2.22 Exothermic and Endothermic Reactions: 10-minute Pack

AQA 8464 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Endothermic reactions are the opposite of exothermic reactions.

(a) Define the term 'endothermic reaction'. **(1)**

(b) Give one example of an everyday process that is endothermic. **(1)**

(Total for Question 1 is 2 marks)

2 State two everyday uses of exothermic reactions, other than a hand warmer.

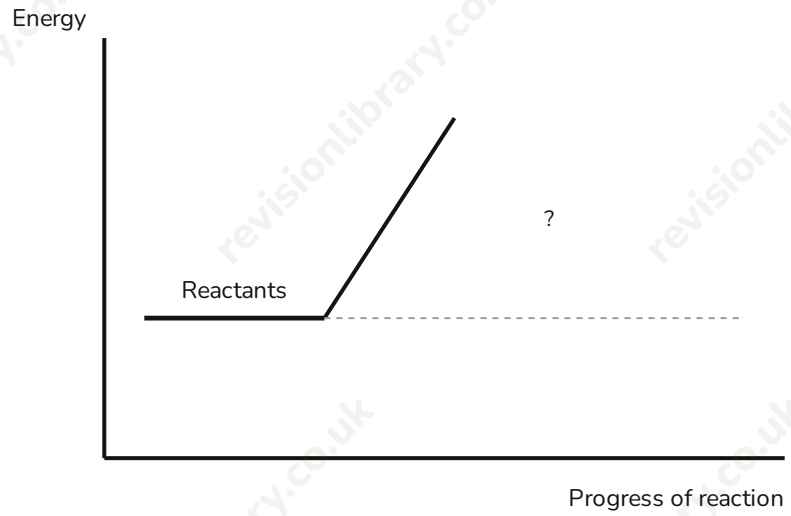
(Total for Question 2 is 2 marks)

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3 Define the term 'exothermic reaction'.

(Total for Question 3 is 1 mark)

4 Calcium carbonate breaks down when heated: $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$. This is an endothermic reaction. The diagram shows the reaction profile, but the position of the products line has not yet been drawn in.



(a) State whether the products line should be drawn above or below the reactants line on the profile. **(1)**

(b) Explain your answer to part (a). **(2)**

(c) Give one observation a student could make in the school laboratory that would show this reaction is endothermic. **(1)**

(Total for Question 4 is 4 marks)

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Mark scheme · 2.22 Exothermic and Endothermic Reactions: 10-minute Pack

Question 1

(a) a reaction that takes in energy from the surroundings, usually shown by a fall in the temperature of the surroundings (oe) **B1**

(a) Answer: A reaction that takes in energy from the surroundings, usually shown by a decrease in the temperature of the surroundings.

(b) any one valid example, e.g. dissolving ammonium nitrate in water, thermal decomposition (e.g. of calcium carbonate), a sports injury cold pack in use (oe, any one) **B1**

(b) Answer: Dissolving ammonium nitrate in water, as used in a sports injury cold pack.

Question 2

any one from: self-heating cans (e.g. for coffee or food); the setting/curing of some adhesives or cements; combustion reactions used for heating homes or cooking; fireworks or flares producing heat and light (oe) **B1**

any second, different example from the same list (oe) **B1**

Answer: Any two from: self-heating food or drink cans; combustion used for heating or cooking; the setting of some adhesives or cements; fireworks or flares.

Question 3

a reaction that transfers energy to the surroundings, usually shown by a rise in the temperature of the surroundings (oe) **B1**

Answer: A reaction that transfers energy to the surroundings, usually shown by an increase in the temperature of the surroundings.

Question 4

(a) above (cao) **B1**

(a) Answer: Above the reactants line.

(b) energy is absorbed (taken in) from the surroundings during the reaction (oe) **B1**

(b) so the products end up with more energy than the reactants (oe) **B1**

(b) Answer: Energy is absorbed from the surroundings, so the products end up with more energy than the reactants.

(c) the temperature of the reaction mixture/surroundings decreases (oe) **B1**

(c) Answer: The temperature of the reaction mixture (and its surroundings) would decrease.

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