Aldehyde or Ketone? Structure and IUPAC Names

Methanal and propanone both have C=O, yet one is an aldehyde and one a ketone. Where the C=O sits decides it, and the names follow: -al for aldehydes, -one for ketones, plus the common names.

Name: _____ Date: _____ Score: ____ / 15

A. Fill in the blanks

1. In an aldehyde, the carbonyl carbon carries at least one ____ atom.

2. The IUPAC ending for aldehydes is ____.

3. The IUPAC ending for ketones is ____.

4. The common name of propanone is ____.

B. True or False

5. In a ketone, the C=O group is at the end of the chain. True / False

6. The –CHO carbon of an aldehyde is always numbered C-1. True / False

7. The smallest ketone has two carbon atoms. True / False

C. Assertion and reason

8. Assertion (A): Ketones need a locant from five carbons on.
Reason (R): The C=O can then sit at more than one position.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

9. Assertion (A): Aldehyde names need no locant.
Reason (R): The –CHO carbon is always C-1.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

10. The IUPAC name of HCHO is:

(a) methanol
(b) methanal
(c) formic acid
(d) ethanal

Answer: _____

11. $CH_3COCH_2CH_2CH_3$ is:

(a) pentan-3-one
(b) pentan-2-one
(c) pentanal
(d) butanone

Answer: _____

12. Acetaldehyde is the common name of:

(a) HCHO

(b) CH_3CHO

(c) CH_3COCH_3

(d) CH_3COOH

Answer: _____

E. Numerical problems

13. How many carbon atoms does the smallest ketone have?

F. Short answer questions

14. State one structural difference between an aldehyde and a ketone.

G. Match the columns

15. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. HCHO	(a) propanone	1 → ____
2. CH_3CHO	(b) ethanal	2 → ____
3. CH_3COCH_3	(c) methanal	3 → ____
4. $CH_3CH_2COCH_2CH_3$	(d) pentan-3-one	4 → ____

Detailed solutions

1. hydrogen

2. -al

3. -one

4. acetone

5. False. It is inside the chain, with carbon groups on both sides.

6. True. So no locant is written.

7. False. Propanone, with three carbons.

8. (a) R explains A.

9. (a) R explains A.

10. (b) methanal. One carbon, -e + al.

11. (b) pentan-2-one. C=O on the second carbon.

12. (b) CH_3CHO. Ethanal.

13. propanone. **Answer: 3**

14. In an aldehyde the carbonyl carbon carries at least one H (C=O at the chain end); in a ketone it carries two carbon groups (C=O inside the chain).

15. 1 → (c), 2 → (b), 3 → (a), 4 → (d). Each formula matches its IUPAC name.