

[This question paper contains 7 printed pages]

**Your Roll No.** : .....

**Sl. No. of Q. Paper** : **5697** **I**

Unique Paper Code : 2173012011

Name of the Paper : DSE: Reactions,  
Reagents and chemical  
Process

Name of the Course : **B.Sc.(Hons.) Chemistry**

Semester : IV

**Time : 3 Hours**

**Maximum Marks : 90**

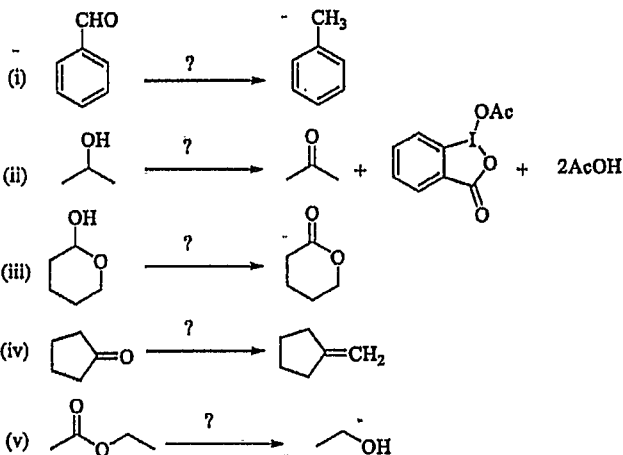
**Instructions for Candidates :**

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
- (b) Attempt any **six** questions. **All** parts of a question should be attempted together.
- (c) Each question carries **15** marks.
- 1.** Explain any **three** of the following reactions with suitable mechanisms :
  - (a) Appel Reaction
  - (b) Prevost Reaction
  - (c) Wittig Reaction
  - (d) Corey Kim OXidation

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P.T.O.

2. (a) Identify the most suitable reagents required to accomplish the following chemical transformation:

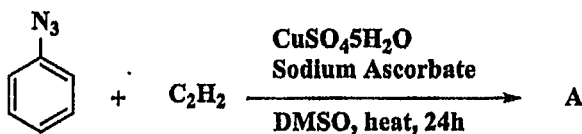


- (b) Write the chemical structure and mention one application of the following reagent:

- (i) ABNO
- (ii) DIBAL-H
- (iii) DEMS
- (iv) 3-Mercaptopropionic acid
- (v) Fetizon's reagent

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3. (a) What is the synthetic utility of Sodium borohydride and PMHS in organic synthesis? Explain with suitable example.
- (b) Write the structure and synthetic application of following reagents:
- (i) Fenton's Reagent
- (ii) TRAP 10,5
4. (a) Identify and write the product (A) of the given Name Reaction. Mention the name of the reaction and provide a detailed mechanism to support your answer.



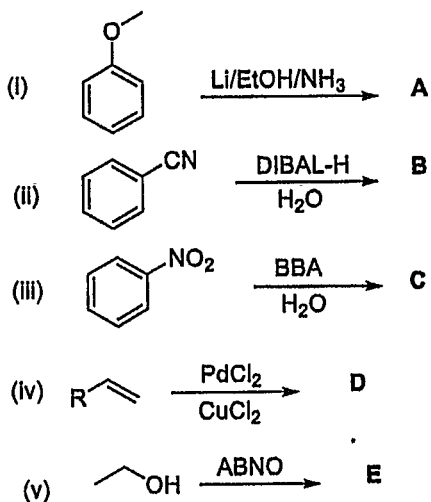
- (b) Which reagent/catalyst is used in the following reactions?
- (i) Darzen West Reaction
- (ii) Mitsunobu Reaction

- (iii) Barbier Reaction
- (iv) Damjanov Reaction
- (v) maukaiyama Aldol Reaction

(c) Explain the Birch Reduction of aromatic Compounds with a suitable mechanism.

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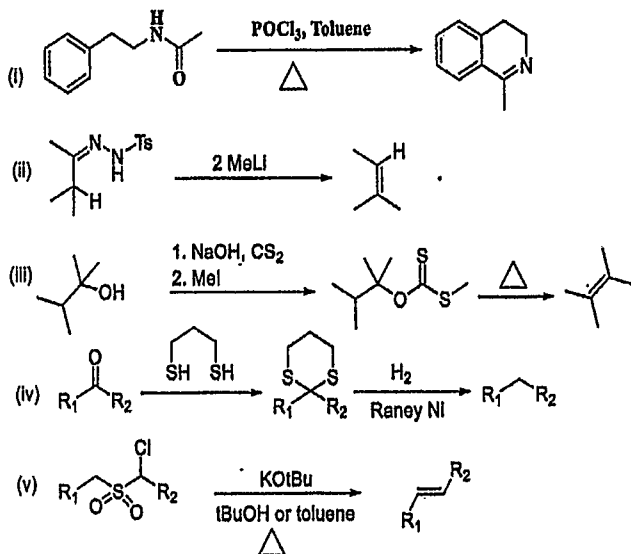
5. (a) Explain the various stages involved in the scale-up process of chemical reactions, highlighting the roles of bench, pilot, and large-scale processes.
- (b) define nitration as a unit process, Describe the mechanism and name one process equipment used for technical nitration.
- (c) What are catalytic halogenations? Differentiate between types of halogenations with suitable examples. 5,5,5
6. (a) Complete the following reactions by giving the product.



- (b) Write the reaction and mechanism of Julia Olefination Reaction.
- (c) Discuss the structure and oxidizing property of AZADO reagent. 5,5,5
7. (a) What a Suzuki coupling Reaction? Write the steps involved in the mechanism.
- (b) Describe the Heck Reaction and show how it works step by step.

(c) Write the name of the following reactions:

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8. (a) What is Schwartz's reagent? Describe its structure and specific application in organic chemistry.
- (b) Write the mechanism of Swern oxidation and discuss its advantages over other oxidation methods.

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- (c) Explain the use of sodium bismuthate and sodium perborate in organic oxidations.

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