

18. Carboxylic acids and derivatives

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

1. The functional group of a carboxylic acid is:

- ☐ -COOH (carboxyl)
- ☐ -OH
- ☐ C=O alone
- ☐ -COO-

2. An ester is made by reacting:

- ☐ an alcohol with a carboxylic acid (condensation, losing water)
- ☐ an alkene with hydrogen
- ☐ a halogenoalkane with NaOH
- ☐ two alkanes

3. A carboxylic acid is made by oxidising a primary alcohol or aldehyde, using:

- ☐ acidified dichromate with reflux
- ☐ distillation to stop early
- ☐ no heating
- ☐ a tertiary alcohol

4. Esters are often recognised by their:

- ☐ sweet or fruity smell
- ☐ sharp acidic smell
- ☐ lack of any smell
- ☐ blue colour

5. A carboxylic acid added to a carbonate gives a salt, water and:

- ☐ carbon dioxide (the fizzing is a test)
- ☐ hydrogen
- ☐ oxygen
- ☐ ammonia

6. Carboxylic acids are weak acids that react with carbonates to give carbon dioxide.

- ☐ True ☐ False

7. An ester is made by reacting a carboxylic acid with an _____.

8. Hydrolysing an ester with dilute acid gives:

- ☐ the carboxylic acid and the alcohol (reversible)
- ☐ the carboxylate salt and the alcohol
- ☐ an alkene
- ☐ a nitrile

9. A carboxylic acid reacting with an alcohol (conc. H_2SO_4 catalyst) makes:

- ☐ an ester
- ☐ an alkene
- ☐ a nitrile
- ☐ an amine

10. Hydrolysing an ester with dilute alkali gives:

- ☐ the carboxylate salt and the alcohol (not reversible)
- ☐ the carboxylic acid and alcohol
- ☐ an ester again
- ☐ an alkene

1. **–COOH (carboxyl)**

Carboxylic acids contain the –COOH group and behave as weak acids.

2. **an alcohol with a carboxylic acid (condensation, losing water)**

Esterification is a reversible condensation of an alcohol and a carboxylic acid, releasing water.

3. **acidified dichromate with reflux**

Reflux ensures full oxidation all the way to the carboxylic acid (distillation would stop at the aldehyde).

4. **sweet or fruity smell**

Many esters have pleasant, fruity smells.

5. **carbon dioxide (the fizzing is a test)**

Like other acids, it releases CO₂ from a carbonate — the fizz is a useful test.

6. **True**

A test for the –COOH group.

7. **alcohol**

Esterification, usually with an acid catalyst.

8. **the carboxylic acid and the alcohol (reversible)**

Acid hydrolysis is the reverse of esterification, giving back the carboxylic acid and alcohol.

9. **an ester**

Esterification joins the acid and alcohol into an ester (losing water).

10. **the carboxylate salt and the alcohol (not reversible)**

Alkali hydrolysis gives the salt of the carboxylic acid (plus the alcohol) and is not reversible.