

**P-933**

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## **CHE-552**

### **Synthetic Organic Chemistry**

M.Sc. Chemistry(MSCCH)

2nd Year Examination, 2023 (June)

**Time : 2 Hours]**

**[Max. Marks : 70**

**Note :** This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answer to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

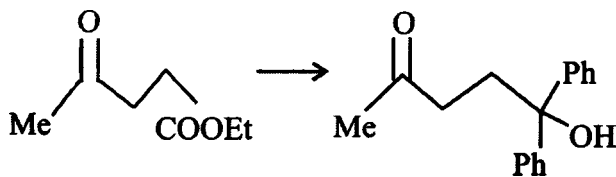
### **SECTION–A**

#### **(Long Answer Type Questions)**

**Note :** Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. Write short notes on any three of the following :
- (a) Prevost hydroxylation.
  - (b) Wolff-Kishner reduction.
  - (c) Enantiotopic ligands.
  - (d) Wilkinson catalyst.
2. Explain the following reactions :
- (a) Ozonolysis of alkenes.
  - (b) Wittig reaction.
  - (c) Hydroboration of alkenes.
3. (a) Discuss the mechanism of protection and deprotection of alcohols as trimethyl ethers.
- (b) Mentioning an appropriate protecting group,  
Drive a way for the following conversion :



4. Write detailed notes on the any *three* of following :
- (a) Birch reduction.
  - (b)  $\text{NaBH}_4$ .
  - (c) Clemmenson Reduction.
  - (d) A catalytic hydrogenation of alkenes.

5. Write explanatory notes on followings:

- (a) Michael Addition,
- (b) Robinson annulation reaction,
- (c) Homotopic Ligands,

### SECTION-B

#### (Short Answer Type Questions)

**Note :** Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. Comment on the protection and deprotection of carbonyl group in acidic and basic medium.
2. Explain the following terms with regard to retrosynthesis and synthesis
  - (a) Synthons and synthetic equivalents.
  - (b) Functional group interconversion.
3. Write synthetic applications of organo-boranes in organic synthesis.
4. Write detailed notes on followings :
  - (a) Enantiomers.
  - (b) Reversal of Polarity.

5. What happens when alkene is treated with
- Alkaline  $\text{KMnO}_4$ .
  - $\text{OsO}_4$  in presence of  $\text{H}_2\text{O}_2$ .
  - $\text{H}_2/\text{Pt}$ .
6. Write explanatory notes on followings :
- Oppenauer Oxidation.
  - Reduction with  $\text{NaBH}_4$ .
7. What is umpolung? Give any two organic synthesis using umpolung reagents.
8. Write notes on followings :
- Knovenagel condensation.
  - Shapiro reaction.
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