Tollens' and Fehling's Tests

Warm a clear liquid and a mirror forms in the test tube. How Tollens' and Fehling's tests tell aldehydes from ketones.

Name: Date: Score: ____ / 18

A. Fill in the blanks

1. Tollens' reagent is ammoniacal ____ nitrate.

2. Aldehydes give a silver ____ with Tollens' reagent.

3. Fehling's solution contains ____ ions.

4. Fehling's test gives a red-brown precipitate of ____.

5. In Tollens' test the aldehyde is oxidised to a ____.

B. True or False

6. Ketones give a silver mirror. True / False

7. Benzaldehyde gives Fehling's test. True / False

8. Benzaldehyde gives Tollens' test. True / False

9. Aldehydes act as reducing agents in these tests. True / False

C. Assertion and reason

10. Assertion (A): Aldehydes give Tollens' test.
Reason (R): Aldehydes are easily oxidised.

(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): Ketones do not give Tollens' test.
Reason (R): Ketones have no H on the carbonyl carbon.

(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 a silver mirror?

(a) Propanone
(b) Ethanal
(c) Pentan-3-one
(d) Butanone

Answer: _____

13. Fehling's solution is:

(a) colourless
(b) blue
(c) red
(d) yellow

Answer: _____

14. Which gives neither test?

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

Answer: _____

15. In Tollens' test Ag^+ becomes:

(a) AgCl
(b) Ag metal
(c) Ag_2O
(d) $AgNO_3$

Answer: _____

E. Short answer questions

16. How would you distinguish ethanal from propanone?

17. How would you distinguish ethanal from benzaldehyde?

F. Match the columns

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

Column A	Column B	Your answer
1. Tollens' positive	(a) red-brown Cu_2O	1 → ____
2. Fehling's positive	(b) Tollens' only	2 → ____
3. Benzaldehyde	(c) neither test	3 → ____
4. Ketone	(d) silver mirror	4 → ____

Detailed solutions

1. silver

2. mirror

3. Cu^{2+}

4. Cu_2O

5. carboxylate

6. False. They have no H on the carbonyl carbon.

7. False. Aromatic aldehydes do not.

8. True. It reduces silver ions.

9. True. They reduce Ag^{+} and Cu^{2+}.

10. (a) R explains A.

11. (a) R explains A.

12. (b) Ethanal. Ethanal is an aldehyde.

13. (b) blue. Cu^{2+} is blue.

14. (d) Propanone. A ketone.

15. (b) Ag metal. It is reduced.

16. Warm with Tollens' reagent: ethanal gives a silver mirror, propanone gives no change.

17. Heat with Fehling's solution: ethanal gives a red-brown precipitate, benzaldehyde gives no change.

18. 1 → (d), 2 → (a), 3 → (b), 4 → (c). Each item matches its result.