



**NAVRACHANA
UNIVERSITY**
a UGC recognized University

School: School of Science
Program/s: M.Sc.-Chemistry
Year: 2nd **Semester:** 3rd
Examination: End Semester Examination
Examination year: December - 2022

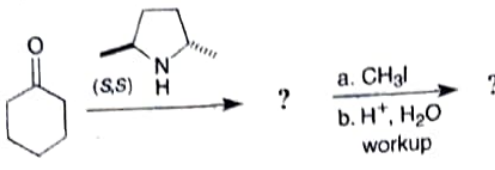
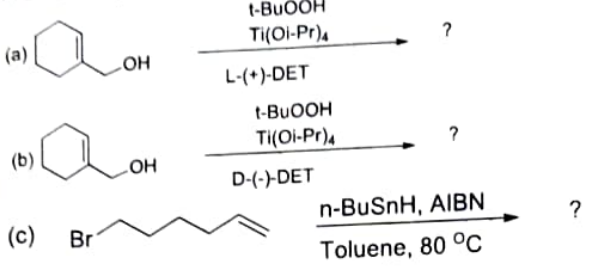
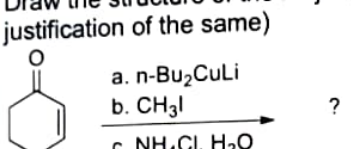
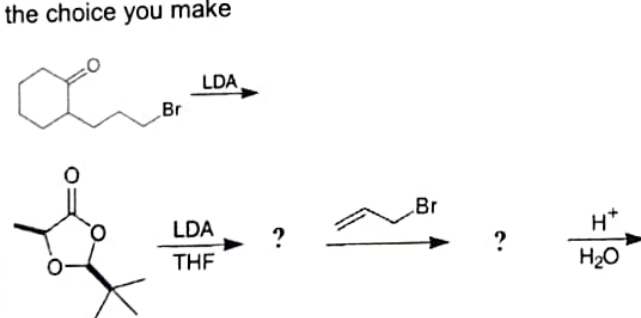
Course Code: CH249 **Course Name:** Reagents in Organic Synthesis
Date: 08/12/2022
Time: 14:30 am to 16:30 am

Total Marks: 40
Total Pages: 2

Instructions:

- Write each answer on a new page.
- Write in points and in brief.
- Please draw structures neatly.

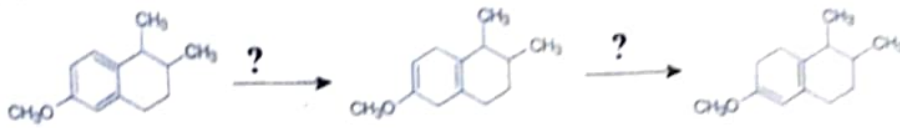
Q. No.	Details	Marks																							
Q.1	<p>Predict the outcome of the reaction with proper justification of the product formed.</p> <p>a. CeCl_3, EtOH $\text{HC}(\text{OCH}_3)_3$</p> <p>b. NaBH_4 c. H_3O^+</p>	5	CO1 CO4	BT1, BT2, BT3, BT4																					
Q.2	<p>Briefly, rationalize the product distribution of 3-Methyl Cyclohexanone for the reagents below</p> <table border="1"> <thead> <tr> <th>Conditions</th> <th>cis (%)</th> <th>trans (%)</th> </tr> </thead> <tbody> <tr> <td>MPV^a ($\text{Al}(\text{O}i\text{-Pr})_3$, $i\text{-PrOH}$)</td> <td>70</td> <td>30</td> </tr> <tr> <td>LiAlH_4, THF</td> <td>76</td> <td>24</td> </tr> <tr> <td>$\text{LiAlH}(\text{O}i\text{-Bu})_3$, THF</td> <td>90</td> <td>10</td> </tr> <tr> <td>NaBH_4, MeOH</td> <td>77</td> <td>23</td> </tr> <tr> <td>L-Selectride ($\text{LiBH}(\text{sec-Bu})_3$), THF</td> <td>5</td> <td>95</td> </tr> <tr> <td>LTSBH^b, THF</td> <td>< 1</td> <td>> 99</td> </tr> </tbody> </table>	Conditions	cis (%)	trans (%)	MPV ^a ($\text{Al}(\text{O}i\text{-Pr})_3$, $i\text{-PrOH}$)	70	30	LiAlH_4 , THF	76	24	$\text{LiAlH}(\text{O}i\text{-Bu})_3$, THF	90	10	NaBH_4 , MeOH	77	23	L-Selectride ($\text{LiBH}(\text{sec-Bu})_3$), THF	5	95	LTSBH ^b , THF	< 1	> 99	8	CO1 CO2 CO3	BT1, BT3, BT4 BT5
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Q.3	<p>Explain the formation of preferential stereoisomer also rationalize the choice of the first reagent trans -2, 5 -dimethyl -pyrrolidine</p>	5	CO1 CO3 CO4	BT1. BT2 BT3 BT4 BT5
				
Q.4	<p>Predict the products for 4a, 4b and 4c</p>	6	CO1 CO4	BT1. BT2 BT3 BT4
				
Q.5	<p>Draw the structure of the major product (along with stereochemistry and justification of the same)</p>	5	CO1 CO2 CO3	BT1. BT3. BT4 BT5
				
Q.6	<p>Predict the major product formed in the following reduction reaction. Also, justify the choice you make</p>	8	CO1 CO3 CO4	BT1. BT2 BT3 BT4 BT5
				

Q.7

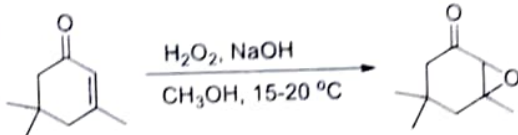
Fill in the transformation with appropriate reagents along with proper justification

(a)



OR

(b) Write a suitable mechanism for the following transformation



4

CO1
CO4

BT1,
BT2,
BT3,
BT4

*****End of Question Paper*****