

- 15** The reversible reaction between methanol and ethanoic acid liquids is catalysed by adding a small volume of concentrated sulfuric acid.

Two statements about this reaction are listed.

- 1 The sulfuric acid is a homogeneous catalyst.
- 2 The sulfuric acid lowers the activation energy of the reverse reaction.

Which statements are correct?

- A** both 1 and 2
B 1 only
C 2 only
D neither 1 nor 2

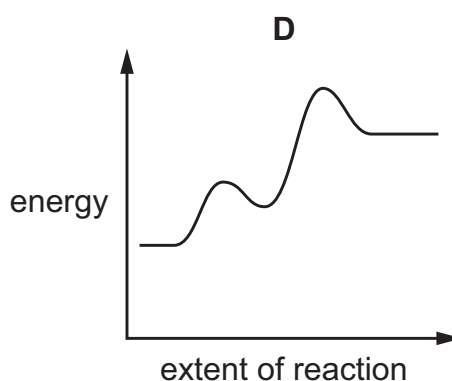
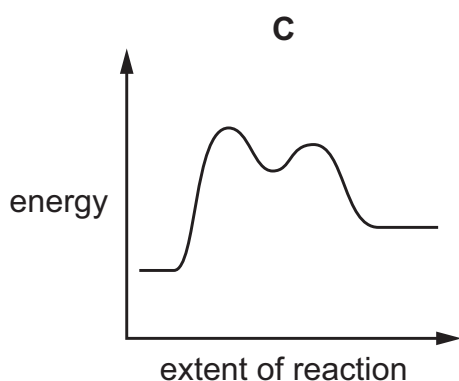
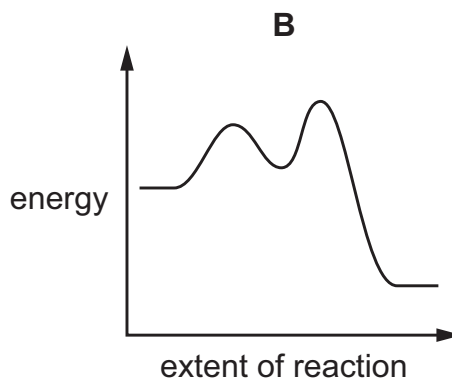
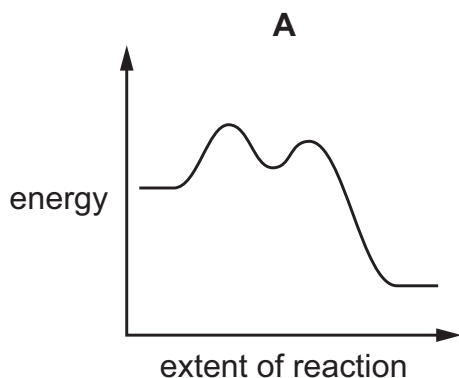
- 14** 20.0 cm^3 of hydrogen peroxide decomposes to water and oxygen in the presence of a suitable catalyst.

160 cm^3 of oxygen, measured at room conditions, is produced in 5.00 minutes.

What is the average rate of decomposition of hydrogen peroxide during this reaction period?

- A** $2.22 \times 10^{-5}\text{ mol s}^{-1}$
B $4.44 \times 10^{-5}\text{ mol s}^{-1}$
C $1.76 \times 10^{-4}\text{ mol s}^{-1}$
D $2.67 \times 10^{-3}\text{ mol s}^{-1}$

- 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?



- 14** When two aqueous solutions are mixed, the reaction between them is very slow.

An effective catalyst is added to the mixture without any change in temperature.

Which statement about this catalyst is correct?

- A** It increases the average energy of the reactant particles.
- B** It changes the distribution of energies of the reactant particles.
- C** It allows a greater number of reactant particles to react per unit time.
- D** It increases the number of reactant particles with the most probable energy.

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
D	true	false	false