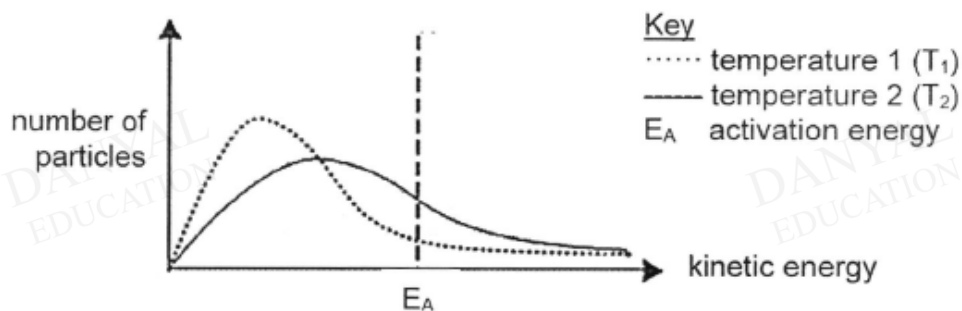


O Level Pure Chemistry MCQs

Energy from Chemicals Test 2.0

Q1

The diagram represents the distribution of kinetic energy of reactant particles at two different temperatures.



Given that the areas under the two curves are equal, which statement about the reaction is correct?

- A At T_1 , the activation energy is lower than at T_2 .
- B At T_1 , the enthalpy change of the reaction is higher than at T_2 .
- C At T_2 , a greater number of particles have sufficient energy to react.
- D At T_2 , the reaction takes a longer time to complete.

Q2

Two substances, X and Y, react to produce substance Z. The enthalpy change for the reaction is -120 kJ/mol , while the activation energy is $+200 \text{ kJ/mol}$.

What is the activation energy for the decomposition of substance Z to substances X and Y?

- A $+80 \text{ kJ/mol}$
- B $+120 \text{ kJ/mol}$
- C $+200 \text{ kJ/mol}$
- D $+320 \text{ kJ/mol}$

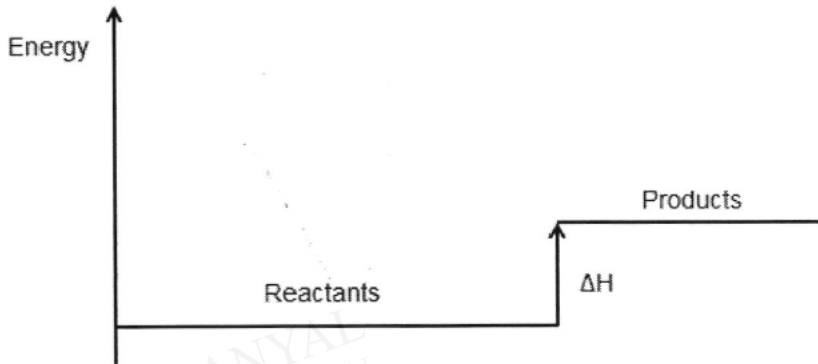
Q3

Which process is endothermic?

- A addition of aqueous sodium hydroxide to hydrochloric acid
- B combustion of butanol
- C oxidation of carbon
- D sublimation of iodine crystals

Q4

What can be deduced from the energy level diagram shown below?



- A Heat energy is released.
- B The reactants are less stable than the products.
- C The surrounding temperature increases during the reaction.
- D The energy change for bond breaking is higher than the energy change for bond formation.

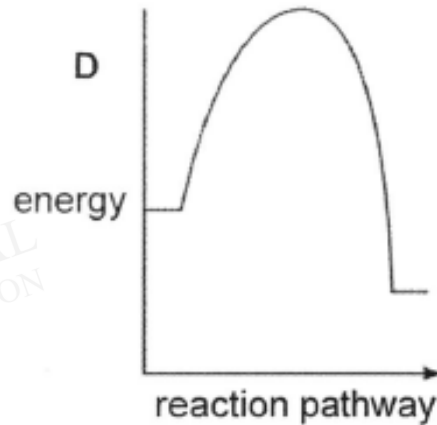
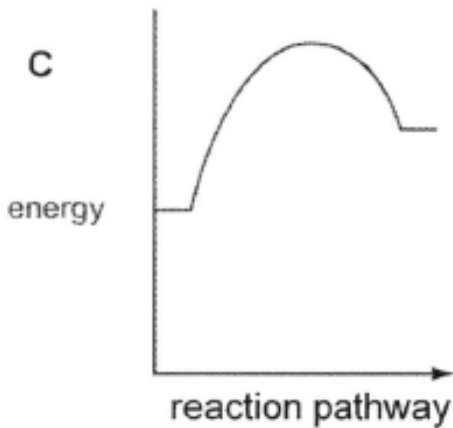
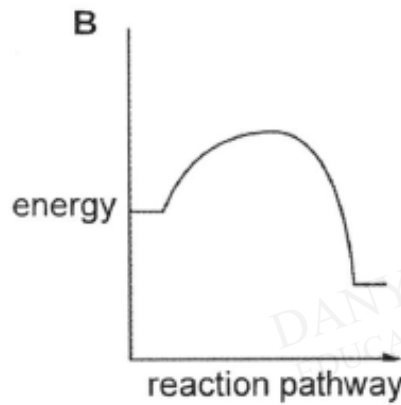
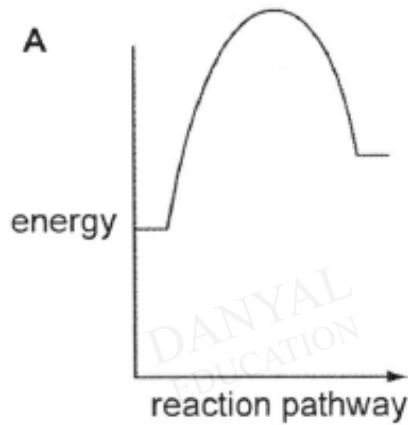
Q5

In which process is energy released?

- A dissolving ammonium nitrate in water
- B electrolysis of water
- C forming a chlorine molecule from two chlorine atoms
- D photosynthesis

Q6

Which reaction profile shows the **fastest** exothermic reaction?



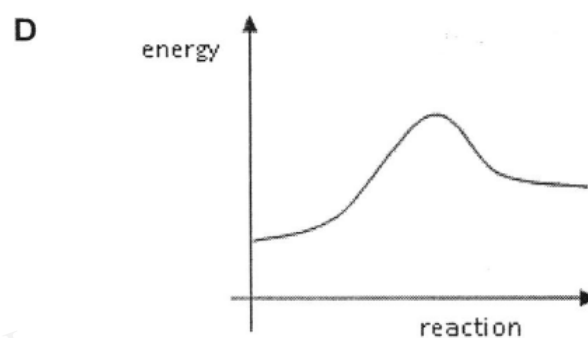
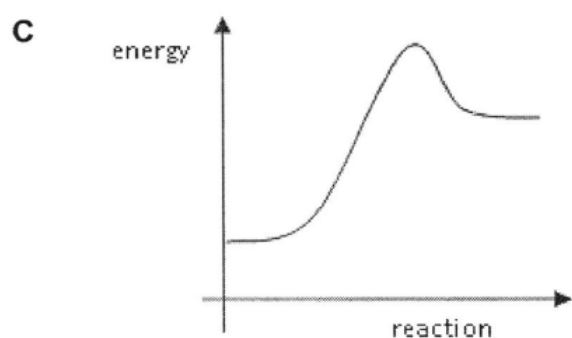
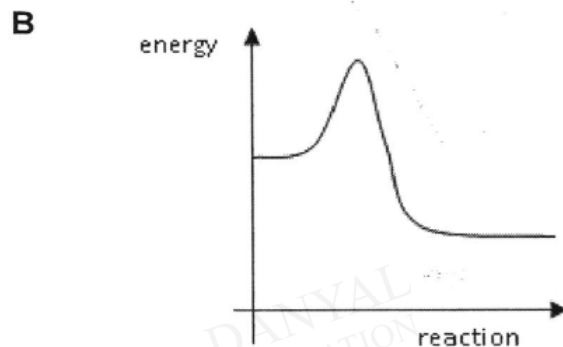
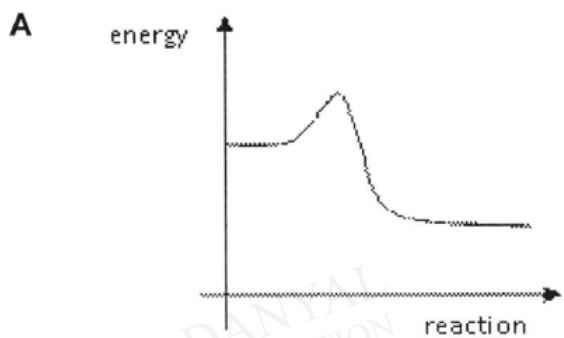
Q7

Which statement describes what happens when hydrogen and oxygen are used in a fuel cell?

- A Hydrogen is reduced.
- B Electricity is generated directly.
- C Hydrogen is burned to form steam.
- D Hydrogen and oxygen react to produce hydrogen peroxide.

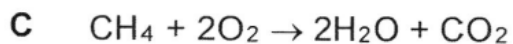
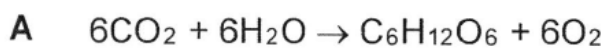
Q8

Four different chemical reactions are represented in the following energy profile diagrams. Which diagram shows the slowest endothermic reaction?



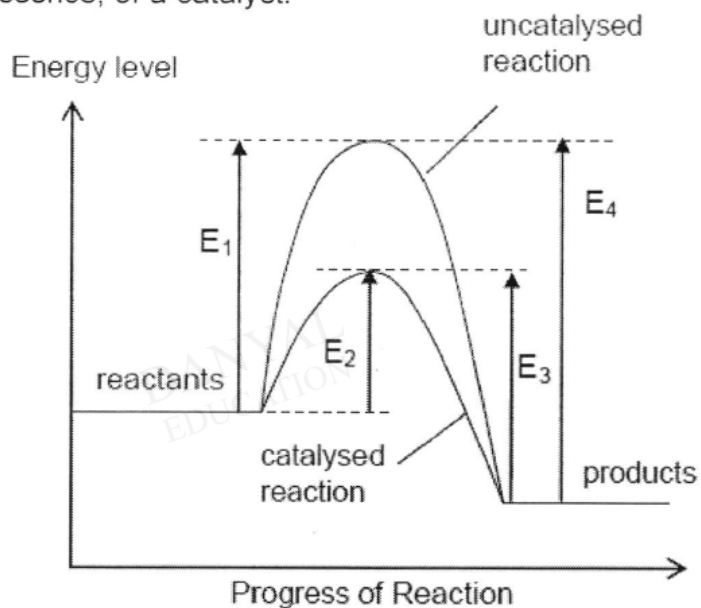
Q9

Which one of the following changes is endothermic?



Q10

The energy profile diagram shows the same reaction that occurred in the absence, and in the presence, of a catalyst.



Which of the following statements is correct when describing the energy changes involved in the reaction?

- A The forward catalysed reaction is endothermic.
- B $(E_4 - E_1)$ is the enthalpy change of the reverse reaction.
- C E_2 is the activation energy for the reverse catalysed reaction.
- D The enthalpy change of the reaction is decreased by using a catalyst.

Answers

Energy from Chemicals Test 2.0

Q1 C

Q2 D

Q3 D

Q4 D

Q5 C

Q6 B

Q7 B

Q8 C

Q9 A

Q10 B

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