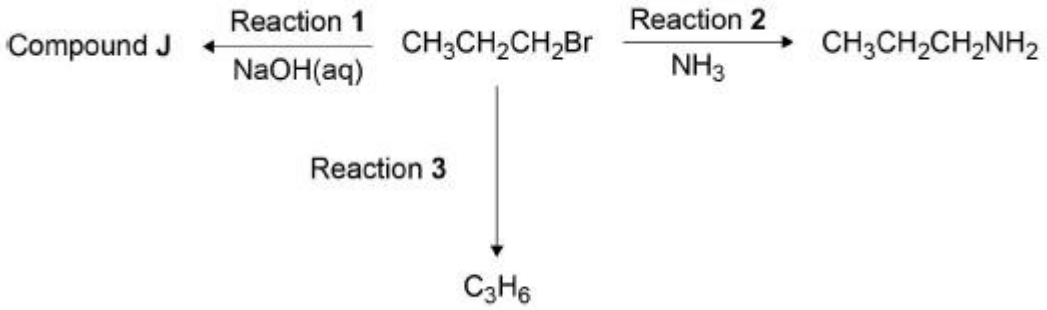
Practice Question Set For A-Level
Subject : Chemistry
Paper-1 Topic: Physical 1

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Name of the Student:_____
Max. Marks : 27 Marks **Time : 27 Minutes**

Q1.

The diagram shows some compounds made from a halogenoalkane.



(a) Draw the displayed formula of compound **J**.

(1)

(b) Name the mechanism for Reaction **2** and give an essential condition used to ensure that $CH_3CH_2CH_2NH_2$ is the major product.

Name of mechanism _____

Condition _____

(2)

(c) Calculate the mass, in grams, of $CH_3CH_2CH_2NH_2$ produced from 25.2 g of $CH_3CH_2CH_2Br$ in Reaction **2** assuming a 75.0% yield.

Give your answer to the appropriate number of significant figures.

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Mass _____ g

(3)

(d) When Reaction **2** is carried out under different conditions, a compound with molecular formula $C_9H_{21}N$ is produced.

Draw the skeletal formula of the compound.

Identify the functional group in the compound including its classification.

Skeletal formula

Functional group including classification _____

(2)

(e) Identify the reagent and conditions used in Reaction **3**.

_____

(1)

(f) Name and outline a mechanism for Reaction 3.

Name of mechanism _____

Mechanism

(4)

(Total 13 marks)

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Q2.

This question is about the element iodine and its compounds.

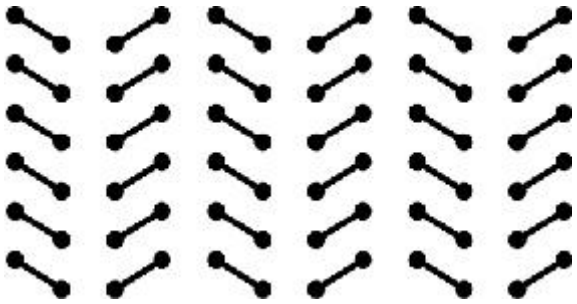
(a) Iodine is in Group 7 of the Periodic Table.

Complete the electron configuration of an iodine atom.

[Kr] _____

(1)

(b) Part of the structure of an iodine crystal is shown in the diagram.



Use your knowledge of structure and bonding to explain why the melting point of iodine is low (113.5 °C) and why that of hydrogen iodide is very low (–50.8 °C).

(6)

(c) State why iodine does **not** conduct electricity.

_____

_____

_____

(1)

(d) Deduce an equation for the formation of hydrogen iodide from its elements.

_____

(1)

(e) The triiodide ion is formed when an iodine molecule is bonded to an iodide ion.

What is the formula of ammonium triiodide?

Tick (✔) **one** box.

NH_3I_3 ☐

NH_3I_4 ☐

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NH_4I ☐

NH_4I_3 ☐

(1)

(f) Draw the shape of the IF_3 molecule and the shape of the IF_4^- ion.
Include any lone pairs of electrons that influence each shape.

(2)

(g) Deduce the oxidation state of iodine in the following species.

$Ba(IO_3)_2$ _____

$[H_4IO_6]^-$ _____

(2)

(Total 14 marks)

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