1. The difference between an aldehyde and a ketone is that:

   ☐ a ketone has an –OH group

   ☐ an aldehyde has no C=O group

   ☐ they have different molecular formulas always

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

2. An orange precipitate with 2,4-DNPH shows the compound is:

   ☐ an alkane (a saturated hydrocarbon)

   ☐ a carboxylic acid only (a –COOH compound)

   ☐ an aldehyde or a ketone (a carbonyl compound)

   ☐ an alcohol (an –OH compound)

3. Oxidising a secondary alcohol gives:

   ☐ a carboxylic acid

   ☐ an aldehyde

   ☐ a ketone

   ☐ an alkene

4. A silver mirror with Tollens' reagent indicates:

   ☐ a ketone

   ☐ an aldehyde

   ☐ an alkene

   ☐ an alcohol

5. Reducing a carbonyl compound (with $NaBH_4$) gives:

   ☐ an alcohol

   ☐ an alkene

   ☐ a carboxylic acid

   ☐ a halogenoalkane

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

   _____

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☐ True ☐ False

8. Butanal reacts with HCN (KCN catalyst). How many carbon atoms are in the hydroxynitrile formed?

   _____

9. Fehling's solution turns from blue to a brick-red precipitate with:

   ☐ an alkane

   ☐ a ketone

   ☐ a tertiary alcohol

   ☐ an aldehyde

10. In the nucleophilic addition of HCN, the first step is:

    ☐ CN^- attacking the slightly positive carbonyl carbon

    ☐ a carbocation forming

    ☐ the C=O bond forming

    ☐ the oxygen taking a proton

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. **mirror**

   Aldehydes are oxidised; ketones are not.

7. **False**

   False. Aldehydes have the carbonyl group at the end of the chain; ketones have it in the middle, bonded to two carbons.

8. **5**

   Butanal has 4 carbons and the CN group adds one: 2-hydroxypentanenitrile.

9. **an aldehyde**

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

10. **CN^- attacking the slightly positive carbonyl carbon**

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

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