

H-6327

M.Sc. (IInd Semester) Examination, 2022

CHEMISTRY

(Organic Synthesis – I)

Time Allowed : Three Hours

Maximum Marks : 70

SECTION - A

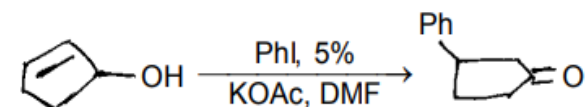
Note : Attempt any ten questions. Each question carries one mark. **1×10=10**

Q. 1. Objective type :

- (i) A class of pericyclic reaction is :
- (a) Grignard reagent
 - (b) Diels Alder reaction
 - (c) Reimer Tiemann reaction
 - (d) Hydroboration reaction
- (ii) A Grignard reagent may be made by reaction of magnesium with which of the following compound :

(2)

- (a) Methyl amine
 - (b) Diethyl ether
 - (c) Ethyl iodide
 - (d) Ethyl alcohols
- (iii) Michael addition and Aldol condensation is an important route for the synthesis of bicyclic ketones and is known as :
- (a) Robinson annulation
 - (b) Aldol condensation
 - (c) 1, 3-dithiane reaction
 - (d) Claisen rearrangement
- (iv) The following reaction is an example of :



- (a) Suzuki reaction
- (b) Heck reaction
- (c) Negishi reaction
- (d) Stille reaction

(3)

(v) Ozonolysis of $\text{CH}_3 - \text{CH} = \text{C} = \text{CH}_2$ will give :

- (a) Only CH_3CHO
- (b) Only HCHO
- (c) Only CO_2
- (d) Mixture of CH_3CHO , HCHO and CO_2

(vi) The borane is used in hydroboration reaction is usually :

- (a) BH_3
- (b) BCl_3
- (c) $\text{DMSO} - \text{BH}_3$
- (d) $\text{THF} - \text{BH}_3$

(vii) Baker's yeast produce gas which helps in rising of dough it is :

- (a) Oxygen
- (b) Hydrogen
- (c) Carbondioxide
- (d) Nitrogen

(4)

(viii) Bayer Villiger oxidation of ketone involve the use of _____.

(ix) LDA is prepared from _____ and _____ in presence of THF at 0°C .

(x) The organo copper reagents are referred to as _____.

(xi) The reversal of polarity and is otherwise called _____.

(xii) Betaine is an intermediate of _____.

SECTION - B

Note : Attempt any five questions. Each question carries two marks. **5×2=10**

Q. 2. Very short answer type (25-30 words) :

- (i) What is Mosher's reagent ?
- (ii) Write the reaction of Mukaiyama reaction.

(5)

- (iii) What do you understand by Umpolung effect ?
- (iv) Write the use of Baker yeast.
- (v) Write the use of DDQ.
- (vi) What is nef reaction ? Give reaction.
- (vii) What is meant by enamines ?

SECTION - C

Note : Attempt any five questions. Each question carries 4 marks. **5×4=20**

Q. 3. Short answer type (250 words) :

- (i) Write the mechanism of Suzuki coupling.
- (ii) Give the reaction and application of Peterson's synthesis.
- (iii) Explain the alkylation and acetylation of enamines.

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(6)

- (iv) Write the short notes on Henry reaction and Wittig reaction.
- (v) Write the reaction and synthetic uses of 9-BBN.
- (vi) What is Robinson annulations ? Give its mechanism.
- (vii) Give the reaction and uses of Vilsmeier-Haack reaction.

SECTION - D

Note : Attempt any three questions. Each question carries 10 marks. **3×10=30**

Q. 4. Essay type (more than 500 words) :

- (i) Write the reaction and mechanism of the following reaction :
 - (a) Hantzsch reaction
 - (b) Biginelli reaction
 - (c) Grubb's reaction

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(7)

(ii) (a) Describe the Diels Alder reaction and its applications.

(b) Write notes on sharpless asymmetric epoxidation.

(iii) Describe the DDQ, Fetizon reagent, Gilman's reagents and its application.

(iv) (a) What is a stereoselective enolate ?
Explain by given example.

(b) Write notes on mechanism and use of Horner–Wadsworth Emmons reaction and their selectivities.
