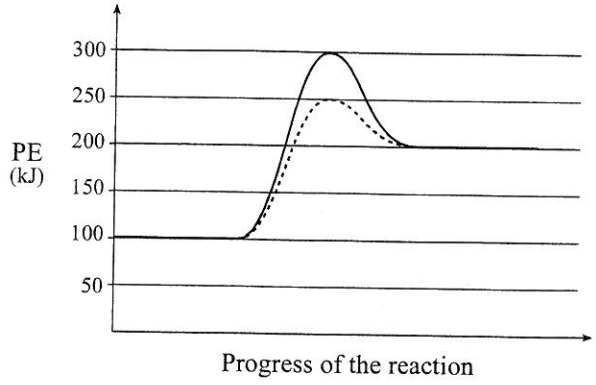
Name:_____
Blk:_____Date:_____

Chemistry 12
Reaction Kinetics and Equilibrium PLO's

D2. Identify the reversible pathways of a chemical reaction on the PE diagram

Related questions:

1. Consider the following PE diagram for a catalyzed and uncatalyzed reaction:

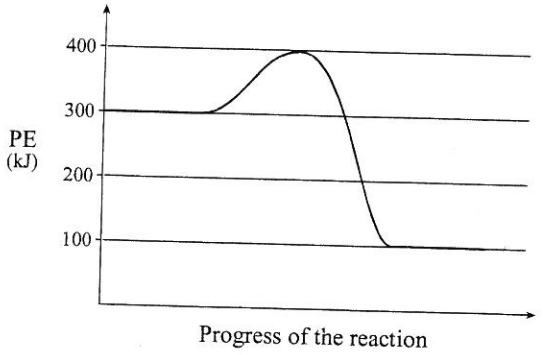


Which of the following describes the **reverse** reaction?

	Reverse Reaction	Activation Energy (kJ)	ΔH (kJ)
A.	Catalyzed	50	– 100
B.	Uncatalyzed	50	– 100
C.	Catalyzed	50	+ 100
D.	uncatalyzed	50	+ 100

Source: January 2002

2. Consider the following PE diagram:

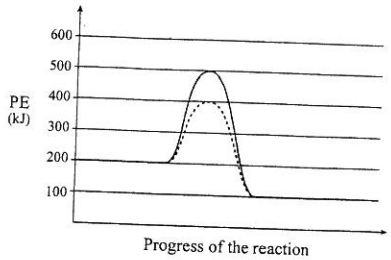


Which of the following describes the type of reaction and ΔH for the **reverse** reaction?

	Type of Reaction	ΔH (kJ)
A.	exothermic	positive
B.	endothermic	positive
C.	exothermic	negative
D.	endothermic	negative

Source: April 2002

3. Consider the following PE diagram for a catalyzed and uncatalyzed reaction:



Which of the following describes the **reverse** reaction?

	Reverse reaction	Activation Energy (kJ)	ΔH (kJ)
A.	uncatalyzed	300	– 100
B.	catalyzed	300	– 100
C.	uncatalyzed	400	+ 100
D.	catalyzed	400	+ 100

Source: June 2002

D3. Relate the changes in RATES of the forward and reverse reactions to the changing concentrations of the reactants and products as equilibrium is established.

→ refer to Exercise #6 +7 pgs 40 + 41 of HEBDEN

In GENERAL, the rate of the FORWARD reaction will DECREASE as the number of reactant particles decreases, and the rate of the REVERSE reaction will INCREASE as the number of product particles increases. (This, however, is dependent on starting with reactants and not products to reach equilibrium.)

Related Questions:

CHALLENGER QUESTION **42.0**

4. Consider the following:

$$2SO_{2(g)} + O_{2(g)} \rightleftarrows 2SO_{3(g)}$$

Initially, SO_3 is added to an empty flask. How do the rate of the forward reaction and $[SO_3]$ change as the system proceeds to equilibrium?

	Forward Rate	$[SO_3]$
A.	decreases	increases
B.	decreases	decreases
C.	increases	increases
D.	increases	decreases

Source: January 2002

CHALLENGER QUESTION **52.0**

5. Consider the following:

$$H_{2(g)} + I_{2(g)} \rightleftarrows 2HI_{(g)}$$

Initially, HI is added to an empty flask. How do the rates of the forward and reverse reactions change as the system proceeds to equilibrium?

	Forward Rate	Reverse Rate
A.	increases	increases
B.	increases	decreases
C.	decreases	decreases
D.	decreases	increases

Source: April 2002

CHALLENGER QUESTION **58.0**

6. Consider the following:

$$2HBr_{(g)} \rightleftarrows H_{2(g)} + Br_{2(g)}$$

Initially, HBr is added to an empty flask. How do the rate of the forward reaction and the $[HBr]$ change as the system proceeds to equilibrium?

	Forward Rate	$[HBr]$
A.	increases	increases
B.	increases	decreases
C.	decreases	decreases
D.	decreases	increases

Source: June 2002