The Haloform Reaction: Iodoform Test

Yellow crystals with a hospital smell reveal the CH_3CO group. How the iodoform test works and which compounds pass it.

Name: Date: Score: ____ / 19

A. Fill in the blanks

1. Iodoform has the formula ____.

2. Iodoform is a ____ solid.

3. The test uses iodine and ____.

4. The test detects the ____ group.

5. The carboxylate formed has ____ carbon fewer.

B. True or False

6. Ethanol gives the iodoform test. True / False

7. Methanol gives the iodoform test. True / False

8. Propanal gives the iodoform test. True / False

9. Propanone gives the iodoform test. True / False

C. Assertion and reason

10. Assertion (A): Propan-2-ol gives the iodoform test.
Reason (R): It is oxidised to a methyl ketone under test conditions.

(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: _____

11. Assertion (A): Propanone gives an acid salt with fewer carbons.
Reason (R): The C–C bond next to CI_3 breaks.

(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

12. Which gives iodoform?

(a) Methanol
(b) Propanal
(c) Propan-2-ol
(d) Pentan-3-one

Answer: _____

13. Which is the only aldehyde that gives iodoform?

(a) Methanal
(b) Ethanal
(c) Propanal
(d) Benzaldehyde

Answer: _____

14. During the test, the methyl group's H atoms are replaced by:

(a) OH
(b) iodine
(c) oxygen
(d) sodium

Answer: _____

15. Pentan-3-one gives a negative test because:

(a) it has no carbonyl
(b) neither side of C=O is methyl
(c) it is an alcohol
(d) it is an acid

Answer: _____

E. Numerical problems

16. How many carbons does the carboxylate from propanone have?

17. How many iodine atoms are in one iodoform molecule?

F. Short answer questions

18. How would you distinguish ethanol from methanol?

G. Match the columns

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

Column A	Column B	Your answer
1. Yellow precipitate	(a) test reagents	1 → ____
2. Propanone	(b) positive	2 → ____
3. Methanol	(c) CHI_3	3 → ____
4. I_2 + NaOH	(d) negative	4 → ____

Detailed solutions

1. CHI_3

2. yellow

3. NaOH

4. CH_3CO

5. 1

6. True. It oxidises to ethanal.

7. False. It cannot form CH_3CO.

8. False. It has no CH_3CO group.

9. True. It is a methyl ketone.

10. (a) R explains A.

11. (a) R explains A.

12. (c) Propan-2-ol. It oxidises to propanone.

13. (b) Ethanal. It has CH_3CO.

14. (b) iodine. Giving CI_3.

15. (b) neither side of C=O is methyl. No CH_3CO group.

16. 3 − 1. **Answer: 2**

17. CHI_3. **Answer: 3**

18. Warm with iodine and NaOH: ethanol gives yellow iodoform, methanol gives no change.

19. 1 → (c), 2 → (b), 3 → (d), 4 → (a). Each item matches its partner.