Name: _____ Class: _____ Date: _____ ID: A

Practice Quiz 8 Mechanics (#5-1, #5-2, #5-3)

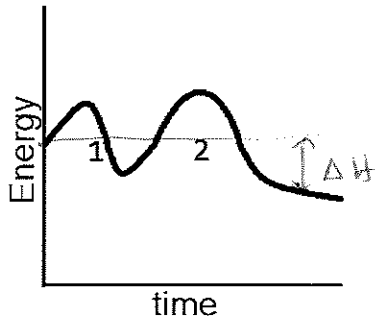
Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. (#5-1) A solid block of Iron is oxidizing to form iron (II) oxide. Which of the following would increase the rate of the reaction?
I. Breaking the iron into several chunks Y
II. Warming the iron. Y
III. Increasing the partial pressure of oxygen Y
a. I only
b. II only
c. I and II only
d. I, II, and III

$A + B \longrightarrow C + D$ (Fast)
$D + B \longrightarrow E$ (Slow)
$C + F \longrightarrow E$ (Fast)

____ 2. (#5-2) Which of the following statements is true relative to the reaction mechanisms above?
I. "D" is an example of a reaction intermediate. Y
II. Doubling the concentration of A will double the reaction rate. NO Yes ↑ [D]
III. The overall reaction is $A + 2B + F \Rightarrow 2E$ Y
a. I and II only
b. I and III only
c. II and III only
d. I, II and III only

____ 3. $2N_2O_5(g) \Rightarrow 4NO_2(g) + O_2(g)$
(#5-3) In an experiment the quantity of NO_2 being produced is "x". How might one express the concentration change of O_2 in terms of "x:
a. -.25x
b. 4x
c. x
d. +.25x
.25x



____ 4. (#5-2) Which of the following is true relative to the energy diagram provided.
I. This reaction is utilizing a catalyst I do not know this
II. This reaction has 2 elementary steps Yes
III. This reaction is exothermic NO yes, ΔH<0
a. I only
b. I and II only
c. II and III only
d. I, II, and III

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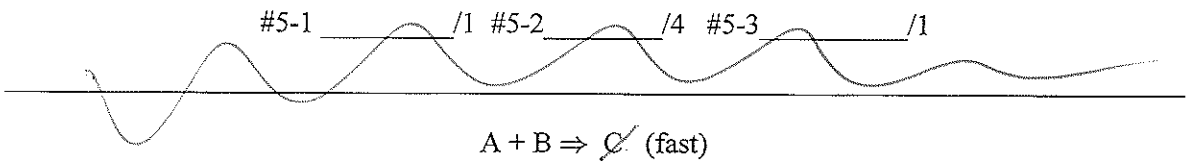
Short Answer

5. #5-1 _____/1 #5-2 _____/4 #5-3 _____/1



$A + B \Rightarrow C$ (fast)

$C + 2D \Rightarrow F$ (Slow)

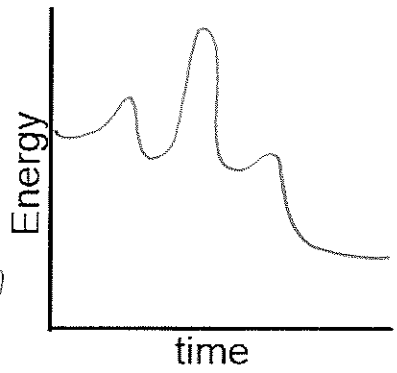
$F + G \Rightarrow H + 2I + B$ (fast)

1. (#5-2) What is the overall net reaction?

$A + B + 2D + G \rightarrow H + 2I + B$

2. (#5-2) Which of the substances above is a:

   a. Catalyst: C, F b. Intermediate: NONE



exothermic ?

3. (#5-2) Determine the rate law for the reaction mechanism provided.

$Rate = K[A][B][D]^2[G]^0$

↑ not needed

4. (#5-2) In the graph to the right propose an energy diagram that could represent the reaction mechanism above. (exothermic)

5. (#5-1) A scientist would like to increase the rate of this reaction process. Propose 2 ways one might accomplish this.

   - ↑ Temp
   - ↑ Conc. of A, B, D

add a Catalyst

(#5-3) If A is being consumed at a rate of 1.5M/s what is the rate of disappearance of D?

$1.5 \cdot \frac{2}{1} = 3.0 \frac{M}{s}$