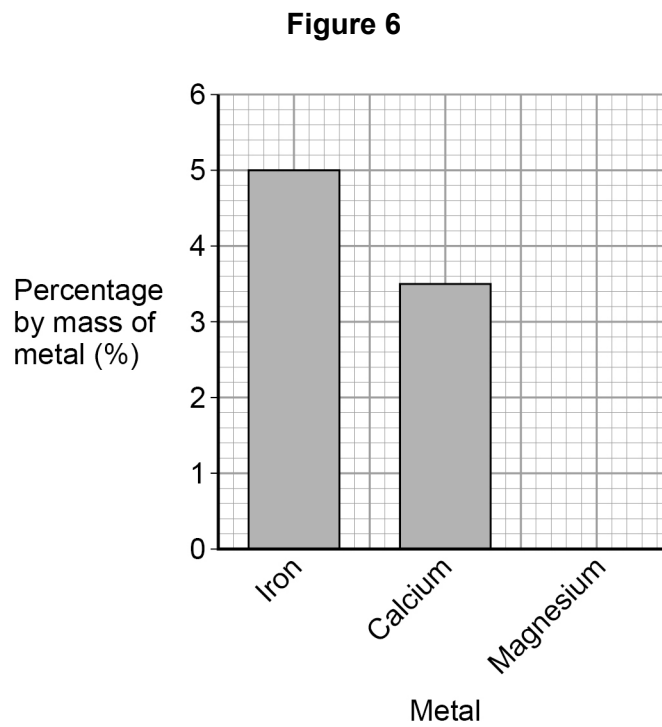


0 5

Figure 6 shows the percentage by mass of some metals in the Earth's crust.



0 5 . 1

What is the percentage by mass of calcium in the Earth's crust?

[1 mark]

Tick (✓) **one** box.

3.25%       3.50%       4.50%       5.00%

0 5 . 2

The percentage by mass of magnesium in the Earth's crust is 2.1%

Draw the bar for magnesium on **Figure 6**.

[1 mark]

Question 5 continues on the next page

Turn over ►

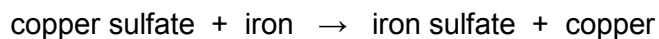


0 5 . 3

Copper sulfate is produced during the extraction of copper from the Earth's crust.

Copper is produced from copper sulfate solution using iron.

The word equation for the reaction is:



From the equation a company calculated that 648 kg of copper sulfate are needed to produce 617 kg of iron sulfate and 258 kg of copper.

Calculate the mass of iron needed to make 258 kg of copper.

**[2 marks]**

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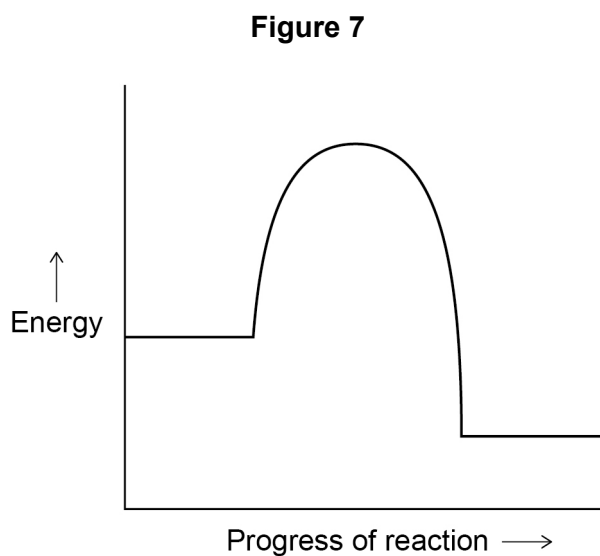
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Mass = \_\_\_\_\_ kg



Copper is used as a catalyst.

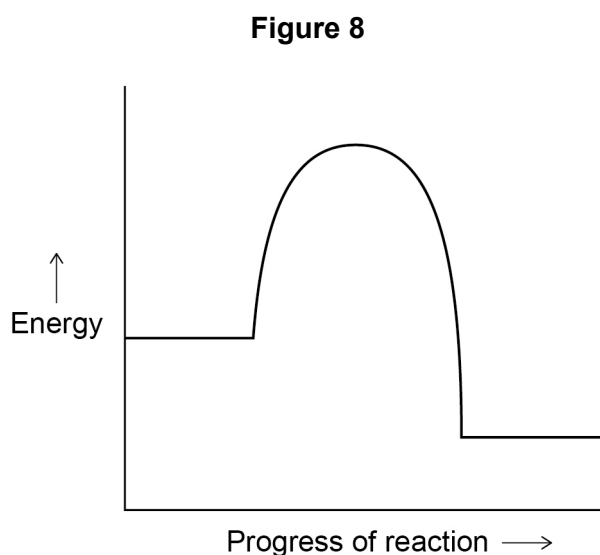
**0 5 . 4** **Figure 7** shows the reaction profile for a reaction without a catalyst.



Draw an arrow on **Figure 7** to show the activation energy.

**[1 mark]**

**0 5 . 5** The reaction profile for the reaction without a catalyst is shown again in **Figure 8**.



Draw a reaction profile on **Figure 8** for the same reaction with a catalyst.

**[2 marks]**

Turn over ►



0 5 . 6 What are catalysts in biological systems called?

[1 mark]

Tick (✓) **one** box.

Detergents

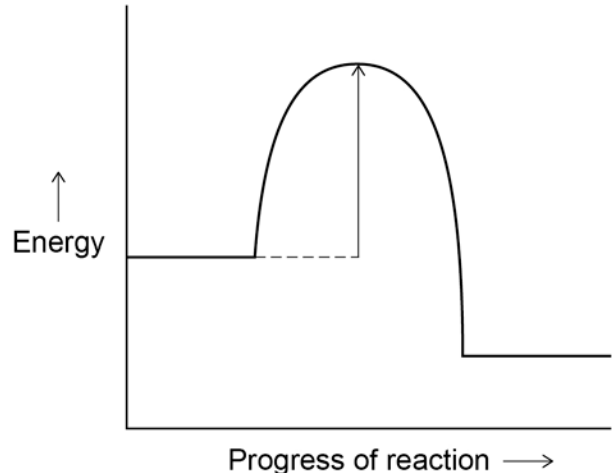
Enzymes

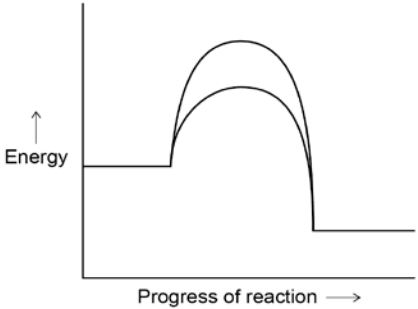
Polymers

Solvents

8



Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1	3.50 %		1	AO2 5.10.1.1
05.2	correct bar to 2.1 (%)	allow a tolerance of $\pm \frac{1}{2}$ a small square	1	AO2 5.10.1.1
05.3	$(617 + 258) - 648$ or $875 - 648$ = 227 (kg)	an answer of 227 (kg) scores 2 marks	1  1	AO2 5.3.1.1
05.4	 <p>ignore arrow heads</p>		1	AO1 5.6.1.4

<p><b>05.5</b></p>	<p>(curve) starts and ends at same energy levels as existing curve</p> <p>maximum of curve below maximum of existing curve</p>	<p>ignore references to activation energy</p> <p>only award if MP1 correct</p> <p>an answer of</p>  <p>scores <b>2</b> marks</p>	<p>1</p> <p>1</p>	<p>AO1 5.6.1.4</p>
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<p><b>05.6</b></p>	<p>enzymes</p>		<p>1</p>	<p>AO1 5.6.1.4</p>
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<p><b>Total</b></p>			<p><b>8</b></p>
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