35. Polymerisation

Starter Quiz ·

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

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Answers ·

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.