

## C2 Assessed Task

4 Plastics are used in cars.

When a car is scrapped, the plastic inside is thrown away.  
New laws have been passed to stop the plastic being thrown away.



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Here is a list of waste disposal suggestions.

- A bury it as 'land fill'
- B pour acid on it
- C let it rot
- D burn it in incinerators for energy
- E recycle it

(a) Which of the methods, **A**, **B**, **C**, **D** or **E**, can be used to dispose of plastics?

answer ..... [2]

(b) Which method, **A**, **B**, **C**, **D**, or **E**, is most environmentally friendly?

answer ..... [1]

[Total: 3]

5 Chemists modify plastics to change their properties.  
Different modifications have different effects.

Draw lines to link each **modification** to its **effect**, and each **effect** to its **reason**.

modification	effect	reason
use plasticisers	more rigid	allows molecules to slide past each other
increase cross-linking	easier to bend	molecules fit together more closely
increase crystallinity	increased density	stops molecules sliding past each other

[4]

[Total: 4]

6 Here is some information about three plastics.

plastic	chain length	tensile strength of sample in MPa	melting point in °C
A	500	100	115
B	1000	100	120
C	1500	245	140

(a) (i) Which of the plastics are solid at 130 °C?  
Put a (ring) around the correct answer.

none of these    **A**    **B**    **C**    all of these    [1]

(ii) Which of the plastics are liquid at 105 °C?  
Put a (ring) around the correct answer.

none of these    **A**    **B**    **C**    all of these    [1]

(b) Chemists look for patterns in the properties of compounds.

What pattern is shown by the table above?

Choose words from the list to complete the sentences.

- decreases
- increases
- doesn't change
- has no clear pattern

(i) As the chain gets longer, the tensile strength ..... [1]

(ii) As the chain gets longer, the melting point ..... [1]

(c) Melting points tell us about forces inside a molecule.

(i) Which statement, **A**, **B**, **C** or **D**, is correct?

Higher melting point

- A** means stronger forces inside each molecule
- B** means stronger forces between molecules
- C** means weaker forces inside each molecule
- D** means weaker forces between molecules.

answer ..... [1]

(ii) Which statement, **A**, **B**, **C** or **D**, is correct?

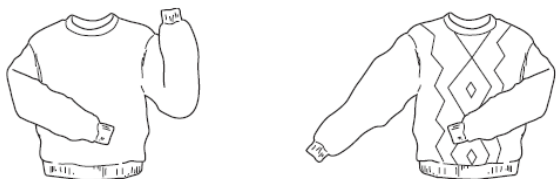
Higher melting point

- A** means more energy is needed to break the molecules apart from each other
- B** means less energy is needed to break the molecules apart from each other
- C** means the same energy is needed to break the molecules apart from each other
- D** is not related to energy because melting point is a temperature.

answer ..... [1]

[Total: 6]

3 A clothing import company has been offered a new type of sweater.



The label says the sweaters are made from 70% wool; 20% polyester; 10% acrylic fibre.

(a) Suggest why the sweaters were made from a **mixture** of materials, rather than just a single type of fibre.

.....  
 .....  
 .....[2]

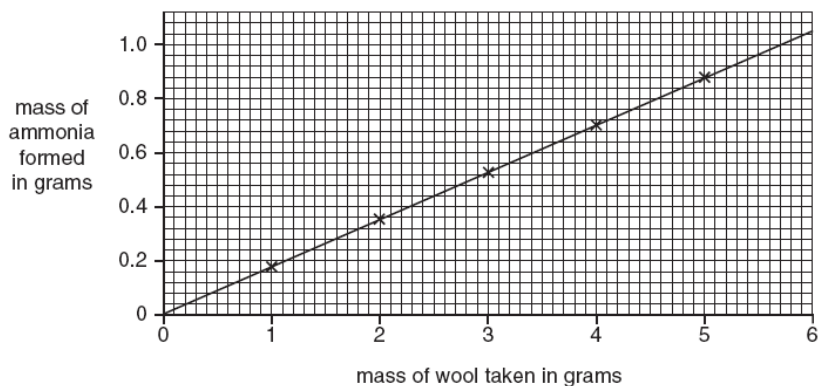
(b) The molecules of wool are made of many smaller molecules linked together.

Wool is a protein. What type of small molecules are linked together to form proteins?

.....[1]

(c) The company use a standard test to see how much wool the sweaters actually contain.

The graph shows how much ammonia is formed from different amounts of wool in the test.



(i) 0.4 g of ammonia was formed when a sample of material from a sweater was tested.

(I) Use the graph to help you find out what mass of wool was in the sample.  
 .....[1]

(II) The sample of sweater material was 5 g. What is the percentage of wool in the sweater material?

Answer: .....% [2]

(ii) Four more samples were taken from different sweaters in the batch, and each was tested.

The results for the percentage of wool in the samples were

43%      46%      48%      47%

(I) Explain how the evidence is improved by testing more than one sample.  
 .....  
 .....  
 .....[2]

(II) What do these results show about the information on the label on the sweaters?  
 .....  
 .....  
 .....[2]

[Total: 10]

Grade	Per Cent
A*	95
A	85
B	75
C	65
D	55
E	45