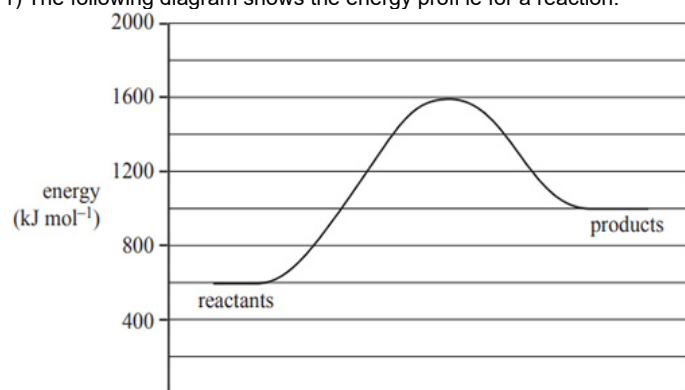


Thermochemistry (2018 NHT)

1) The following diagram shows the energy profile for a reaction.



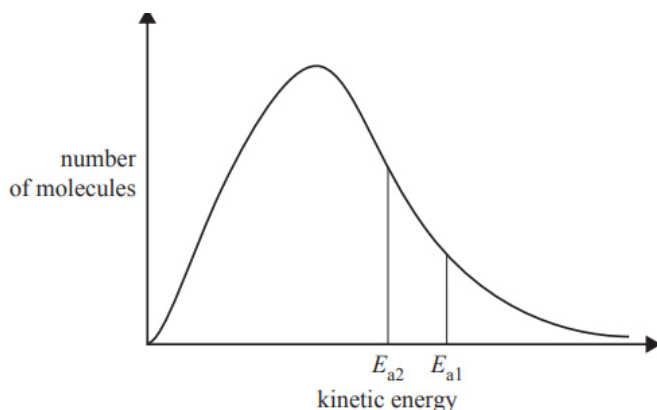
Solution will appear here

A catalyst reduces the activation energy by 250 kJ mol^{-1} . The value of the enthalpy change, in kJ mol^{-1} , of the catalysed reaction is

- A. -600
- B. 400
- C. 750
- D. 1000

Solution

2) The diagram below represents the distribution of kinetic energy in a sample of gaseous reactant molecules. Activation energy E_{a1} can be changed to activation energy E_{a2} .



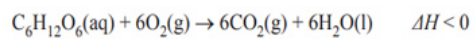
Solution will appear here

This change increases the reaction rate. Which of the following gives the most likely cause of the change from E_{a1} to E_{a2} and explains why the reaction rate would increase?

	Cause	Why the reaction rate increases
A.	catalyst added	molecules move faster, resulting in more successful collisions
B.	catalyst added	greater proportion of reactants collide with sufficient energy to react
C.	temperature increased	greater proportion of reactants collide with the correct orientation to react
D.	concentration of reactants increased	greater frequency of collisions, resulting in more successful collisions

Solution

3) The equation for cellular respiration is as follows.



$$M(\text{C}_6\text{H}_{12}\text{O}_6) = 180.0 \text{ g mol}^{-1}$$

When 72.0 g of glucose, $\text{C}_6\text{H}_{12}\text{O}_6$, is metabolised in cellular respiration, the total energy released is 1.126×10^3 kJ. The value of ΔH , in kJ mol^{-1} , for the equation above is

- A. -1.56×10^1
- B. -4.50×10^2
- C. -2.82×10^3
- D. -8.11×10^4

[Solution](#)

Solution will appear here