) increases (3) remains the same

Which statement explains why the speed of some chemical reactions is increas when the surface area of the reactant is increased?
(1) This change increases the density of the reactant particles.
(2) This change increases the concentration of the reactant.
(3) This change exposes more reactant particles to a possible collision.
(4) This change alters the electrical conductivity of the reactant particles.
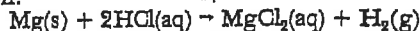
Given the reaction:
$$Mg(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + H_2(g)$$
The reaction occurs more rapidly when a 10-gram sample of Mg is powder rather than in one piece, because powdered Mg has
(1) less surface area (3) a lower potential energy
(2) more surface area (4) a higher potential energy

Under which conditions will the rate of a chemical reaction always decrease?
(1) the concentration of the reactants decreases, and the temperature decrea
(2) the concentration of the reactants decreases, and the temperature increa
(3) the concentration of the reactants increases, and the temperature decrea
(4) the concentration of the reactants increases, and the temperature increa

As the number of effective collisions between the reactant particles in a chemi reaction decreases, the rate of the reaction
(1) decreases (2) increases (3) remains the same

Adding a catalyst to a chemical reaction will
(1) lower the activation energy needed
(2) lower the potential energy of the reaction
(3) increase the activation energy needed
(4) increase the potential energy of the reactants

7. The potential energy diagram shown below represents the reaction
R + S + energy → T.
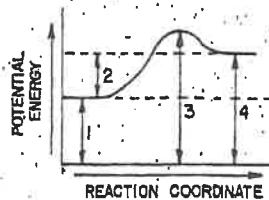
Which numbered interval represents the potential energy of the product T? (1) 1 (2) 2 (3) 3 (4) 4

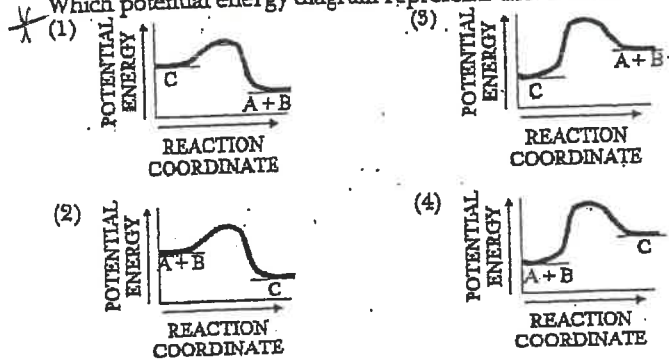8. A potential energy diagram is shown below.
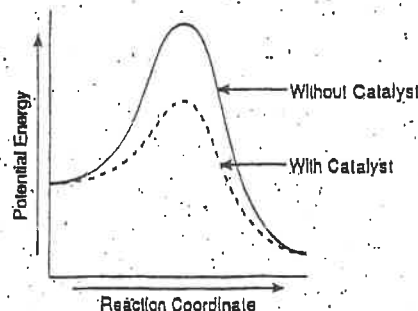
Which reaction would have the lowest activation energy? (1) the forward catalyzed reaction (2) the forward uncatalyzed reaction (3) the reverse catalyzed reaction (4) the reverse uncatalyzed reaction

Chapter 22
15 + 16

If a catalyst is added to a system at equilibrium, and the temperature and pressure remain constant, there will be no effect on the
(1) rate of the forward reaction   (3) activation energy of the reaction
(2) rate of the reverse reaction   (4) heat of the reaction

Which potential energy diagram represents the reaction $A + B \rightarrow C + energy$?

(1)

(3)

(2)

(4)

) The potential energy diagram shown below represents the reaction A+B → AB.
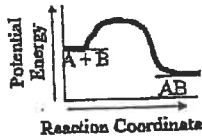
Which statement correctly describes this reaction?
(1) It is endothermic and energy is absorbed.
(2) It is endothermic and energy is released.
(3) It is exothermic and energy is absorbed.
(4) it is exothermic and energy is released.
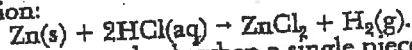
) Given the reaction:
$$Zn(s) + 2HCl(aq) \rightarrow ZnCl_2 + H_2(g).$$
The reaction occurs more slowly when a single piece of zinc is used than when the same mass of powdered zinc is used. Why does this occur?
(1) The powdered zinc is more concentrated.
(2) The powdered zinc has a greater surface area.
(3) The powdered zinc requires less activation energy.
(4) The powdered zinc generates more heat energy.

) As the number of effective collisions between the reactant particles in a chemical reaction decreases, the rate of the reaction
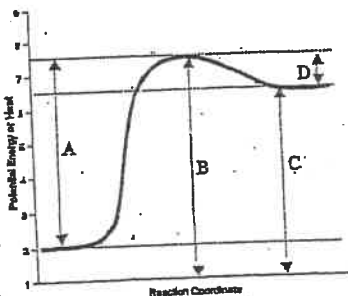(1) decreases   (2) increases   (3) remains the same

3.) In a chemical reaction, a catalyst changes the
(1) potential energy of the products   (3) heat of reaction
(2) potential energy of the reactants   (4) activation energy

4.) In the diagram at right, which arrow represents the activation energy for the forward reaction?
(1) A   (3) C
(2) B   (4) D

5.) Which statement describes characteristics of an endothermic reaction?
(1) The sign of ΔH is positive, and the products have less potential energy than the reactants.
(2) The sign of ΔH is positive, and the products have more potential energy than the reactants.
(3) The sign of ΔH is negative, and the products have less potential energy than the reactants.
(4) The sign of ΔH is negative, and the products have more potential energy than the reactants.

43.) Explain why, if there is more concentration, more surface area, or higher temperature, the reaction is faster.

44.) Draw an exothermic reaction diagram. Label potential energy of reactants, potential energy of products, activation energy, and ΔH. Give the formula for heat of reaction.

45. Draw an endothermic reaction diagram. Label potential energy of reactants, potential energy of products, activation energy, activation energy with catalyst, and ΔH. Give the formula for heat of reaction.

11) The potential energy diagram below shows the reaction $X + Y \rightarrow Z$.
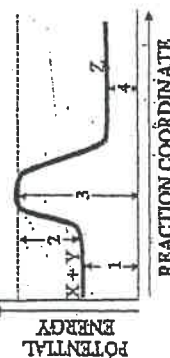
When a catalyst is added to the reaction, it will change the value of
(1) 1 and 2   (2) 1 and 3   (3) 2 and 3   (4) 3 and 4

12) Assume that the potential energy of the products in a chemical reaction is 60 kilojoules. This reaction would be exothermic if the potential energy of the reactants were
(1) 50 kJ   (2) 20 kJ   (3) 30 kJ   (4) 80 kJ

6) The graph below represents a chemical reaction.
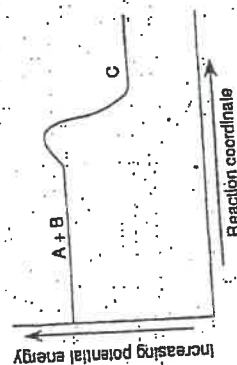
This reaction is best described as (1) endothermic, because energy is absorbed   (2) endothermic, because energy is released   (3) exothermic, because energy is absorbed   (4) exothermic, because energy is released