Starter Quiz ·

A-Level Chemistry Name: _____ Score: _____

1. Aromatic compounds are built on a:

   ☐ long straight chain

   ☐ single C=C bond

   ☐ benzene ring (six carbons)

   ☐ metal ion

2. Electrophilic substitution is when:

   ☐ two molecules join with no loss

   ☐ a nucleophile adds across a double bond

   ☐ a radical removes an electron

   ☐ an electrophile replaces a hydrogen atom on a benzene ring

3. Each carbon in benzene is:

   ☐ sp hybridised and linear

   ☐ sp^3 hybridised and tetrahedral

   ☐ sp^2 hybridised, forming a flat ring of sigma bonds

   ☐ not bonded to hydrogen

4. Two enantiomers differ in that they:

   ☐ react completely differently

   ☐ have different melting points

   ☐ have different molecular formulas

   ☐ rotate plane-polarised light in opposite directions (and may differ in biological effect)

5. When naming an aromatic compound, you:

   ☐ never use numbers

   ☐ name only the longest chain

   ☐ use the benzene ring as the parent and number the substituents

   ☐ ignore the ring

6. Reduction adds hydrogen (or removes oxygen) to a molecule.

   ☐ True ☐ False

☐ True ☐ False

8. A racemic mixture rotates plane-polarised light.

   ☐ True ☐ False

9. A compound containing a benzene ring is described as _____.

   _____

10. Benzene readily undergoes addition reactions because its electrons are localised in three C=C bonds.

    ☐ True ☐ False

1. **benzene ring (six carbons)**

   Aromatic compounds contain a benzene ring; new families also include the amide group.

2. **an electrophile replaces a hydrogen atom on a benzene ring**

   Benzene reacts by electrophilic substitution, keeping its stable ring while swapping an H for the electrophile.

3. **sp^2 hybridised, forming a flat ring of sigma bonds**

   sp^2 carbons give the flat hexagon; the leftover p-orbitals form the delocalised π system.

4. **rotate plane-polarised light in opposite directions (and may differ in biological effect)**

   Enantiomers are otherwise identical; they rotate plane-polarised light oppositely and can act differently in the body.

5. **use the benzene ring as the parent and number the substituents**

   e.g. 3-nitrobenzoic acid puts a $–NO_2$ on carbon 3 of the ring.

6. **True**

   The opposite of oxidation.

7. **True**

   Its sp^2 σ framework and delocalised π system make it planar and symmetrical.

8. **False**

   False. A racemic mixture contains equal amounts of the two enantiomers, whose rotations cancel, so it is optically inactive. A single pure enantiomer is optically active.

9. **aromatic**

   Aliphatic compounds have no benzene ring.

10. **False**

    False. Benzene's π electrons are delocalised around the ring, which makes it unusually stable, so it resists addition and prefers substitution.