Unit 8: Reaction kinetics

Subunit 8.2: Effect of temperature on reaction rates and the concept of activation energy

Topical Question No: 1

4 Which factor can affect the value of the activation energy of a reaction?

A changes in concentration of the reactants

B decrease in temperature

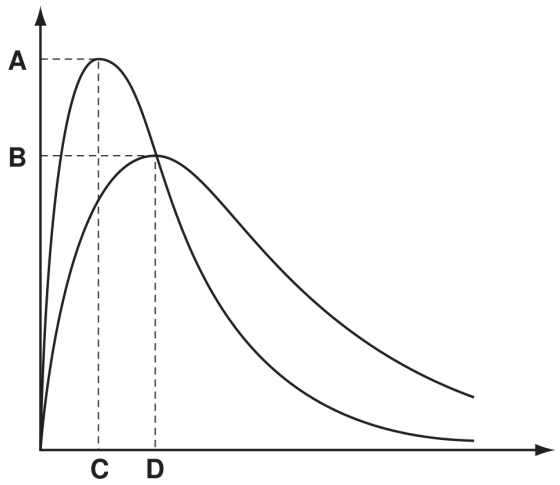
C increase in temperature

D the presence of a catalyst

Topical Question No: 2

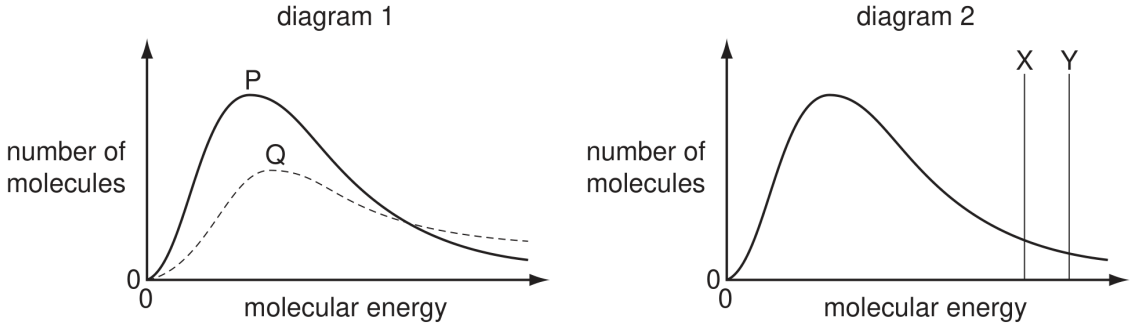
5 The diagram shows the Maxwell-Boltzmann energy distribution curves for molecules of a sample of a gas at two different temperatures.

Which letter on the axes represents the most probable energy of the molecules at the **lower** temperature?



Topical Question No: 3

11 Boltzmann distributions are shown in the diagrams.



In diagram 1, one curve, P or Q, corresponds to a temperature higher than that of the other curve.

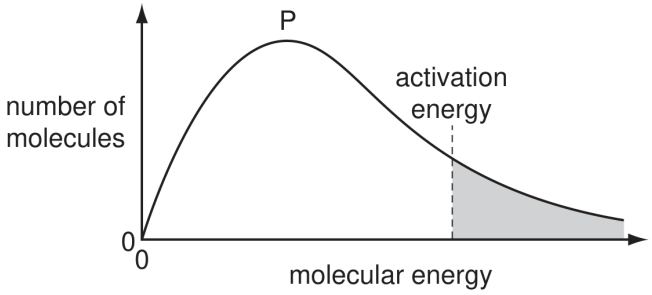
In diagram 2, one line, X or Y, corresponds to the activation energy in the presence of a catalyst and the other line corresponds to the activation energy of the same reaction in the absence of a catalyst.

Which combination gives the correct curve and line?

	higher temperature	presence of catalyst
A	P	X
B	P	Y
C	Q	X
D	Q	Y

Topical Question No: 4

1 The diagram shows a Boltzmann distribution of molecular energies for a gaseous mixture. The distribution has a peak, labelled P on the diagram.



What happens when the temperature of the mixture increases?

A The height of the peak, P, decreases and the activation energy moves to the left.

B The height of the peak, P, decreases and the activation energy moves to the right.

C The height of the peak, P, decreases and the activation energy does not change.

D The height of the peak, P, increases and the activation energy moves to the left.

Answer Key

1. Error
2. Error
3. Error
4. Error