

M.Sc. CHEMISTRY  
SECOND SEMESTER  
ORGANIC CHEMISTRY II  
MSC – 202 [SPECIAL REPEAT]  
USE OMR FOR OBJECTIVE PART

**SET  
A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

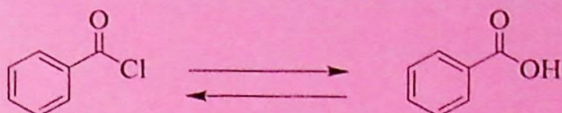
Marks: 20

[ Objective ]

1X20=20

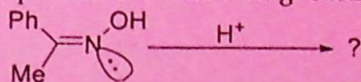
Choose the correct answer from the following:

- Ligase is an enzyme which
  - catalyzes the joining of two molecules by forming a new chemical bond
  - catalyzes the breaking of a chemical bond
  - catalyzes transfer of a fundamental group from one molecule to another
  - catalyzes the hydrophilic cleaning of atom
- Which statement is true for the following reactions?



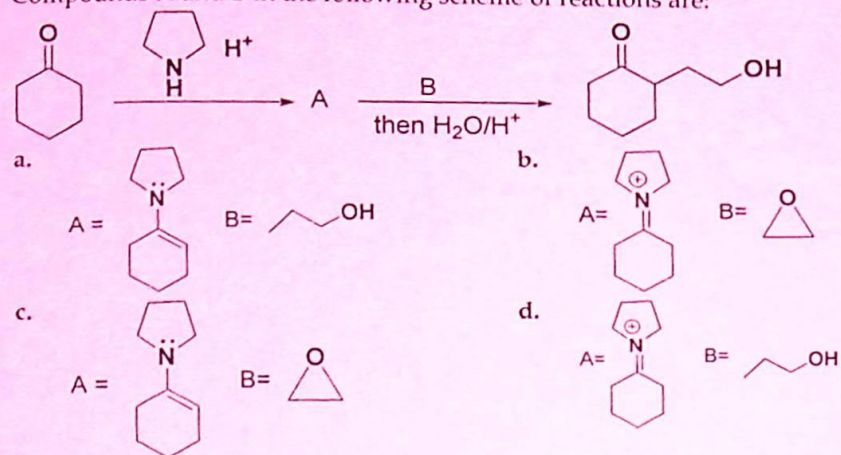
- Forward reaction is an oxidation reaction & backward reaction is a reduction reaction.
- Both the forward & backward reactions are non-redox, substitution reactions.
- Forward reaction is a reduction reaction & backward reaction is an oxidation reaction
- Both the reactions are redox reactions.

- What will be the product in the following reaction?

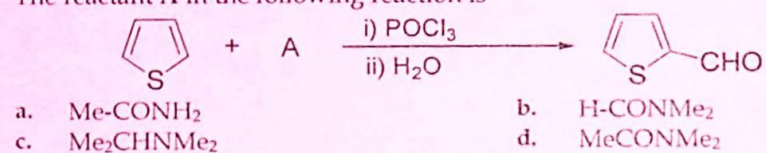


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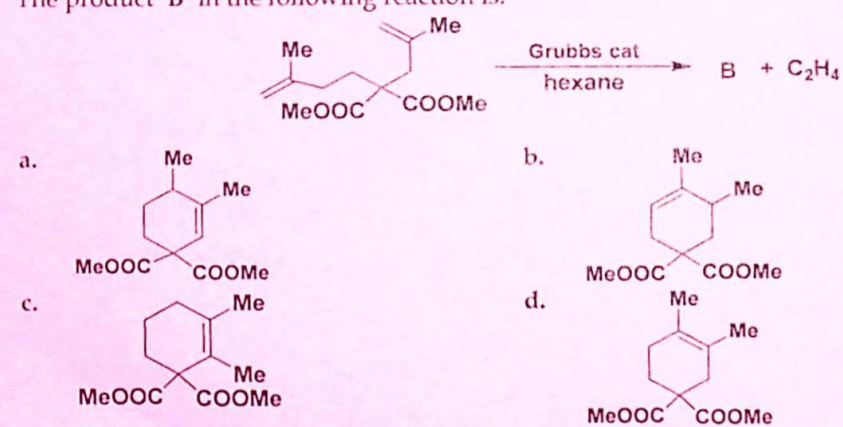
4. Compounds A and B in the following scheme of reactions are:



5. The reactant A in the following reaction is



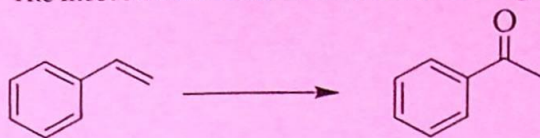
6. The product 'B' in the following reaction is:



7. MnO<sub>2</sub> is a very selective oxidant, it does oxidation of only

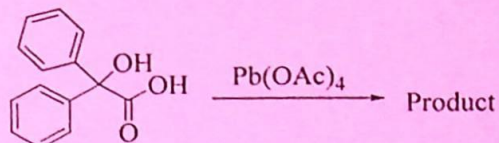
- a. secondary alcohol
- b. primary alcohol
- c. allylic alcohol
- d. aldehyde

8. The most suitable condition for the following reaction is



- a. PCC oxidation  
 b. Etard oxidation  
 c. Wacker Oxidation  
 d. PDC oxidation

9. Product of the following reaction is

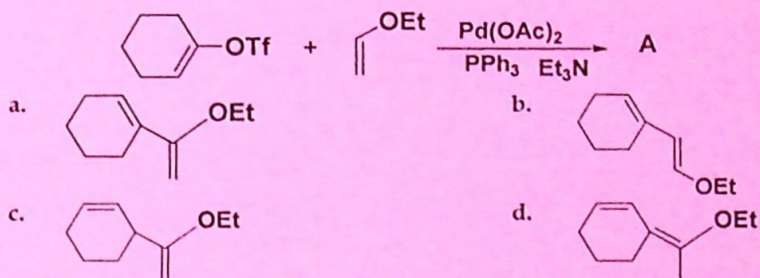


- a. Acetophenone  
 b. Benzophenone  
 c. Diphenylmethanol  
 d. Benzaldehyde

10. The most suitable reagent for the synthesis of benzophenone from  $CO_2$  is

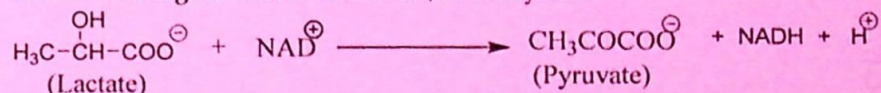
- a. 2eq  $PhMgBr$   
 b. 2eq  $Ph_2CuLi$   
 c. 2eq  $PhLi$   
 d. 2eq  $Ph_2CuMgBr$

11. Product 'A' in the following



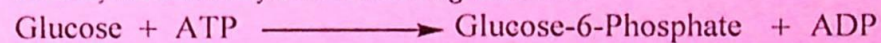
- a.   
 b.   
 c.   
 d.

12. In the following biochemical reaction, the enzyme is



- a. Pyruvate dehydrogenase  
 b. Lactate hydrogenase  
 c. Lactate dehydrogenase  
 d. Lactate decarboxylase

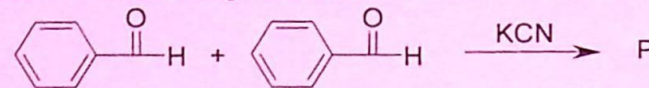
13. The enzyme that catalyses the following reaction is



- a. Oxidoreductase  
 b. Transferase  
 c. Ligase  
 d. Lyase

14. The rearrangement of 1,2-diketones to form  $\alpha$ -hydroxy-carboxylic acids using a base is known as
- Benzil-benzilic acid rearrangement
  - Pinacol-pinacolone rearrangement
  - Wagner-Meerwein rearrangement
  - Wolf rearrangement

15. The product P in the following reaction is



- 
- 
- 
- None of the above

16. The reagent involve in Wolff-Kishner reduction is

- $\text{LiAlH}_4$
- $\text{Zn-Hg/HCl}$
- $\text{NH}_2\text{NH}_2 \cdot \text{OEt}$
- $\text{Na, NH}_3$

17. In McMurray coupling reaction two carbonyl groups form

- Carbon-Carbon single bond
- Carbon-Carbon double bond
- Carbon-Carbon triple bond
- Carbon-Nitrogen single bond

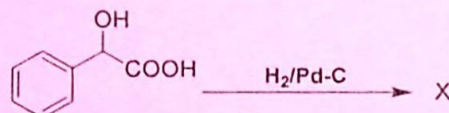
18. Alkyne when treated with Lindlar's catalyst produce majorly

- E-alkene
- Z-alkene
- Both E- and Z-alkene
- Alkane

19.  $\text{Pt/H}_2$  is used as a

- Homogeneous catalyst
- Oxidizing agent
- Catalytic poison
- Heterogenous catalyst

20.



For above reaction, the product 'X' is

- Benzyl alcohol
- 2-phenyl acetic acid
- 2-cyclohexyl acetic acid
- none of these

**( Descriptive )**

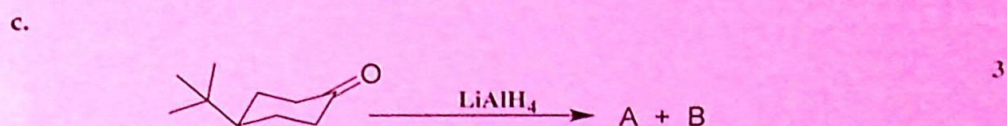
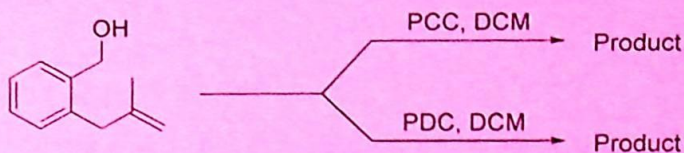
Time : 2 hrs. 30 mins.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

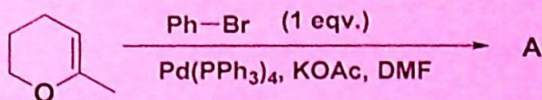
1. a. Explain apo-enzyme and holoenzyme? 3

b. What are the expected products of the following reactions. 2

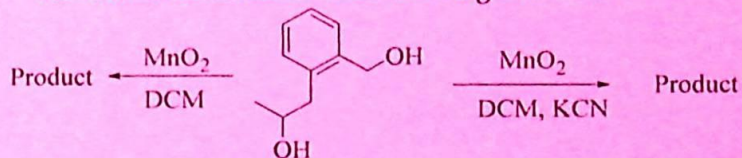


Write down the products A and B. Mention which one is major product.

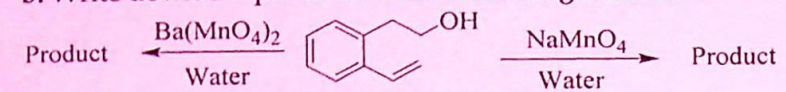
d. Write final product in the following reaction: 2



2. a. What is one of the most suitable oxidizing reagents for allylic alcohol oxidation? Explain Why? Write the products with reaction mechanism of the following reactions 2+3=5

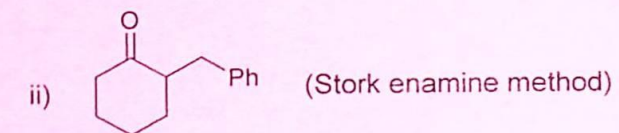
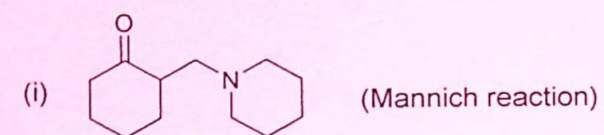


b. Write down the products of the following reactions 2

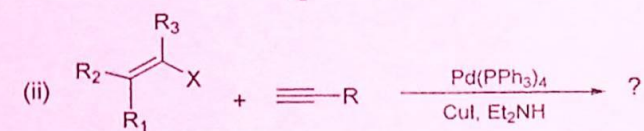
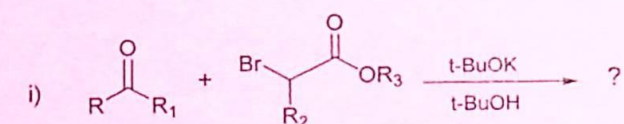


c. Explain the Prevost's and Woodward's dihydroxylation reactions with suitable examples. 3

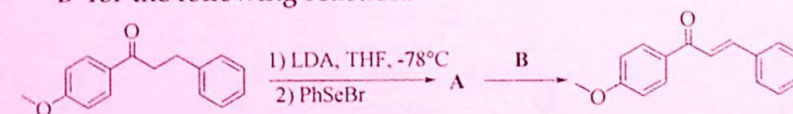
3. a. How can you synthesise the following using the reaction mentioned, give mechanism: 2+3=5



b. Write down the product formed in the following reaction with mechanism: 2+3=5

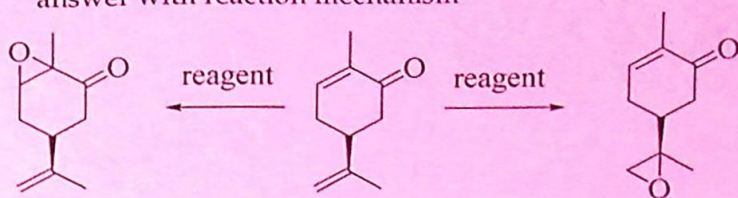


4. a. Write down the structure of product 'A' and suggest the reagent 'B' for the following reaction. 3



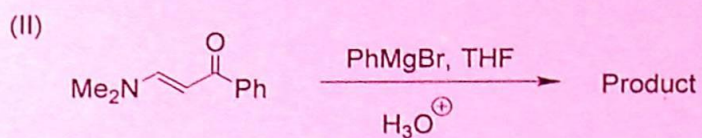
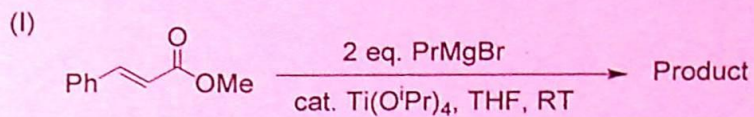
b. Write the reagents of the following reactions and justify your answer with reaction mechanism

2



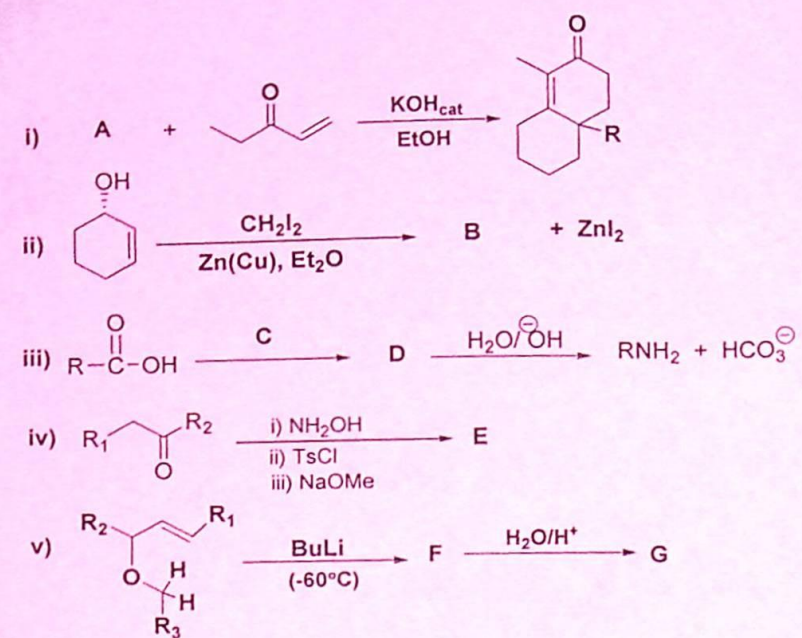
c. Write the products of the following reactions with reaction mechanisms

3+2=5



5. Complete the following reactions: (Write down the structure of reactant/product/reagent 'A' to 'G')

2+2+1+1  
+2+1+1=  
10



a. What is NAD<sup>+</sup>? Write its structure. 2

b. Explain the mechanism of enzyme action. 2

c. Write the structure of the following. 3

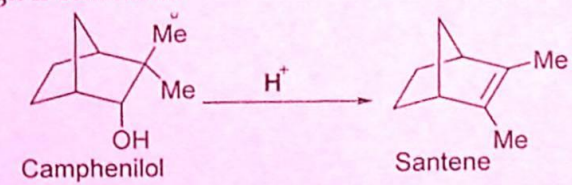
i) Lipoic acid

ii) CoASH

iii) TPP

d. What is Wagner Meerwein rearrangement? 3

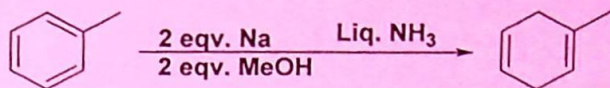
Justify the formation of the product santene from camphenilol through mechanism.





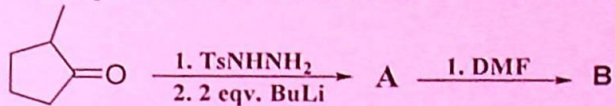
7. a. What is MPV reduction? Write down the detailed mechanism of MPV reduction with a suitable example. 5+3+2  
=10

b. What is name of the following reaction? Show the mechanism

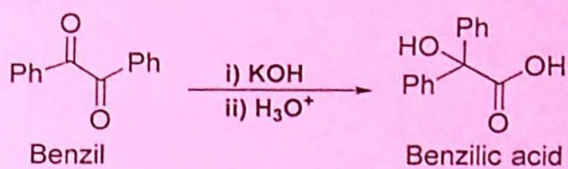


c. Write down the structure of DIBAL-H.

8. a. Write the product A and B and discuss the detailed mechanism. 5



b. What is benzil benzilic acid rearrangement? Give the mechanism of the following reaction. 5



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