

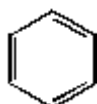
Name of the Student: _____

Max. Marks : 21 Marks

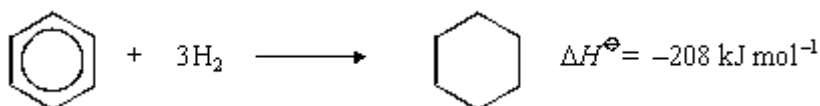
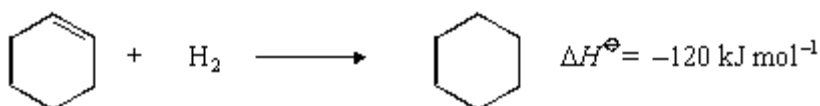
Time : 21 Minutes

Q1.

- (a) Use the following data to show the stability of benzene relative to the hypothetical cyclohexa-1,3,5-triene.

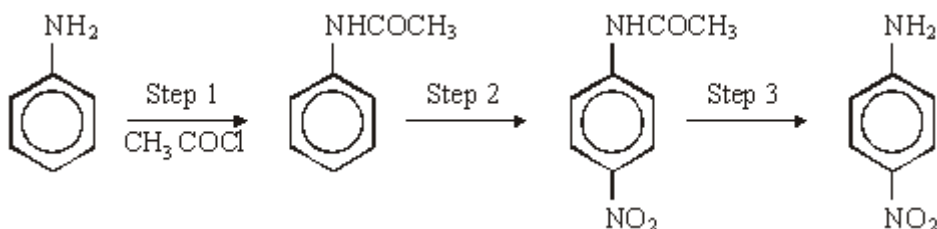


Give a reason for this difference in stability.



(4)

- (b) Consider the following reaction sequence which starts from phenylamine.



- (i) State and explain the difference in base strength between phenylamine and ammonia.

(3)

- (ii) Name and outline a mechanism for the reaction in Step 1 and name the organic product of Step 1.

(6)

- (iii) The mechanism of Step 2 involves attack by an electrophile. Give the reagents used in this step and write an equation showing the formation of the electrophile. Outline a mechanism for the reaction of this electrophile with benzene.

(6)

- (iv) Name the type of linkage which is broken in Step 3 and suggest a suitable reagent for this reaction.

(2)

(Total 21 marks)