No. of Printed Pages : **3**

21CHE2C6L

Sl. No.

M.Sc. II Semester Degree Examination, October - 2023

CHEMISTRY

DSC 6 : Reaction Mechanism in Organic Synthesis and Pericyclic Reactions

(NEP)

Time : 3 Hours Maximum Marks : 70

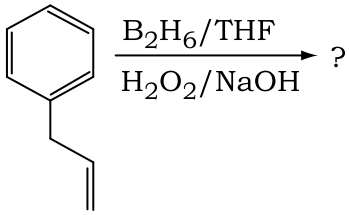
Note : *Answer **any five** of the following questions. Question No.**1** (**Q.1)** is **compulsory** and each question carries **equal** marks.*

1. (a) How the reaction mechanism determined by kinetic method ? **5+5+4**

(b) Discuss the condition that forms E_1cB mechanism.

(c) What are diazonium salts ? How are they prepared ?

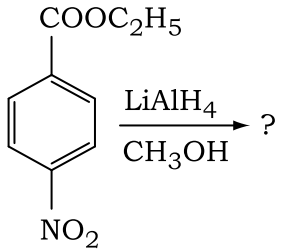
2. (a) Predict the product for the following reaction with mechanism. **5+5+4**



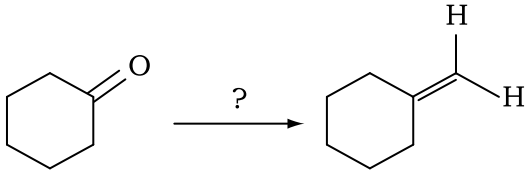
(b) Describe the hydrogenation of double and triple bond with suitable example.

(c) What is meant by chemoselectivity ? Give an example.

3. (a) Predict the product and explain the mechanism. **5+5+4**



(b) Suggest the reagents and propose the mechanism for the following transformation.

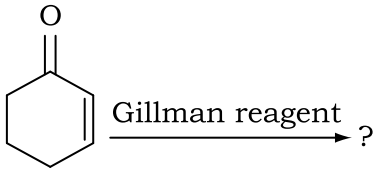


(c) Write any two synthetic application of Grignard reagent.

P.T.O.

4. (a) What are phase transfer catalyst ? Mention any two uses in organic synthesis. **5+5+4**

(b) Predict the product and sketch the mechanism for the following.

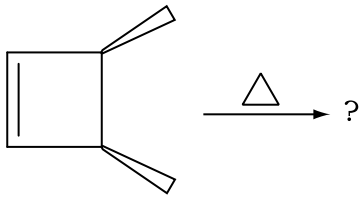


(c) Write a note on peterson's synthesis.

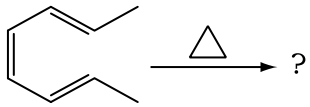
5. (a) How are pericyclic reactions classified ? Give the main classes. **5+5+4**

(b) With explanation predict the products with proper stereochemistry.

(i)

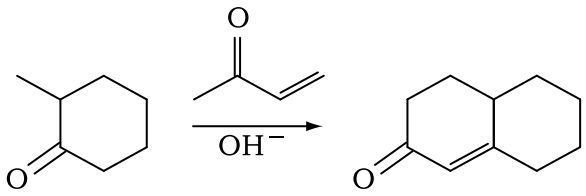


(ii)



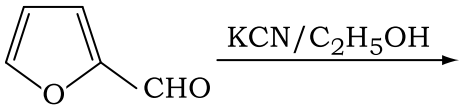
(c) Explain FMO approach for the [4+2] Diels Alder cyclisation reaction.

6. (a) Write the mechanism for the following. **5+5+4**



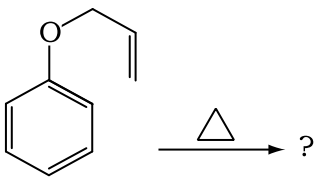
(b) Differentiate between chemoselectivity and regioselectivity.

(c) Predict the product and explain the mechanism involved.



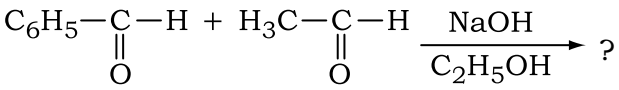
7. (a) Write the frontier orbital diagram of 1,3,5-hexatriene. **5+5+4**

(b) Predict the product and mechanism for the following reaction.



(c) Thermal [1,3]-sigmatropic shift to hydrogen is not observed. Justify.

8. (a) Name the product and sketch the mechanism for the following transformation. **5+5+4**



(b) Discuss the salient features and mechanism of Claisen and Cope rearrangement.

(c) Write any two synthetic applications of the following reagents by taking suitable example.

(i) Dicyclohexylcarbodiimide(DDC)

(ii) 2,3-dichloro-5,6-dicyano-1,4-benzoquinone. (DDQ).

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