LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

FIFTH SEMESTER – **NOVEMBER 2024**

UCH 5501 – ORGANIC FUNCTIONAL GROUPS - II

Date: 07-11-2024 Dept. No. Max. : 100 Marks

Time: 09:00 am-12:00 pm

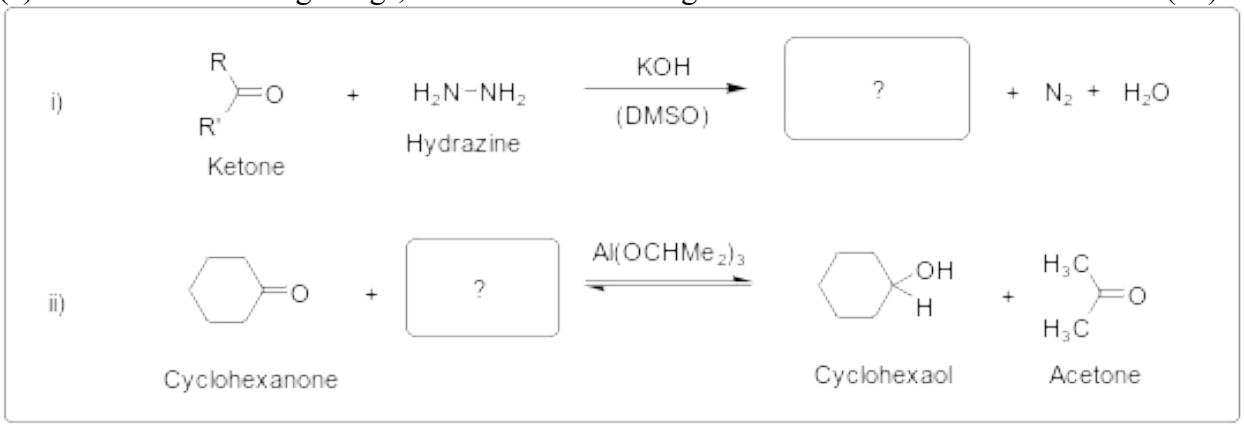
	SECTION A - K1 (CO1)	
	Answer ALL the Questions -	**(10 x 1 = 10)**
1.	**Fill in the blanks**	
a)	The reaction of aromatic aldehyde with ester containing α-hydrogen is called _____ condensation reactions.	
b)	Cinnamic acid is an example for _____ carboxylic acid.	
c)	In Lossen rearrangement reaction, hydroxamic acid rearranges to _____.	
d)	Ethyl acetoacetate has _____ tautomerism.	
e)	If the metal is directly linked to the _____, it is called as organometallic compound.	
2.	**True or False**	
a)	Aldol condensation is a self-condensation of aldehydes or ketones.	
b)	Acetic acid is stronger than chloro-acetic acid.	
c)	Rearrangement involving migration of a group to carbocation is called cationotropic rearrangement.	
d)	Tautomerism is an example of prototropy.	
e)	Organomagnesium compounds are the intermediates in the Reformatsky reaction.	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**Match the following**	
a)	Wittig reaction - -CO-NH- as functional group	
b)	Amides - Phenyl acetate to o-/p-hydroxyacetophenone	
c)	Fries rearrangement - Triphenyl phosphoranes	
d)	Fractional distillation - Gilman reagent	
e)	Organocopper reagents - Method for separation of tautomers	
4.	**Define the following**	
a)	Alpha hydrogen	
b)	Acid anhydride	
c)	Intra-molecular rearrangement	
d)	Tautomerism	
e)	Grignard reagent	
	SECTION B - K3 (CO2)	
Answer any TWO of the following		**(2 x 10 = 20)**
5.	Construct a note for (i) Knoevenagel reaction and (ii) Claisen condensation.	(5+5)
6.	List the methods of preparations for (i) oxalic acid and (ii) acrylic acid.	(5+5)
7.	Discuss in detail about Cope and oxy-Cope rearrangement reactions.	(5+5)
8.	(a) Provide any three synthetic applications of cyanoacetic ester.	

	(5) (b) Develop a note for the reactions of organomagnesium compounds with active hydrogen compounds. (5)

SECTION C – K4 (CO3)

Answer any TWO of the following	**(2 x 10 = 20)**
9.	Explain the following with mechanism. (5+5) (i) Norrish Type-I and (ii) Norrish Type-II reactions.
10.	Distinguish between maleic acid and fumaric acid based on (i) Action of heat and (ii) Diels-Alder reactions. (5+5)
11.	Find the name and write the mechanism of the following. (5+5) (i) Rearrangement of acyl azide to primary amine. (ii) Rearrangement of allylphenyl ether to *ortho*-allylphenol.
12.	(a) How are acetoacetic esters prepared? Write any two of its uses. (5) (b) Write a method of preparation of Frankland's reagent and any one of its chemical properties. (5)

SECTION D – K5 (CO4)

Answer any ONE of the following	**(1 x 20 = 20)**
13.	(a) Discover the missing things, name of the following reactions and write the mechanism. (10)  (b) Explain the preparation of (i) acetic acid (ii) lactic acid and (iii) pyruvic acid. (3+3+4)
14.	(a) Examine the mechanism of Beckmann and Hoffmann rearrangements. (10) (b) Explain the applications of diazomethane (i) as a methylating agent and (ii) in ring expansion reactions. (3+2) (c) Present the reaction of organocopper reagents with alkyl and aryl halides. (5)

SECTION E – K6 (CO5)

Answer any ONE of the following	**(1 x 20 = 20)**
15.	(a) Discuss the addition reaction of malonic ester to acrolein with mechanism. (6) (b) How does acid chlorides undergo (i) hydrolysis and (ii) alcoholysis? (4+4) (c) Explain the formation of pinacolone from pinacol in the acidic medium. (6)
16.	(a) Discuss in details about the synthetic applications of malonic ester. (10) (b) Compile the methods of preparation of organolithium compounds and their chemical properties. (10)
