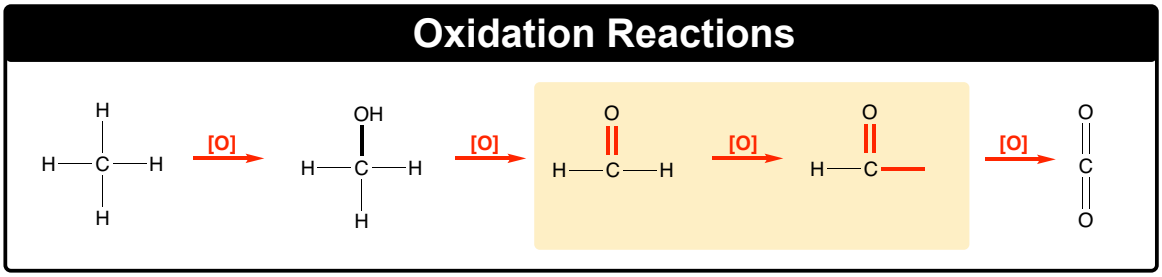
CONCEPT: TOLLENS' AND BENEDICT'S TEST

Oxidation Reactions

- Recall, **oxidation** uses an oxidizing agent to add as many _____ bonds as possible without breaking any C–C bonds.

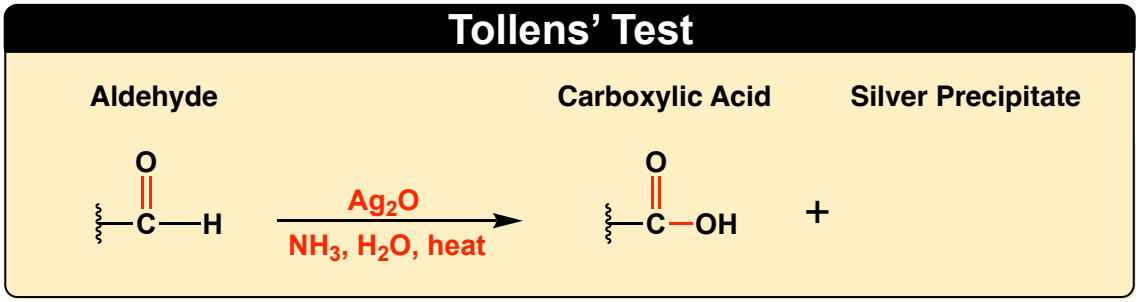


EXAMPLE: Determine which of the following compounds cannot undergo an oxidation reaction?

a) Hexanal b) Benzaldehyde c) Acetone d) Ethanal e) Propanal

Tollens' Test

- Tests for the presence of an _____ within a basic solution.
  - □ Known as the _____ _____ Test because of the formation of a silver precipitate.



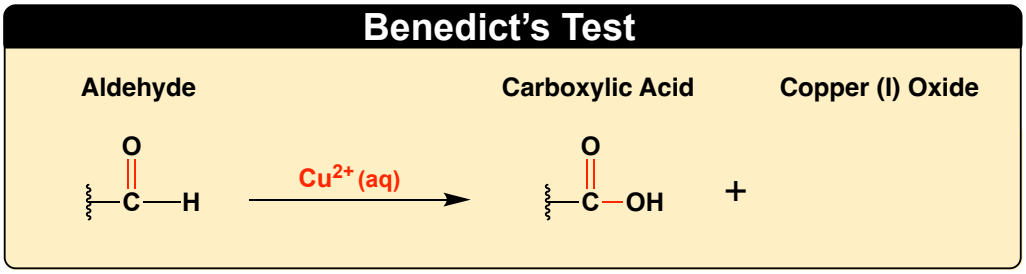
- The oxidizing agent can be represented in different ways as a combination of _____ and _____.

EXAMPLE: Draw the carboxylic acid produced when 2,3-dimethylpentanal is submerged in a Tollens' solution.

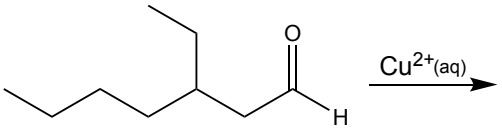
CONCEPT: TOLLENS' AND BENEDICT'S TEST

Benedict's Test

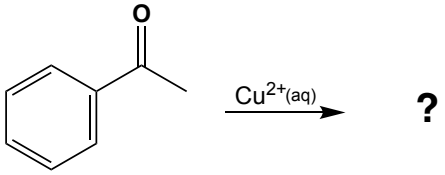
- Like Tollens' Test, tests for the presence an _____ within a basic solution.
  - □ A positive test reduces _____ to _____ in the formation of a brick-red Cu_2O precipitate.

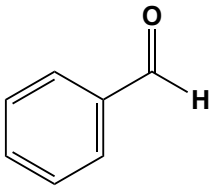


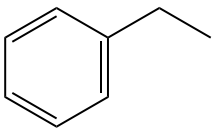
EXAMPLE: Determine the product formed when 3-ethylheptanal is treated with a basic copper (II) solution.

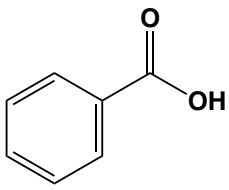


PRACTICE: Determine the product formed when the following compound undergoes the Benedict's test.



a) 

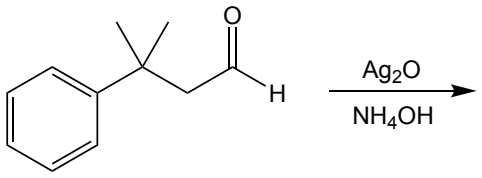
b) 

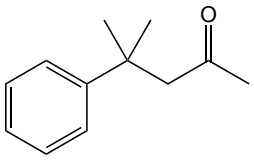
c) 

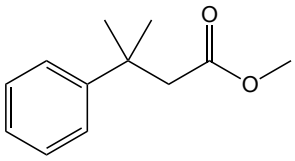
d) No Reaction

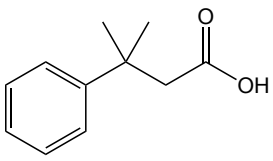
CONCEPT: TOLLENS' AND BENEDICT'S TEST

PRACTICE: Under the following test, which structure represents the product formed?



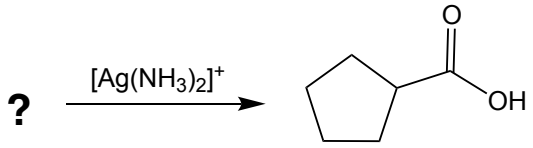
a) 

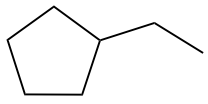
b) 

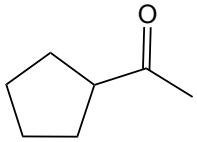
c) 

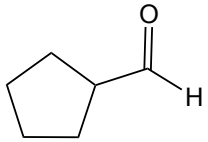
d) No Reaction

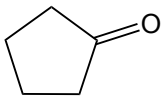
PRACTICE: What was the starting material that created the following carboxylic acid product?



a) 

b) 

c) 

d) 

PRACTICE: Draw the product when 2,3,5-trimethyloctanal is submerged in a basic copper (II) solution.