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

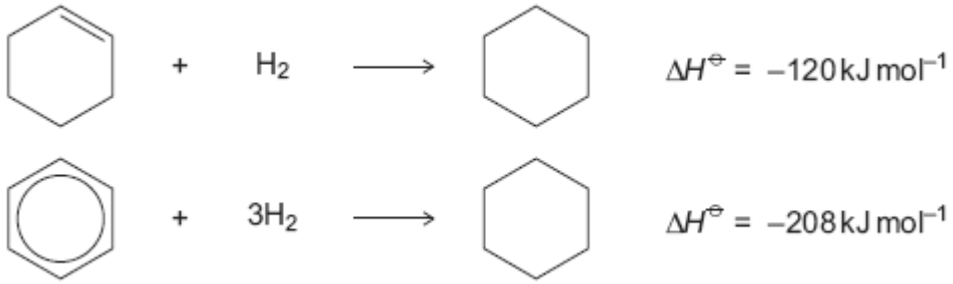
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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

The hydrocarbons benzene and cyclohexene are both unsaturated compounds.
Benzene normally undergoes substitution reactions, but cyclohexene normally undergoes addition reactions.

(a) The molecule cyclohexatriene does not exist and is described as hypothetical.
Use the following data to state and explain the stability of benzene compared with the hypothetical cyclohexatriene.



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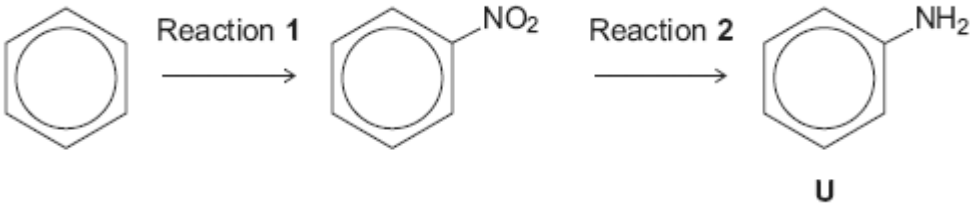
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(4)

(b) Benzene can be converted into amine **U** by the two-step synthesis shown below.



U

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The mechanism of Reaction **1** involves attack by an electrophile.

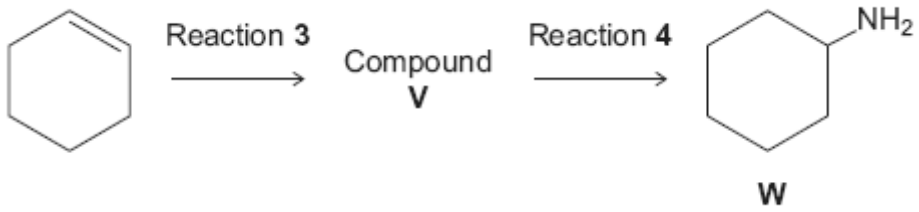
Give the reagents used to produce the electrophile needed in Reaction **1**.

Write an equation showing the formation of this electrophile.

Outline a mechanism for the reaction of this electrophile with benzene.

(6)

(c) Cyclohexene can be converted into amine **W** by the two-step synthesis shown below.



Suggest an identity for compound **V**.

For Reaction **3**, give the reagent used and name the mechanism.

For Reaction **4**, give the reagent and condition used and name the mechanism.

Equations and mechanisms with curly arrows are **not** required.

(6)

(d) Explain why amine **U** is a weaker base than amine **W**.

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(3)

(Total 19 marks)

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