

Name of the Student: _____

Max. Marks : 25 Marks

Time : 25 Minutes

Q1.

- (a) Name the compound $(\text{CH}_3)_2\text{NH}$

(1)

- (b) $(\text{CH}_3)_2\text{NH}$ can be formed by the reaction of an excess of CH_3NH_2 with CH_3Br . Name and outline a mechanism for this reaction.

Name of mechanism _____

Mechanism

(5)

- (c) Name the type of compound produced when a large excess of CH_3Br reacts with CH_3NH_2 . Give a use for this type of compound.

Type of compound _____

Use _____

(2)

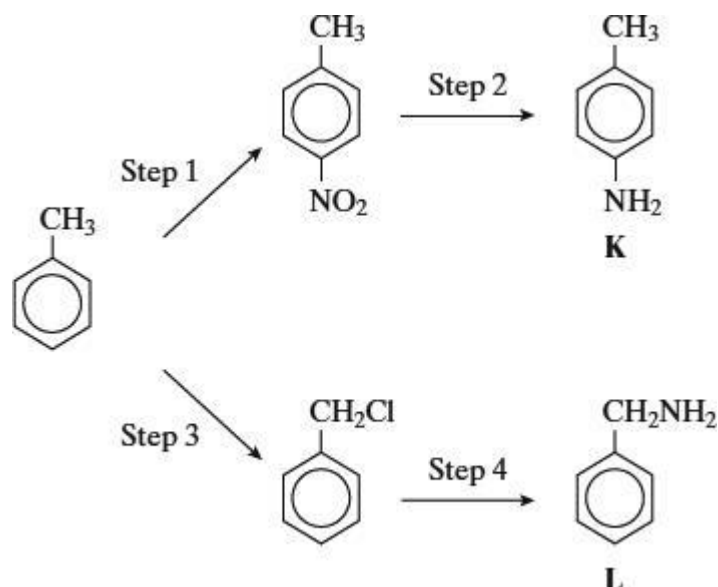
- (d) Draw the structures of the two compounds formed in the reaction of CH_3NH_2 with ethanoic anhydride.

(2)

(Total 10 marks)

Q2.

The following reaction scheme shows the formation of two amines, **K** and **L**, from methylbenzene.



- (a) (i) Give the reagents needed to carry out Step 1. Write an equation for the formation from these reagents of the inorganic species which reacts with methylbenzene.

Reagents _____

Equation _____

- (ii) Name and outline a mechanism for the reaction between this inorganic species and methylbenzene.

Name of mechanism _____

Mechanism

(7)

- (b) Give a suitable reagent or combination of reagents for Step 2.

(1)

- (c) (i) Give the reagent for Step 4 and state a condition to ensure that the primary amine is the major product.

Reagent _____

Condition _____

- (ii) Name and outline a mechanism for Step 4.

Name of mechanism _____

Mechanism

(7)

(Total 15 marks)