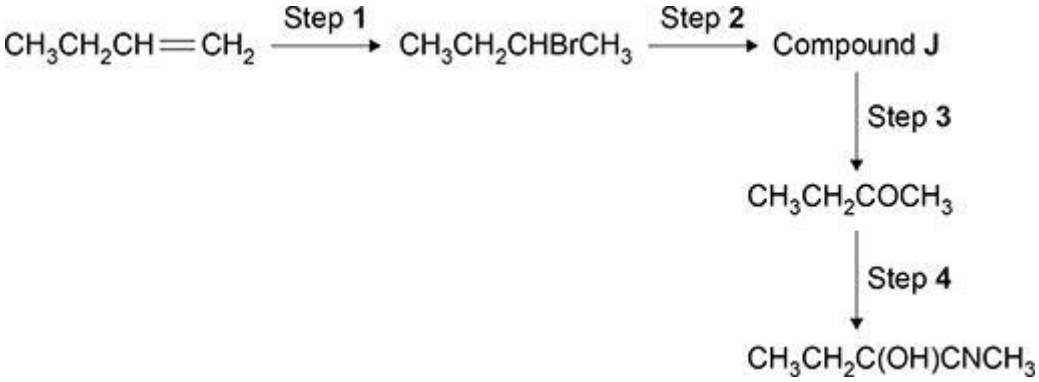
Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Halogenoalkanes

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

This question is about an organic synthesis.



(a) Name the mechanism in Step **1**.

State the reagent(s) used for Step **1**.

Name of mechanism _____

Reagent(s) _____

(2)

(b) Identify compound **J**.

State the reagent(s) and conditions needed for Step **2**.

Compound **J** _____

Reagent(s) and conditions _____

_____

(2)

(c) State the reagent(s) used for Step **4**.

Outline the mechanism for Step **4**.

Reagent(s) _____

Mechanism

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(5)

(d) Explain why Step **4** produces a racemic mixture.

_____

_____

_____

_____

_____

_____

(3)

(Total 12 marks)

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Q2.

This question is about amines.

(a) An incomplete equation for Step **1** in the reaction between bromoethane and an amine is shown.



Complete the equation.

In Step **2** of this reaction, the product of Step **1** forms a secondary amine.

Name the secondary amine formed.

Amine name _____

(2)

(b) $CH_3CHBrCH_2CH_3$ reacts with NH_3

Draw the skeletal formula of the major organic product formed when

- an excess of NH_3 is used
- an excess of $CH_3CHBrCH_2CH_3$ is used.

Product with excess NH_3

Product with excess $CH_3CHBrCH_2CH_3$

(2)

(c) **Figure 1** shows a two-step synthesis to make amine **G**.

Figure 1

$$\xrightarrow{\text{Step 1}} (CH_3)_2CHCN + Br^-$$

$$(CH_3)_2CHCN + 2\,H_2 \xrightarrow{\text{Step 2}}$$

Amine **G**

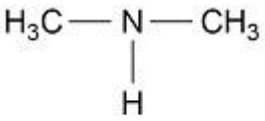
Complete **Figure 1** by drawing the mechanism for Step **1** and the displayed formula of amine **G**.

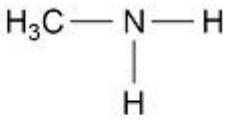
(3)

(d) **Figure 2** shows two amines, **P** and **Q**.

Figure 2

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Explain why **P** is a stronger base than **Q**.

_____

_____

_____

_____

(2)

(Total 9 marks)

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