Total No. of Printed Pages: 4 Roll No.....

CHE-552

SYNTHETIC ORGANIC CHEMISTRY

M.Sc. Chemistry (MSCCH-12/13/16/17)

Second Year, Examination-2020

Time Allowed : 2 Hours Maximum Marks : 80

Note: This paper is of Eighty (80) marks divided into Two (02) sections A and B. Attempt the question contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer Type Questions)

Note: Section-'A' contains Five (05) long answer type questions of twenty (20) marks each. Learners are required to answer any two (02) questions only. (2×20=40)

1. Discuss protection and de protection of following functional groups in organic synthesis :
   (a) Amine group
   (b) Carbonyl group

2. Write notes on following terms of Disconnection approach of organic synthesis :
   (a) Target Molecule
   (b) Synthetic Equivalent
   (c) Retron
3. Write explanatory notes on followings :
   (a) Stork enamine synthesis
   (b) Michael Addition
   (c) Hydride transfer reagents
4. Write detailed notes on followings:
   (a) Diastereomers
   (b) Homotopic faces
   (c) Cram rule
5. Write retrosynthesis of followings :
   (a) N-heptyl piperidine
   (b) Z-Jasmone

Section-B

(Short answer type questions)

Note: Section-B Contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only. (4×10=40)

1. What happens when alkene is treated with

   (a) alkaline $KMnO_4$

   (b) OsO_4 in presence of H_2O_2

   (c) Meta chloroperbenzoic acid

   (d) H_2/Pt

   (e) Bromine water

   (f) B_2H_6

   (g) (i) O_3 and then $(CH_3)_2S$.

2. Write a note on Shapiro reaction.

3. Discuss pyrolytic elimination in Threo and Erythro –2 (N, N – dimethyl amine) – 3 phenyl butane oxides.

4. Giving suitable examples discuss Heterogeneous hydrogenation.

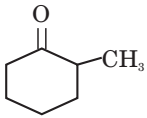
5. Write explanatory notes on followings :

   (a) Prochirality

   (b) Diastereotopic faces

6. Write a detailed note on applications of organoboranes.

7. Complete the following reactions and identify Ⓐ to Ⓖ.

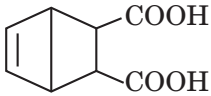
(a) 

$\xrightarrow[\text{LDA}]{(CH_3)_3\ SiCl}$ Major + Minor
Ⓐ Ⓑ

(b) $H_5C_2 - C \equiv C - C_2H_5 \xrightarrow{9\ BBN}$ Ⓒ

1. NaOH
2. pH 7
3. H_2O_2

Ⓓ

(c) 

$\xrightarrow[\text{Pyridine}]{\text{Electrolysis}}$ Ⓔ

(d) $R\ H\ C = CH - NO_2 \xrightarrow{Pd/H_2}$ Ⓕ

(e) $Ph - HC = CH - \underset{\underset{O}{\|}}{C} - H \xrightarrow{H_2\ ,\ [P\ Ph_3]_3\ Cl\ Ph}$ Ⓖ

8. Write a detailed note on two group C–X disconnection.

******