

A-Level Chemistry

Name: _____ Score: _____

1. In condensation polymerisation:
 - ☐ a C=C opens and nothing is lost
 - ☐ no bonds form
 - ☐ only one monomer is used
 - ☐ monomers join and a small molecule (e.g. water) is lost each time
2. A monomer with a C=C double bond, where nothing else is lost, undergoes:
 - ☐ addition polymerisation
 - ☐ condensation polymerisation
 - ☐ no polymerisation
 - ☐ hydrolysis
3. Poly(alkene)s are hard to biodegrade because they have:
 - ☐ only strong, non-polar C–C and C–H bonds
 - ☐ ester links
 - ☐ ionic bonds
 - ☐ amide links
4. A polyester can be made from:
 - ☐ a single C=C monomer
 - ☐ an alkane and a halogen
 - ☐ two alkenes
 - ☐ a diol and a dicarboxylic acid
5. Monomers with two functional groups that lose a small molecule give:
 - ☐ condensation polymerisation (with ester or amide links)
 - ☐ free-radical substitution
 - ☐ addition polymerisation
 - ☐ no polymer
6. Some polymers are made photodegradable so that light can break them down.
 - ☐ True ☐ False

7. Polymers made by joining monomers with loss of a small molecule (e.g. water) form by _____ polymerisation.

8. Addition polymers form from monomers with C=C double bonds and release water as each link forms.

☐ True ☐ False

9. Polymers that can be broken down by microbes or hydrolysis are described as _____.

10. Condensation polymers such as polyesters can be hydrolysed and so are more easily degraded than addition polymers.

☐ True ☐ False

A-Level Chemistry

1. monomers join and a small molecule (e.g. water) is lost each time

Each new link releases a small molecule; the monomers need two reactive groups.

2. addition polymerisation

Addition polymerisation opens the $C=C$ and joins monomers with no other product.

3. only strong, non-polar C–C and C–H bonds

With no polar links to attack, microbes cannot easily break poly(alkene)s down.

4. a diol and a dicarboxylic acid

A diol (two $-OH$) and a dicarboxylic acid (two $-COOH$) form ester links along the chain.

5. condensation polymerisation (with ester or amide links)

Two-group monomers join with loss of a small molecule, forming ester/amide links – condensation.

6. True

Photodegradable polymers are designed to be broken down by light.

7. condensation

Polyesters and polyamides form this way.

8. False

False. Addition polymerisation has no by-product: all the monomer atoms end up in the polymer. Losing a small molecule such as water happens in condensation polymerisation.

9. degradable

They reduce plastic waste.

10. True

The ester/amide links can be broken.