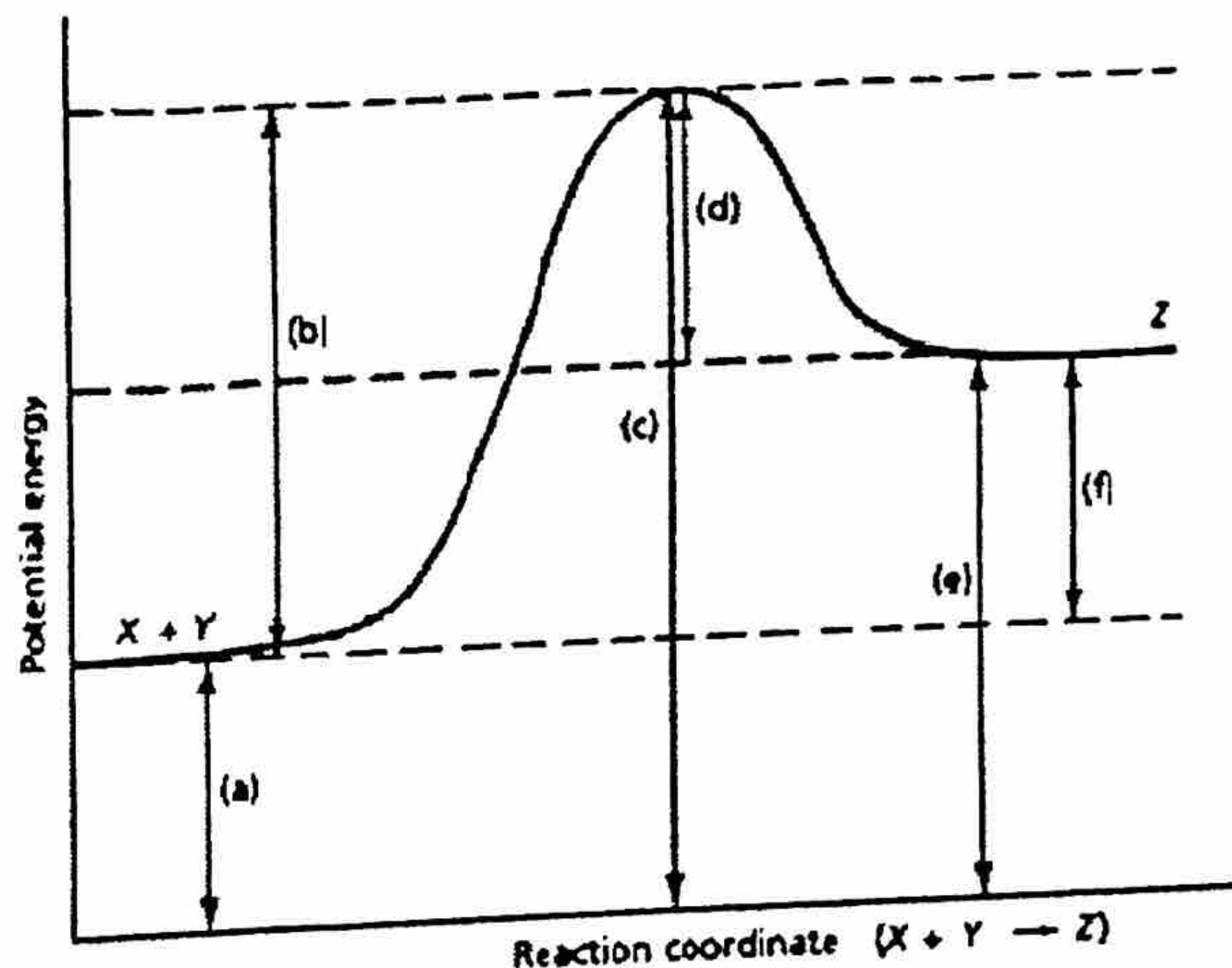


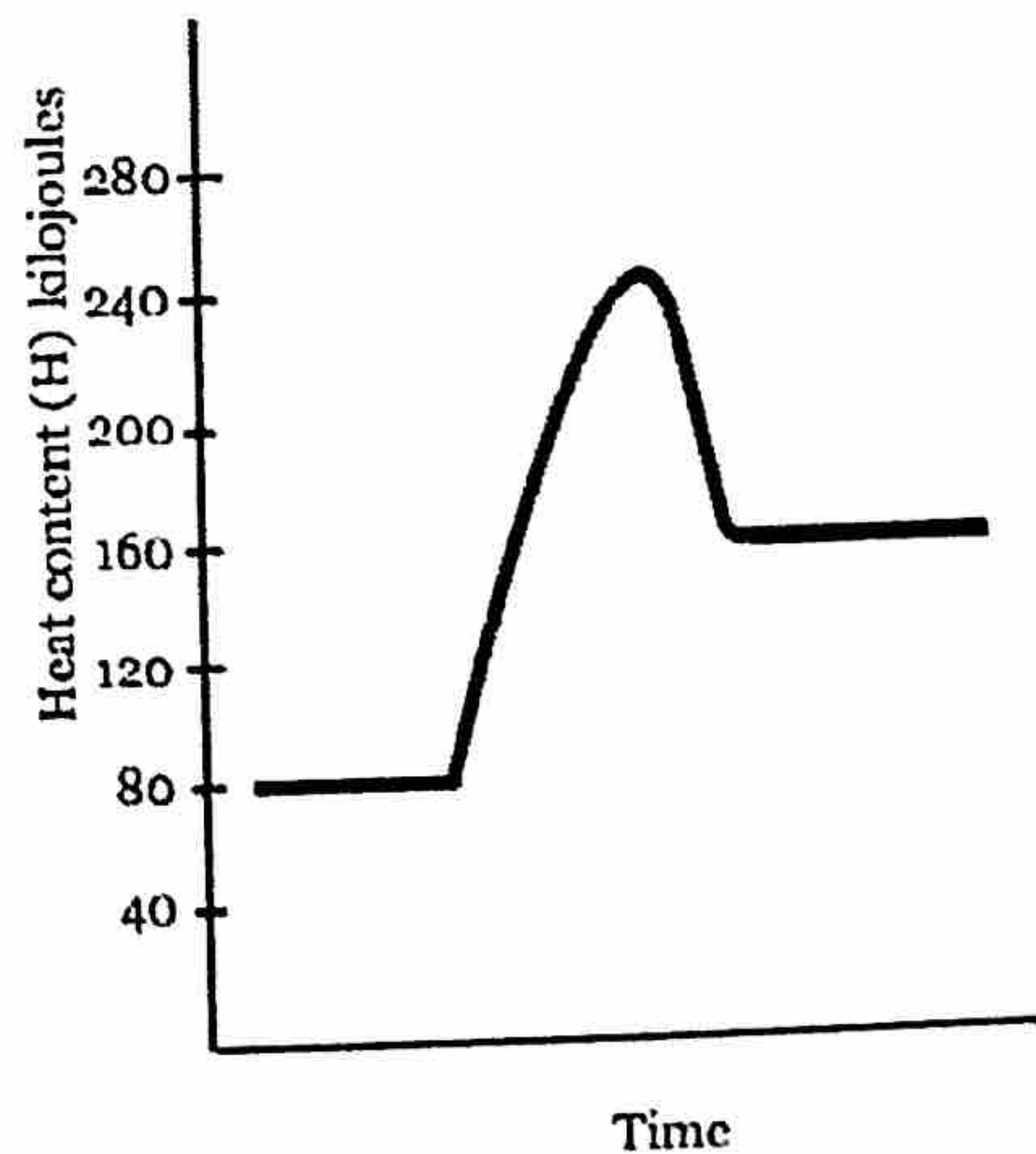
Honors Review: Rates of Reactions

WS#1: Potential Energy Diagrams

1. Which of the letters a-f in the diagram represents the potential energy of the products? e
2. Which letter indicates the potential energy of the activated complex? c
3. Which letter indicates the potential energy of the reactants? a
4. Which letter indicates the activation energy? b
5. Which letter indicates the heat of reaction? f
6. Is the reaction exothermic or endothermic? endo
7. Which letter indicates the activation energy of the reverse reaction? d
8. Which letter indicates the heat of reaction of the reverse reaction? f
9. Is the reverse reaction exothermic or endothermic? exo



1. The heat content of the reactants of the forward reaction is about 80 kilojoules. *Products - reactant*
2. The heat content of the products of the forward reaction is about 160 kilojoules.
3. The heat content of the activated complex of the forward reaction is about 240 kilojoules.
4. The activation energy of the forward reaction is about 160 kilojoules.
5. The heat of reaction (ΔH) of the forward reaction is about 80 kilojoules. *products - reactants 160 - 80 = 80*
6. The forward reaction is endo (endothermic or exothermic).
7. The heat content of the reactants of the reverse reaction is about 160 kilojoules.
8. The heat content of the products of the reverse reaction is about 80 kilojoules.
9. The heat content of the activated complex of the reverse reaction is about 240 kilojoules.
10. The activation energy of the reverse reaction is about 80 kilojoules.
11. The heat of reaction (ΔH) of the reverse reaction is about -80 kilojoules.
12. The reverse reaction is exo (endothermic or exothermic).



WS #2: Collision Theory

1. Chemical reactions occur when reactants collide. For what reasons may a collision fail to produce a chemical reaction?

not enough energy, not in correct orientation

2. If every collision between reactants lead to a reaction, what determines the rate at which the reaction occurs?

of collisions per second

3. What is the activation energy of a reaction, and how is this energy related to the activated complex of the reaction?

the amount of energy ~~to~~ required to start a reaction. The activated complex is the intermediate between the reactants and products

4. What happens when a catalyst is used in a reaction?
that is created when the ~~reactants~~ reactants gain enough energy to start the reaction
It speeds up the rate of a reaction by lowering the activation energy

5. Name 4 things that will affect the rate of a chemical reaction.

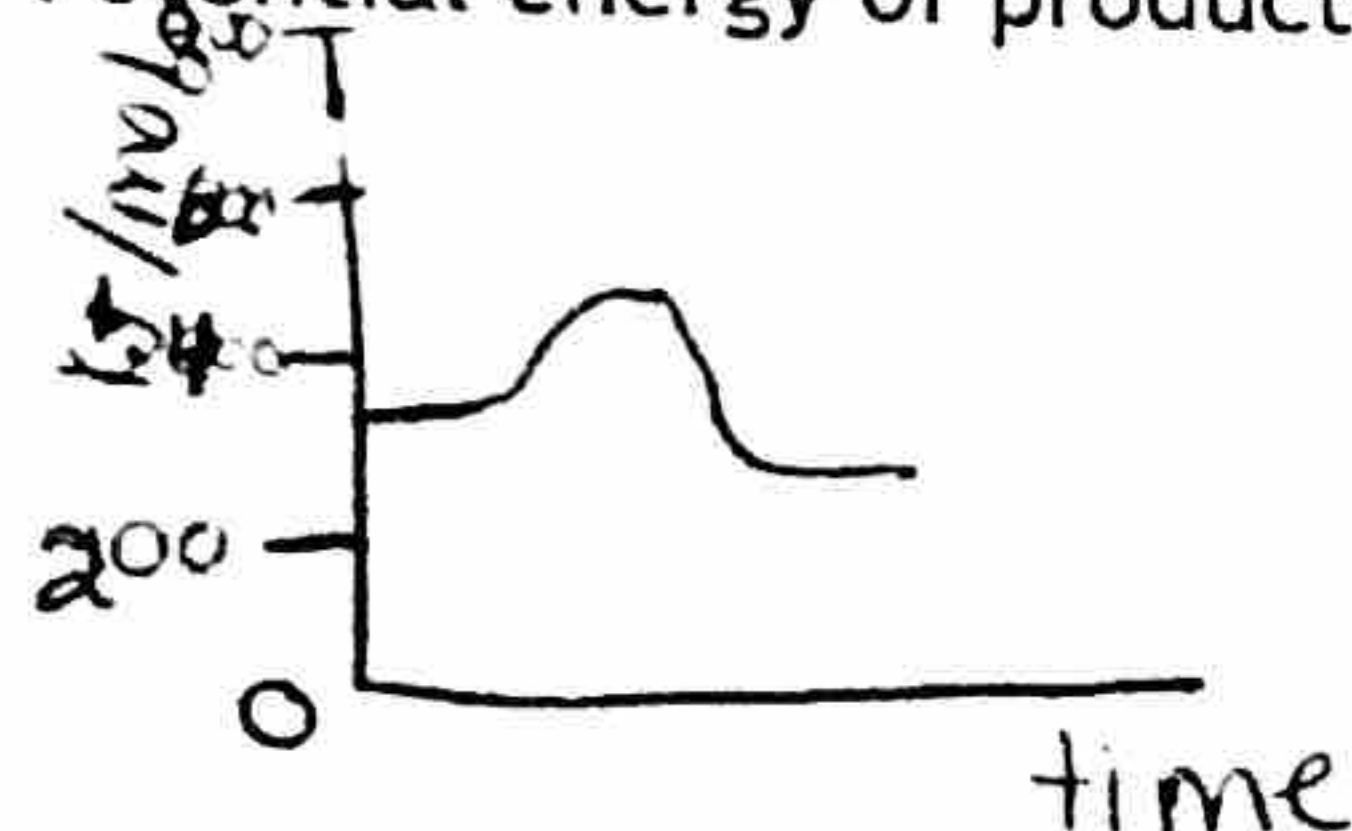
- concentration of reactant
- catalyst
- surface area
- temperature

6. Draw an energy diagram for a reaction. (label the axis)

Potential energy of reactants = 350 KJ/mole

Activation energy = 100 KJ/mole

Potential energy of products = 250 KJ/mole



7. Is the reaction in # 6 exothermic or endothermic? Explain.

exothermic → the products have less energy than the reactants meaning

that the reaction lost energy throughout the course of the reaction

8. How could you lower the activation energy for the reaction in #6?

introduce a catalyst