

17. Carbonyl compounds

Starter Quiz · 课前小测

A-Level Chemistry

Name: _____ Score: _____

- The difference between an aldehyde and a ketone is that:
 - ☐ the C=O is on the end of the chain in an aldehyde, and in the middle in a ketone
 - ☐ an aldehyde has no C=O group
 - ☐ a ketone has an –OH group
 - ☐ they have different molecular formulas always
- An orange precipitate with 2,4-DNPH shows the compound is:
 - ☐ an aldehyde or a ketone (a carbonyl compound)
 - ☐ an alcohol
 - ☐ an alkane
 - ☐ a carboxylic acid only
- Oxidising a secondary alcohol gives:
 - ☐ a ketone
 - ☐ an aldehyde
 - ☐ a carboxylic acid
 - ☐ an alkene
- A silver mirror with Tollens' reagent indicates:
 - ☐ an aldehyde
 - ☐ a ketone
 - ☐ an alcohol
 - ☐ an alkene
- Reducing a carbonyl compound (with NaBH₄) gives:
 - ☐ an alcohol
 - ☐ an alkene
 - ☐ a carboxylic acid
 - ☐ a halogenoalkane
- Aldehydes have the carbonyl group at the end of the carbon chain.
 - ☐ True ☐ False

- Tollens' reagent gives a silver _____ with an aldehyde but not a ketone.

- Fehling's solution turns from blue to a brick-red precipitate with:
 - ☐ an aldehyde
 - ☐ a ketone
 - ☐ a tertiary alcohol
 - ☐ an alkane
- In the nucleophilic addition of HCN, the first step is:
 - ☐ CN[–] attacking the slightly positive carbonyl carbon
 - ☐ the oxygen taking a proton
 - ☐ the C=O bond forming
 - ☐ a carbocation forming
- A pale-yellow precipitate of CHI₃ in the iodoform test shows the compound has the:
 - ☐ CH₃CO– group
 - ☐ C=C bond
 - ☐ –COOH group
 - ☐ C–X bond

1. the C=O is on the end of the chain in an aldehyde, and in the middle in a ketone

Both have the carbonyl C=O; in an aldehyde it is terminal (–CHO), in a ketone it is between two carbons.

2. an aldehyde or a ketone (a carbonyl compound)

2,4-DNPH gives an orange precipitate with any carbonyl (aldehyde or ketone).

3. a ketone

Secondary alcohols oxidise to ketones; primary alcohols (with distillation) give aldehydes.

4. an aldehyde

Aldehydes are oxidised and reduce Tollens' to silver (a mirror); ketones give no change.

5. an alcohol

Reduction turns a carbonyl back into an alcohol (aldehyde → primary, ketone → secondary).

6. True

Ketones have it in the middle.

7. mirror

Aldehydes are oxidised; ketones are not.

8. an aldehyde

An aldehyde reduces Fehling's to a brick-red precipitate; a ketone does not react.

9. CN[−] attacking the slightly positive carbonyl carbon

The cyanide nucleophile attacks the $\delta+$ carbon, breaking the C=O; the O[−] then takes an H⁺.

10. CH₃CO– group

The iodoform (CHI₃) test is positive for compounds containing the CH₃CO– group (and CH₃CH(OH)–).