Aldehydes & Ketones — Instructor Answer Key

Worked solutions and reasoning • For instructor review before publication

1. **Which structure contains an aldehyde?**

   Answer: CH_3CH_2CHO

   Reasoning: CH_3CH_2CHO (propanal) has a terminal carbonyl bonded to H.

2. **How is $CH_3COCH_2CH_3$ named?**

   Answer: Butan-2-one

   Reasoning: The four-carbon chain has a ketone at C2: butan-2-one.

3. **Which atom is the main electrophilic site of a simple ketone?**

   Answer: Carbonyl carbon

   Reasoning: C=O polarization leaves the carbonyl carbon partially positive.

4. **Which carbonyl compound is usually less hindered during nucleophilic attack?**

   Answer: Ethanal

   Reasoning: Ethanal has one H instead of a second carbon substituent at the carbonyl carbon.

5. **Which is a ketone?**

   Answer: CH_3COCH_3

   Reasoning: Propanone has two carbon substituents on the carbonyl carbon.

6. **What is the suffix usually used for an aldehyde?**

   Answer: -al

   Reasoning: Simple acyclic aldehydes use the suffix -al.

7. **Which molecule is butanal?**

   Answer: $CH_3CH_2CH_2CHO$

   Reasoning: $CH_3CH_2CH_2CHO$ is a four-carbon aldehyde.

8. **In the C=O bond, the oxygen is generally:**

   Answer: δ^-

   Reasoning: Oxygen attracts electron density more strongly than carbon.

9. **What makes a ketone different from an aldehyde?**

   Answer: A ketone has two carbon substituents at the carbonyl carbon; an aldehyde has at least one H there.

   Reasoning: A ketone has two carbon substituents at the carbonyl carbon; an aldehyde has at least one H there.

10. **Which is usually more reactive toward simple nucleophilic addition, ethanal or propanone?**

    Answer: Ethanal, owing generally to reduced steric hindrance and greater electrophilicity.

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