

Polymers

Q1. (2018) – 5b

(b) Poly(propene) is an example of a polymer.

The structure of a poly(propene) molecule is shown in Figure 5.

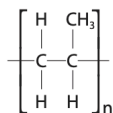


Figure 5

This polymer is made from a monomer.

Draw the structure of the monomer molecule showing all covalent bonds.

(2)

Q2. (2018) – 5c

(c) A layer of poly(chloroethene) (PVC) is used to surround the copper in electrical cables.

Explain why poly(chloroethene) is a suitable material for this purpose.

(2)

Q3. (2018) – 5d

(d) Some polymers are polyesters.

What type of reaction takes place when polyesters are formed?

(1)

- ☐ A addition
- ☐ B condensation
- ☐ C neutralisation
- ☐ D precipitation

Q4. (2018) – 5e

(e) The repeating unit in a polyester molecule is shown in Figure 6.

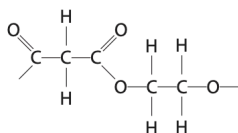


Figure 6

A)

(i) This polymer is made from two different monomers.

Draw a molecule of each monomer showing all covalent bonds.

(2)

B)

(ii) Give the name or formula of the small molecule formed when the monomer molecules react to form an ester link.

(1)

Q5. (2020) – 4c

4 Figure 2 shows the structure of a molecule of dichloroethene.

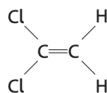


Figure 2

- (c) Poly(dichloroethene) was used to wrap food to keep it fresh.

Explain **one** property that a plastic food wrapping must have.

(2)

Q6. (2020) – 5a (ii, iii)

- 5 (a) Figure 3 shows the structure of two monomers.

monomer A	monomer B
$\text{HO}-\text{CH}_2-\text{CH}_2-\text{OH}$	$\text{HOOC}-\text{CH}_2-\text{CH}_2-\text{COOH}$

Figure 3

A)

- (ii) When monomer **A** and monomer **B** react together they polymerise to form a polymer and one other product.

Name the type of polymerisation that takes place and name the other product.

(2)

type of polymerisation.....

name of other product.....

B)

- (iii) A naturally occurring polymer is made by combining monomers called nucleotides.

Give the name of this natural polymer.

(1)

Q7. (2021)

A)

- 4 This question is about polymers.

- (a) (i) State a problem with **recycling** polymers.

(1)

B)

- (ii) Describe a problem associated with the **disposal** of polymers.

(2)

Q8. (2021) – 4b (ii, iii)

- (b) Poly(chloroethene) is a polymer made from chloroethene.
A molecule of chloroethene is shown in Figure 5.

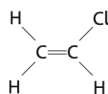


Figure 5

A)

- (ii) Draw a section of a poly(chloroethene) molecule containing three repeating units, showing all bonds.

(3)

B)

- (iii) What type of polymer is poly(chloroethene)?

(1)

Q9. (2022) – 10a (iii)

- 10 (a) Figure 14 shows the structure of a molecule of hydrocarbon **Z**, C_4H_8 .

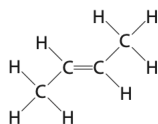


Figure 14

- (iii) Draw the repeating unit of the addition polymer formed when hydrocarbon **Z** undergoes polymerisation.

(2)

Q10. (2022) – 10c

- (c) Some alcohols can react with some carboxylic acids to form polyesters, which are condensation polymers.

Figure 17 shows the repeating unit of the polyester molecule formed in a reaction between a carboxylic acid and an alcohol.

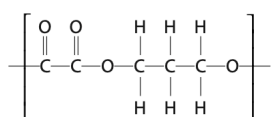


Figure 17

A)

- (i) Give the formula of the other product formed in this reaction.

(1)

B)

- (ii) Draw the structure of one molecule of the alcohol used to produce the polyester shown in Figure 17, showing all covalent bonds.

(2)

Q11. (2023) – 4c

- (c) Figure 8 shows the structure of a molecule of tetrafluoroethene.



Figure 8

A)

- (i) Tetrafluoroethene can form the polymer poly(tetrafluoroethene).

Draw a diagram to show the structure of the repeating unit of this polymer.

(2)

B)

- (ii) Poly(tetrafluoroethene) is also known as TeflonTM.

State one use of poly(tetrafluoroethene) and explain how one of its properties makes it suitable for that use.

(3)

use

explanation

Q12. (2024) – 4a (iii)

- 4 (a) Figure 6 shows a poly(ethene) bottle containing substance **K** with one of its hazard symbols showing.

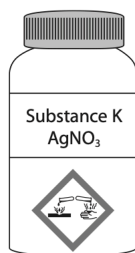


Figure 6

- (iii) State **one** property of poly(ethene) that makes it a suitable material to make a container for storing substances.

(1)

Q13. (2024) – 10c

- (c) Poly(phenylethene) is an addition polymer.

Polyesters are condensation polymers.

Describe the differences between the type of monomer molecules used to form addition polymers and the type of monomer molecules used to form condensation polymers.

(3)