

Past-paper walk-through

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

eXercise

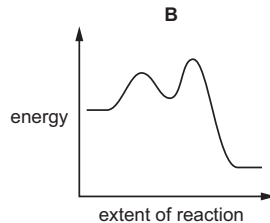
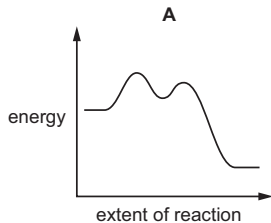
Questions in this set

- 9701/12 N25 Q15 ■ 1 mark
- 9701/14 N25 Q15 ■ 1 mark

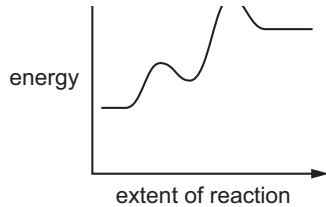
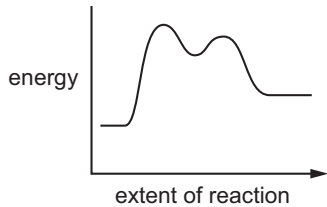
Question 15

9701/12 N25 ■ Q15 ■ 1 mark

- 15** Which reaction pathway diagram shows an endothermic reaction that occurs in two steps and in which the second step of the reaction is likely to be faster than the first?



Question 15



Solution 15

Answer: **C**

Why

- Endothermic means the products finish *higher* than the reactants overall.
- Two steps means two humps with an intermediate dip between them.
- The faster second step has the smaller activation energy, so the second hump must be the lower one, measured from the intermediate.

Question 15

9701/14 N25 ■ Q15 ■ 1 mark

15 A mixture of gases reacts faster as its temperature increases.

Which row explains this?

	the activation energy remains unchanged	more particles have energy equal to or above the activation energy	there is an increase in the rate of successful collisions
A	false	false	false
B	true	true	true
C	false	true	true

Question 15

C	false	true	true
D	true	false	false

Solution 15

Answer: **B**

Why

- Raising the temperature does not change the activation energy – that belongs to the reaction pathway.
- It shifts the Boltzmann distribution, so a larger fraction of particles have energy at or above E_a .
- More particles over the barrier means more successful collisions per second, so all three statements are true.