

Name:

Enrolment No:



UPES

End Semester Examination, December 2023

Course: Organic reaction mechanism

Program: M.Sc Chemistry

Course Code: CHEM7045

Semester: I

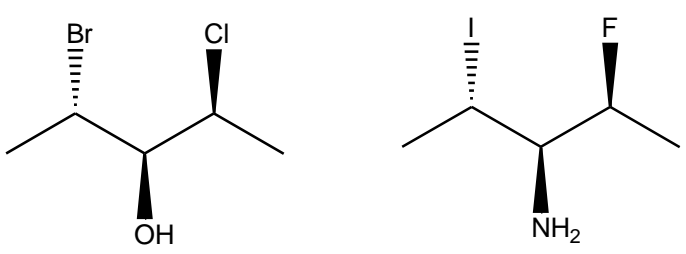
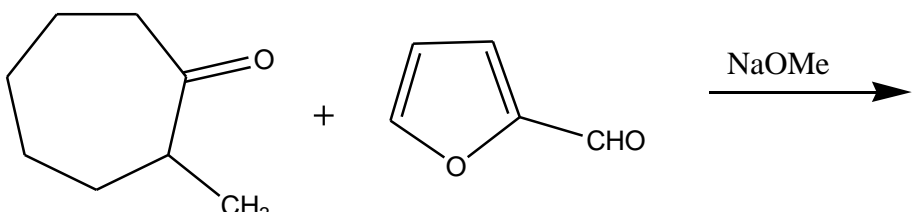
Time : 03 hrs.

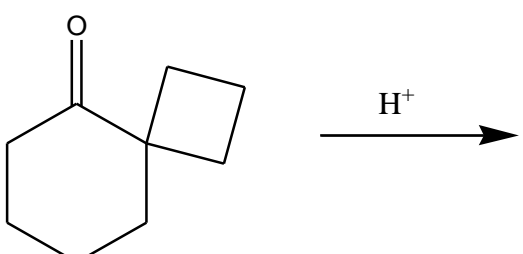
Max. Marks: 100

Instructions:

1. Write your enrolment number on the top left of the question paper
2. Do not write any thing else on the question paper except your enrolment number
3. Attempt all part of a question at one place only
4. Internal choice is given for question number 9 of Section B and question number 11 of Section C only

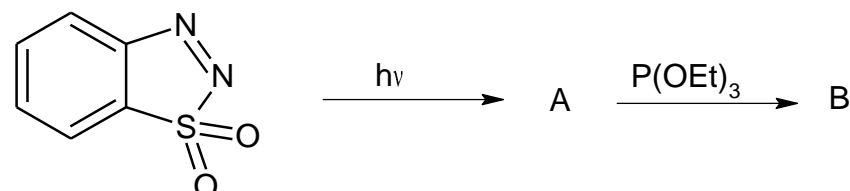
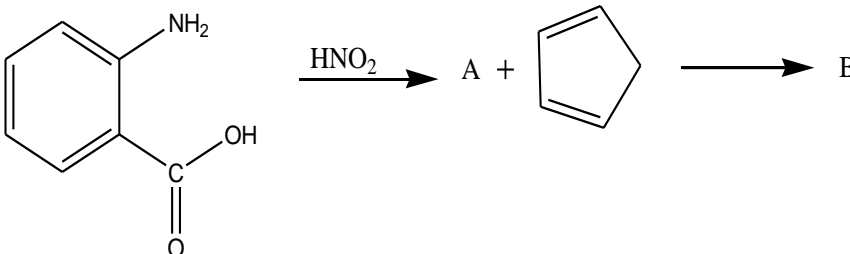
SECTION A  
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Draw Fischer projection of following compounds: 	4	CO2
Q 2	Show the hydride attack of lithium aluminum hydride from Re and Si face of 2-pentanone.	4	CO3
Q 3	Discuss any two methods for determination of mechanism of reaction.	4	CO1
Q 4	Elucidate the product with mechanism: 	4	CO1

Q 5	<p>How will the size of the ring be affected in the following case. Justify.</p>  <p>The reaction shows bicyclo[4.1.0]heptan-7-one reacting with <math>H^+</math>. The structure is a seven-membered ring with a ketone group and a fused four-membered ring.</p>	4	CO1
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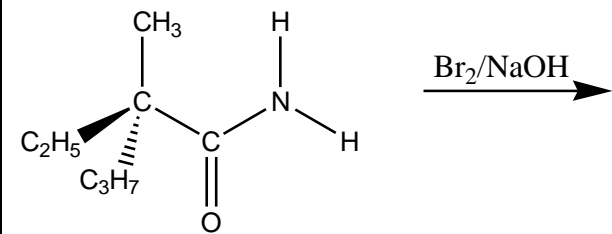
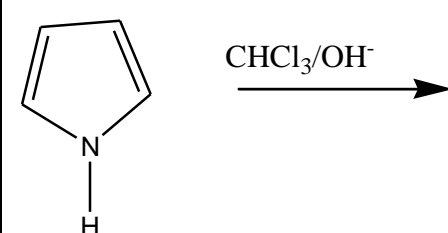
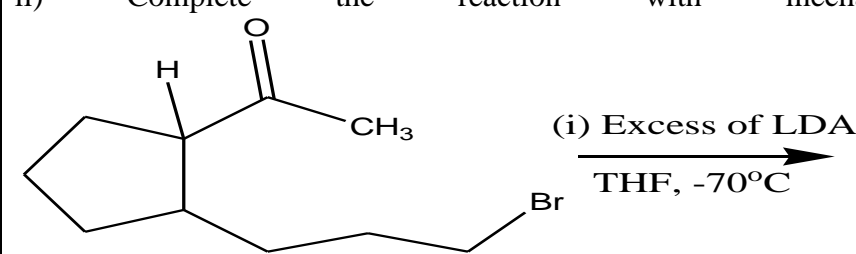
**SECTION B**  
(4Qx10M= 40 Marks)

(Question No. 6, 7 and 8 are Compulsory); attempt any one from question no 9

Q 6	<p>Write the most stable conformation of trans-1,2-dimethylcyclohexane. Is it chiral?</p>	10	CO3
Q 7	<p>Predict the hydrogen atoms in cis-1,2 dichlorocyclopropane as homotopic, enantiotopic and diastereotopic</p>	10	CO3
Q 8	<p>Complete the following reaction sequence with mechanism:</p>  <p>The reaction sequence starts with benzotriazole sulfone. It reacts with <math>h\nu</math> to form intermediate A, which then reacts with <math>P(OEt)_3</math> to form product B.</p>	10	CO1
Q 9	<p>Mention the products A and B in the following reaction with mechanism:</p>  <p>The reaction starts with 2-aminobenzoic acid reacting with <math>HNO_2</math> to form product A. Product A then reacts with cyclopentadiene to form product B.</p> <p style="text-align: center;"><b>OR</b></p> <p>Discuss:</p> <p>(a) Axial chirality (b) Spiranes</p>	10	CO2

- (c) Allene  
(d) Ansa compounds

**SECTION-C**  
(2Qx20M=40 Marks)  
(Question No. 10 Compulsory); attempt any one from question no 11

Q 10	<p>i) Write the product with mechanism:</p>  <p>ii) Write various method for generation of benzyne intermediate. Also discuss its structure and few important reactions.</p>	<b>10+ 10</b>	<b>CO1</b>
Q 11	<p>i) Discuss chemical correlation method which involves diastereomers.</p> <p>ii) Complete the reaction.</p>  <p style="text-align: center;"><b>OR</b></p> <p>i) Discuss the structure and stereochemistry of cis-decalol.</p> <p>ii) Complete the reaction with mechanism:</p> 	<b>10+ 10</b>	<b>CO3</b>