

(c) Cracking one mole of dodecane,  $C_{12}H_{26}$ , produces two moles of ethene and one mole of another hydrocarbon molecule.

(i) Write the equation for this cracking reaction.

..... [1]

The ethene can be used in the production of poly(ethene).

(ii) Give the full name of the process used to produce poly(ethene) from ethene.

..... [1]

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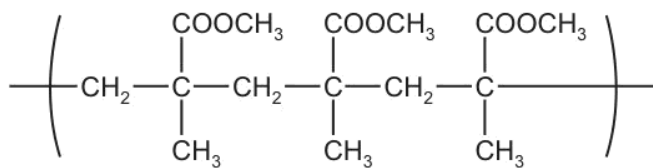
7

(iii) Give **two** reasons why poly(ethene) should be reused or recycled rather than just thrown away.

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

May/June 2018 9701/21 · Q2 (c)(i), (c)(ii), (c)(iii), (c)(iv) (continued ·)

- (iv) Part of a polymer chain, produced by the same type of process as poly(ethene), is shown.



Give the **displayed** formula of the monomer used to produce this polymer.

[2]

[Total: 9]

(ii) Draw the repeat unit of the polymer that is produced from but-2-ene.

[2]

May/June 2018 9701/22 · Q3 (b)(ii)

(ii) Prenol can be polymerised to form poly(prenol).

Draw **one** repeat unit of poly(prenol).

[1]

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[Turn over

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Oct/Nov 2019 9701/22 · Q4 (c)(ii)

(ii) Draw the repeat unit of the addition polymer that can be formed from 4-pentenoic acid.

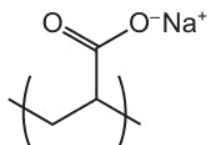
[1]

March 2020 9701/22 · Q3 (c)(ii)

(d) **X** reacts with another reagent to form **Y**.

Molecules of **Y** react together to form addition polymer **Z**. The diagram shows the repeat unit of polymer **Z**.

repeat unit of polymer **Z**



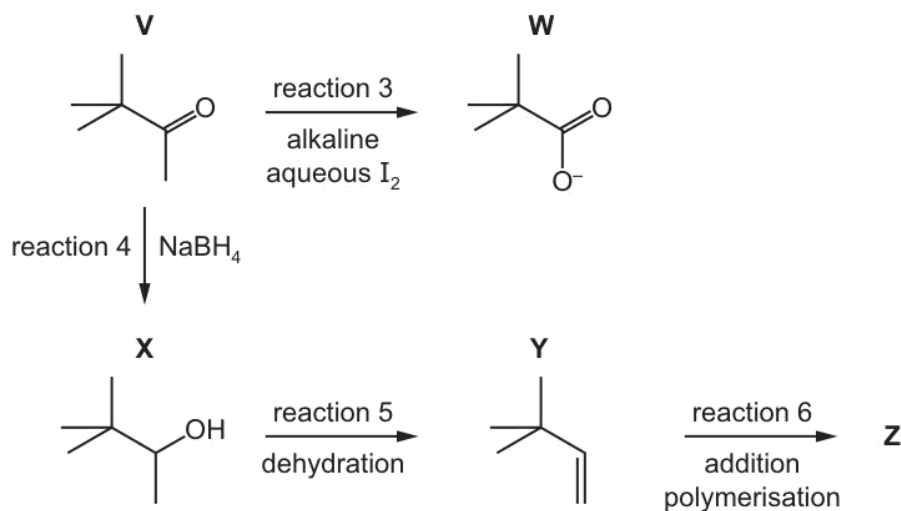
Draw the structural formula of monomer **Y**.

[1]

May/June 2021 9701/21 · Q5 (d)

(e) **V** is used in a wide range of organic reactions.

Some reactions of **V** are shown.



(i) **V** and **W** are colourless and soluble in water.

State what you would observe in reaction 3.

..... [1]

(b) **K** is used to make the addition polymer Perspex®. A synthesis of Perspex® is shown in Fig. 4.2.

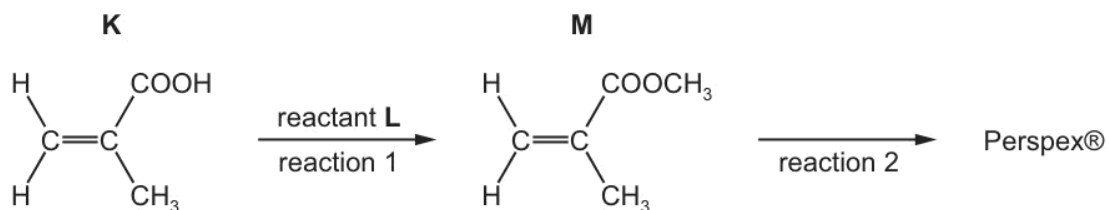


Fig. 4.2

(i) Identify **L**. State the conditions required for reaction 1.

**L** = .....

conditions = .....

[2]

(ii) Draw **one** repeat unit of the addition polymer Perspex®.

[2]

March 2022 9701/22 · Q4 (b)(i), (b)(ii)

(c) **X** is an addition polymer.

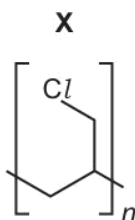


Fig. 4.3

(i) Draw the monomer of **X**.

[1]

May/June 2022 9701/22 · Q4 (c)(i)

(ii) Draw one repeat unit of the polymer formed from **C2**.

[2]

[Total: 14]

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[Turn over

**12**

Oct/Nov 2022 9701/21 · Q4 (d)(ii)

(ii) Draw one repeat unit of polymer **Z**.

[2]

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[Turn over

**10**

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(iii) Draw **one** repeat unit of the addition polymer that forms from **L**.

[1]

[Total: 18]

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[Turn over

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March 2024 9701/22 · Q2 (d)(iii)

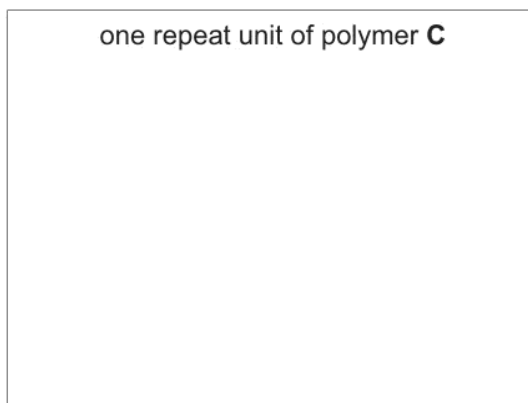
(c) (i) Complete Fig. 4.1 to:

- draw the structure of compound **A**
- name compound **B**.

[2]

(ii) Draw the structure of one repeat unit of polymer **C** in the box.

one repeat unit of polymer **C**



[1]

Oct/Nov 2024 9701/22 · Q4 (c)(ii)

(vi) **Z** is used to produce addition polymer **Q**.

Draw the repeat unit of polymer **Q**.

[1]

(c) Poly(ethene) is an addition polymer made from ethene.

Explain why ethene reacts with electrophiles but poly(ethene) does **not**.

.....  
..... [1]

[Total: 14]

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[Turn over]

(b) Under suitable conditions, propene polymerises to form poly(propene).

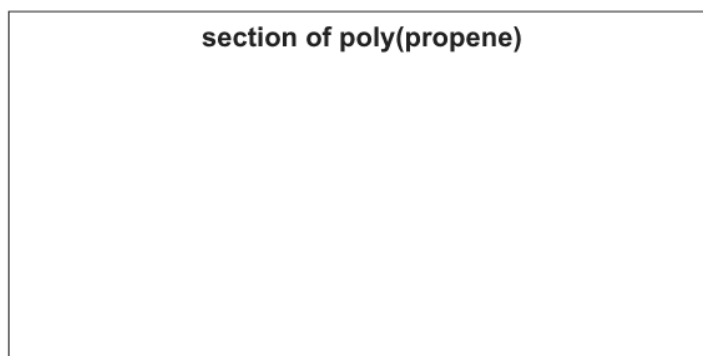
Poly(propene) exhibits stereoisomerism.

(i) Identify the type of polymerisation that forms poly(propene) from propene.

..... [1]

(iii) Draw a section of poly(propene), showing **two** repeat units.

Use your diagram to identify the type of stereoisomerism shown by poly(propene).  
Explain your answer.



.....  
.....  
.....  
.....

[3]

Oct/Nov 2025 9701/21 · Q4 (b)(i), (b)(iii), (b)(iv) (continued ·)

(iv) State **two** difficulties associated with the disposal of poly(propene).

1 .....

2 .....

[2]

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[Turn over]

14

Oct/Nov 2025 9701/21 · Q4 (b)(i), (b)(iii), (b)(iv) (cont.)

(iv) State **two** difficulties associated with the disposal of poly(propene).

1 .....

2 .....

[2]

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[Turn over]

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Oct/Nov 2025 9701/23 · Q4 (b)(iv)

