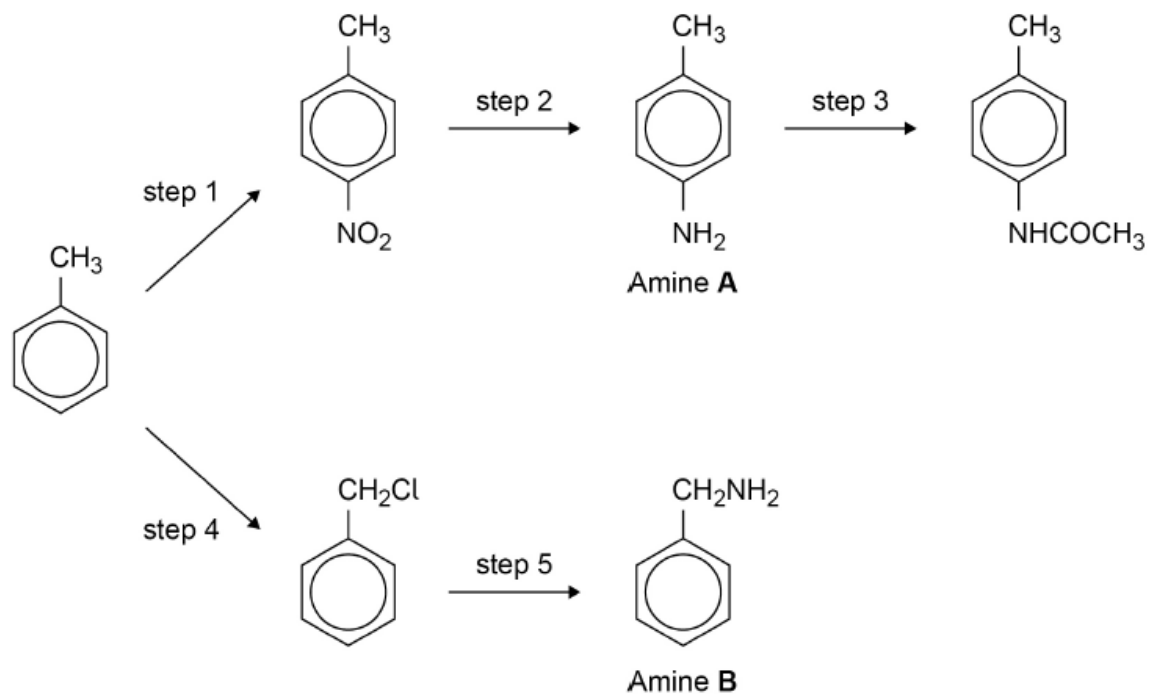


Organic Synthesis – A2 2022 Chemistry P2&P3

1. June/2022/Paper_7405/2/No.10

1 0

This question is about the reaction scheme shown.



1 0 . 1

State the reagents needed for step 1 and the reagents needed for step 2.

[3 marks]

step 1 _____

step 2 _____

1 0 . 2

Give the name of the mechanism for the reaction in step 3.

[1 mark]

1 0 . 3 Name the reagent for step 4.

State a necessary condition for step 4.

[2 marks]

Reagent _____

Condition _____

1 0 . 4 Amine **A** is formed in step 2 and amine **B** is formed in step 5.

Explain why the yield of **B** in step 5 is less than the yield of **A** in step 2.

[2 marks]

1 0 . 5 Explain why amine **B** is a stronger base than amine **A**.

[2 marks]

2. *June/2022/Paper_7405/3/No.22*

2-Bromopropane reacts with bromine to form 2,2-dibromopropane.

What is the name of the mechanism of this reaction?

[1 mark]

A Electrophilic addition

B Elimination

C Free-radical substitution

D Nucleophilic substitution

3. *June/2022/Paper_7405/3/No.23*

Which compound is formed from bromoethane in a nucleophilic substitution reaction?

[1 mark]

A CH_3CN

B $\text{CH}_3\text{CH}_2\text{NH}_2$

C $\text{CH}_2=\text{CH}_2$

D $\text{CH}_3\text{CH}_2\text{OSO}_2\text{OH}$

4. *June/2022/Paper_7405/3/No.24*

Which statement is **not** correct for both primary and secondary alcohols?

[1 mark]

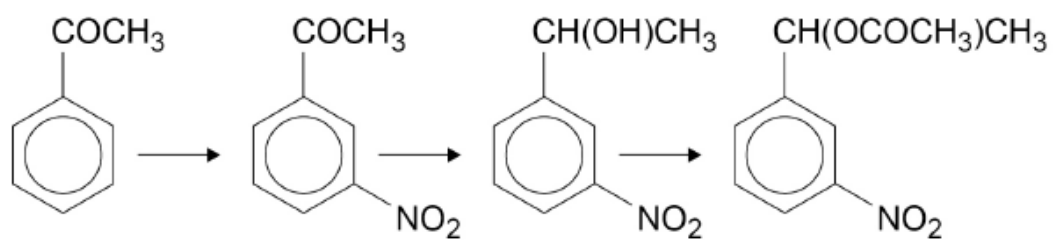
A They are easily oxidised to carboxylic acids by acidified $\text{K}_2\text{Cr}_2\text{O}_7$ solution.

B They can be formed from bromoalkanes by hydrolysis.

C They form esters with carboxylic acids.

D They show hydrogen bonding in the liquid state.

5. June/2022/Paper_7405/3/No.30



Which type of reaction is **not** involved in this reaction sequence?

[1 mark]

A esterification

B hydrolysis

C nitration

D reduction