

**A-0996**

Total Pages : 4

Roll No. ....

**MCH-602**

**M.Sc. Chemistry (MSCCH)**

**Synthetic Organic Chemistry-I**

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 35

**Note :-** This paper is of Thirty Five (35) 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 answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**(Long Answer Type Questions) (2×9½=19)**

**Note :-** Section 'A' contains Five (05) Long-answer type questions of Nine and Half (9½) marks each. Learners are required to answer any *two* (02) questions only.

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( 1 )

P.T.O.

1. Explain the use of fragmentation reaction in carbon-carbon double bond formation with examples.
2. Write notes on the following :
  - (a) Michael addition
  - (b) Knoevenagel condensation.
3. What is protecting group ? Write the most important characteristics of a good protecting group. Give two examples each for protection of alcohols and amines.
4. Give the preparation of trimethyl silyl enol ethers. Discuss the important characteristics of trimethyl silyl enol ether.
5. Write explanatory notes on the following :
  - (a) PCC reagent
  - (b) Grignard reagent
  - (c) Decarboxylation of  $\gamma$ -Lactones

### Section–B

**(Short Answer Type Questions) (4×4=16)**

**Note** :- Section ‘B’ contains Eight (08) Short-answer type questions of Four (04) marks each. Learners are required to answer any *four* (04) questions only.

1. Define any *two* the following term :
  - (a) 9BBN
  - (b) Bouveault-blanc reduction
  - (c) Reduction of Conjugated system
2. Discuss Shapiro reaction with a suitable example.  
Explain its mechanism.
3. Discuss free radical reactions of organoboranes.
4. What happens when  $R-CH=CH_2$  reacts with the following :
  - (a)  $Br_2$
  - (b)  $H_2O/H^+$
  - (c)  $KMnO_4$
5. Discuss the mechanism of heterogeneous catalytic hydrogenation of alkenes.
6. Formulate the step involved along with reagent within the conversion of phenol to :
  - (a) 2-amino and 4-amino phenol
  - (b) 4-methoxy benzaldehyde

7. Write short notes on the following :
- (a) 1, 2-dihydroxylation by  $\text{OsO}_4$
  - (b) Wittig reaction
8. Classify hydride transfer reagents (in reduction) and give at least one example of reduction using each of these reagents.

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