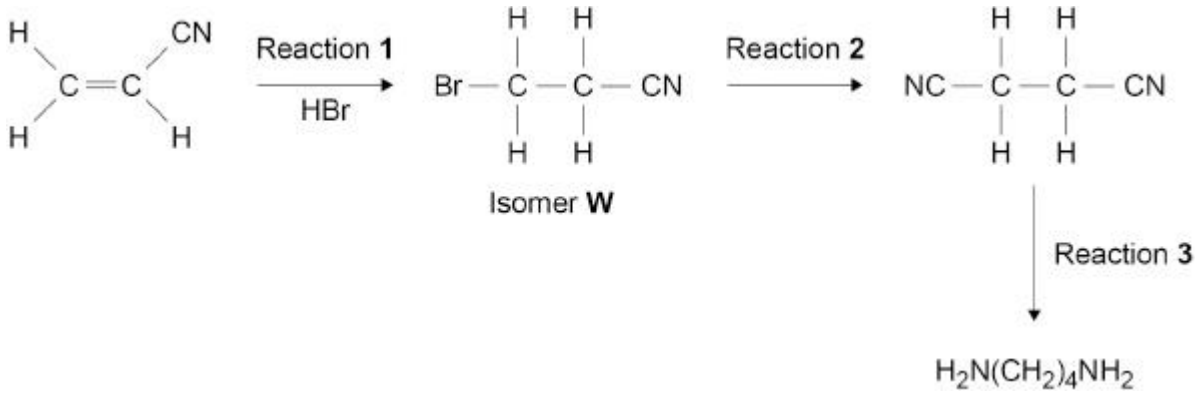
Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Amines

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Acrylonitrile, $H_2C=CHCN$, can be used as a starting material for the synthesis of butane-1,4-diamine, as shown in this reaction scheme.



(a) Use IUPAC rules to name isomer **W**.

_____

(1)

(b) Reaction **1** produces a mixture of **W** and two other isomers.

Draw the structures of the two other isomers.

Explain, by considering the mechanism of this reaction, why all three isomers are formed.

_____

_____

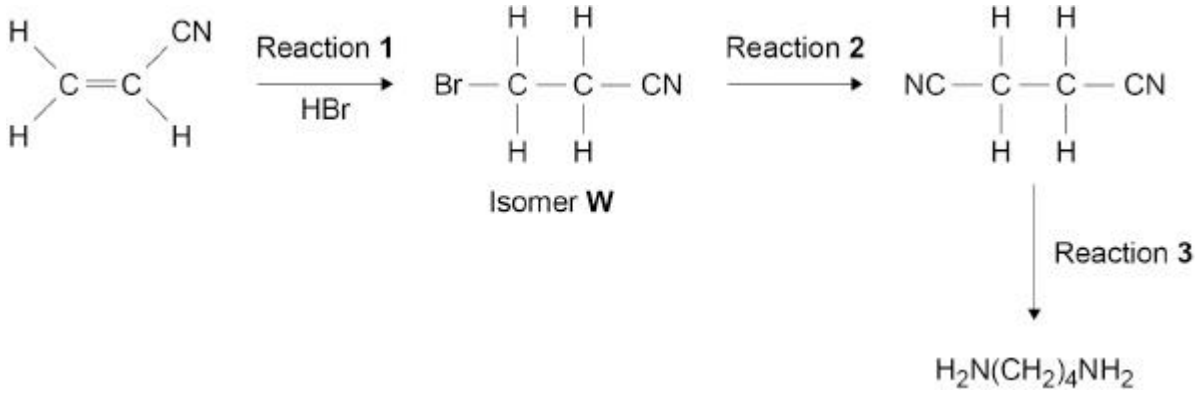
_____

_____

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(6)

The reaction scheme is repeated here.



(c) Identify the reagent that is warmed with isomer **W** in reaction **2**.

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State the other reaction condition needed.

Reagent _____

Condition _____

(2)

(d) State the reagent and reaction conditions needed for reaction **3**.

Give an equation for reaction **3**.

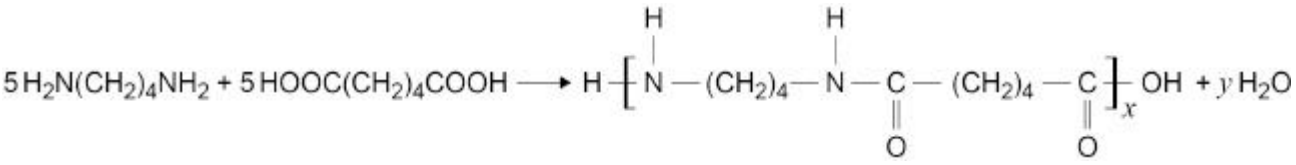
Reagent and conditions _____

Equation

_____

(2)

(e) An incomplete equation for the formation of nylon 4,6 from five molecules of butane-1,4-diamine and five molecules of hexanedioic acid is shown.

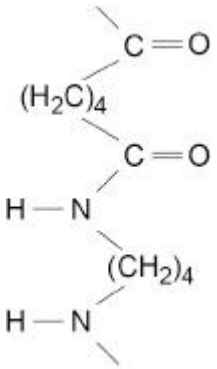


Deduce the values of x and y in this equation.

x _____ y _____

(2)

(f) The figure below shows a section of the nylon 4,6 polymer molecule.



Draw, on the figure above, another section of nylon 4,6 polymer showing two hydrogen bonds between the two sections.

Draw, on the figure above, another section of nylon 4,6 polymer showing two hydrogen bonds between the two sections.

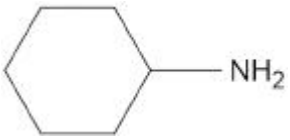
(2)

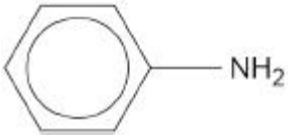
(Total 15 marks)

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Q2.

Which compound is the strongest base?

A  ⬭

B  ⬭

C NH_3 ⬭

D NH_4Cl ⬭

(Total 1 mark)

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Q3.

Which statement about $HOCH_2CH(NH_2)COOH$ is correct?

A It decolourises bromine water. ⬭

B It is a component of DNA. ⬭

C It is insoluble in water. ⬭

D It reacts with hydrochloric acid. ⬭

(Total 1 mark)

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