Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Amines

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Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

Which compound is the strongest base?

A Ammonia ⬭

B Ammonium chloride ⬭

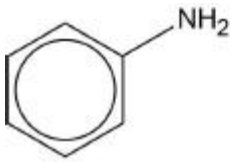
C Methylamine ⬭

D Phenylamine ⬭

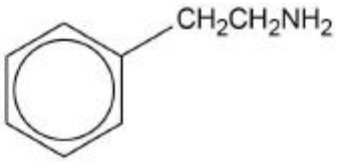
(Total 1 mark)

Q2.

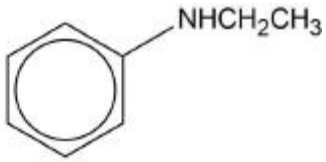
This question is about the three amines, **E**, **F** and **G**.



E



F



G

(a) Amines **E**, **F** and **G** are weak bases.

Explain the difference in base strength of the three amines and give the order of increasing base strength.

(6)

(b) Amine **F** can be prepared in a three-step synthesis starting from methylbenzene.

Suggest the structures of the two intermediate compounds.

For each step, give reagents and conditions only. Equations and mechanisms are **not** required.

(5)

(Total 11 marks)

Q3.

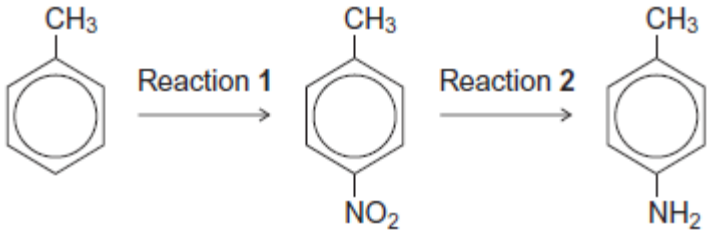
What type of reaction is used to convert $(CH_3)_3N$ into the cationic surfactant $[(CH_3)_3N(CH_2)_{15}CH_3]Cl$?

A	Bronsted–Lowry acid-base reaction	⬭
B	Nucleophilic addition	⬭
C	Nucleophilic addition-elimination	⬭
D	Nucleophilic substitution	⬭

(Total 1 mark)

Q4.

Consider the following reaction sequence starting from methylbenzene.



J

(a) Name the type of mechanism for reaction **1**.

_____

(1)

(b) Compound **J** is formed by reduction in reaction **2**.

(i) Give a reducing agent for this reaction.

_____

(1)

(ii) Write an equation for this reaction. Use [H] to represent the reducing agent.

_____

(1)

(iii) Give a use for **J**.

_____

(1)

(c) Outline a mechanism for the reaction of bromomethane with an excess of compound **J**. You should represent **J** as RNH_2 in the mechanism.

(4)

(d) Compound **K** ($C_6H_5CH_2NH_2$) is a structural isomer of **J**.

Explain why **J** is a weaker base than **K**.

_____

_____

_____

_____

_____

_____

(3)

(Total 11 marks)