

Enrolment No:



Course: (Advanced Organic Chemistry)

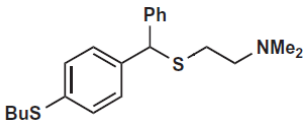
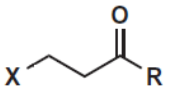
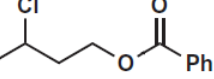
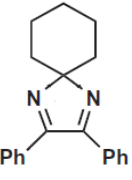
Program:
Time: 3 hrs.

MSc Chemistry
Max. Marks:100

Section - A (All Questions are compulsory)

(30 marks)

1.	State whether the following statements are true or false? a. Synthons are the charged species generated during the reaction. b. Amino group can be obtained from nitro group during the synthesis. c. Nitro group will be disconnected prior to alkyl group in a molecule. d. A di- or tri-substituted compound can be used to synthesize a complex organic molecule. e. Amide group can be obtained by the hydrolysis of cyanide group.	[5]	CO1
2.	Fill in the blanks: a. Assuming a functional group to be obtained by another one is known as	[5]	CO3
	b. group can be used to protect amino group during a reaction.		
	c. can be used as a reagent to generate R- as the synthon.		
	d. Most reactive acid derivative (functional group) towards organic synthesis is		
	e. Making one functional group to react preferably over other one in an organic molecule is known as		
3.	Choose the correct option: a. Multistriatin on disconnection produces: i. Compound with one ketonic and two hydroxyl groups ii. Compound with one hydroxyl and two ketonic groups iii. Compound with one ketonic and one hydroxyl groups iv. Compound with two ketonic and two hydroxyl groups	[5]	CO2
4.	Precursor used for synthesizing paracetamol is: i. Chlorobenzene ii. Nitrobenzene iii. Phenol iv. Aniline	[5]	CO4
5.	a. Basically, the Prostaglandins as precursors of _____ b. Treatment of Menthol with Oxidizing agent in the presence of Oxidizing agent causes _____	[5]	CO1

6.	<p>a. During an asymmetric synthesis, only one enantiomer is formed. Such type of reaction is referred as _____</p> <p>b. State whether the SN2 reaction is stereoselective or stereospecific.</p>	[5]	CO3
SECTION - B (All Questions are compulsory)		(50 marks)	
7.	Write the fragments while synthesizing tropinone using retrosynthesis. Apply disconnection approach and also suggest if any modification is required while performing actual synthesis with reason.	[10]	CO1
8.	Analyse all the precursors for synthesizing p-methoxy acetophenone. Explain the reason of attempting each step in a specific sequence.	[10]	CO2
9.	<p>Identify the appropriate fragmentation site in the following compounds:</p> <p>a. </p> <p>b. </p> <p>c. </p> <p>d. </p>	[10]	CO3
10.	How will you calculate enantiomeric excess for a reaction? Also, give a relation to identify the percentage of major and minor products.	[10]	CO4
11	Write the detailed mechanism for the total synthesis of menthol from 3-methyl cyclohexanone. Also, discuss the stereochemistry of menthol molecules on the basis of chair conformation.	[10]	CO2
SECTION - C (All questions are compulsory)		(20 marks)	

12.	<p>Draw the reaction coordinates for the following reactions:</p> <ol style="list-style-type: none">Achiral carbonyl compound in the presence of an achiral nucleophile.Achiral carbonyl compound with a chiral nucleophile. <p>On the basis of the reaction coordinates, discuss whether the above reactions yield a stereoselective or a stereospecific product.</p> <p style="text-align: center;">OR</p> <ol style="list-style-type: none">Write the mechanism of Asymmetric epoxidation in the presence of the chiral catalyst Diethyl Tartarate (DET). How does the chirality of the catalyst determines the reaction mechanism. Discuss in details.Write the mechanism of asymmetric Aldol condensation via Zimmerman-Traxler transition state.	[10+10]	CO5
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