

M.Sc. CHEMISTRY
SECOND SEMESTER
ORGANIC CHEMISTRY II
MSC - 202

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

(PART-A: Objective)

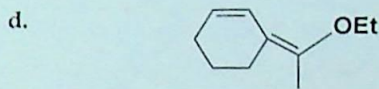
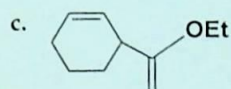
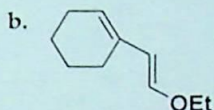
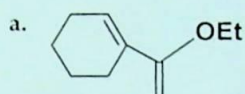
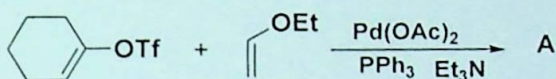
Time : 20 min.

Marks : 20

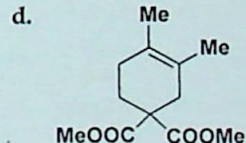
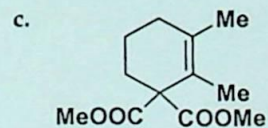
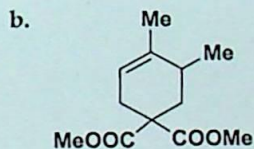
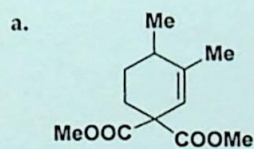
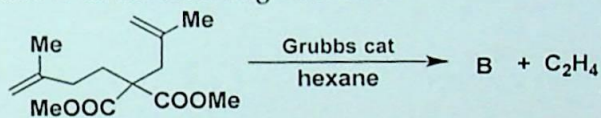
Choose the correct answer from the following:

1X20=20

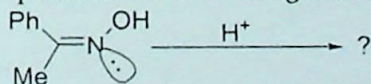
1. Product 'A' in the following

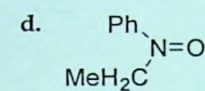
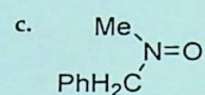
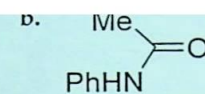
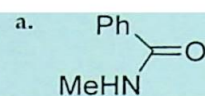


2. The product 'B' in the following reaction is:

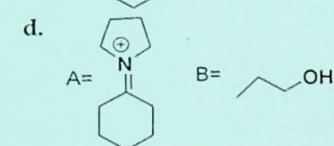
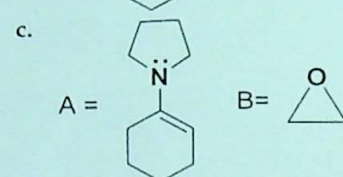
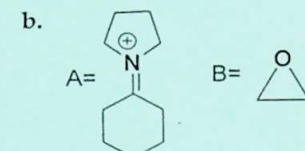
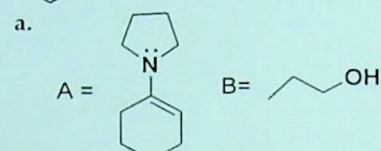
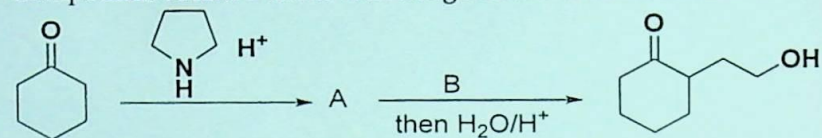


3. What will be the product in the following reaction?

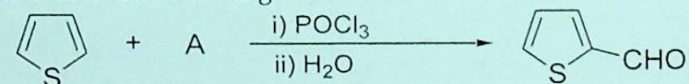




4. Compounds A and B in the following scheme of reactions are:



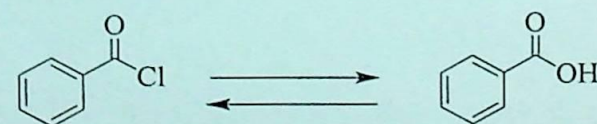
5. The reactant A in the following reaction is



- a. Me-CONH₂
c. Me₂CHNMe₂

- b. H-CONMe₂
d. MeCONMe₂

6. Which statement is true for the following reactions?

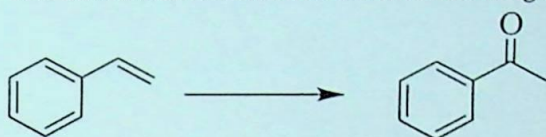


- a. Forward reaction is an oxidation reaction & backward reaction is a reduction reaction.
b. Both the forward & backward reactions are non-redox, substitution reactions.
c. Forward reaction is a reduction reaction & backward reaction is an oxidation reaction
d. Both the reactions are redox reactions.

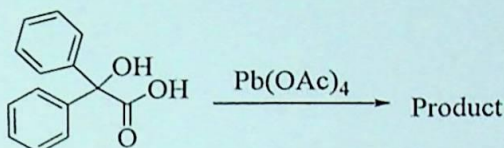
7. MnO₂ is a very selective oxidant, it does oxidation of only

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

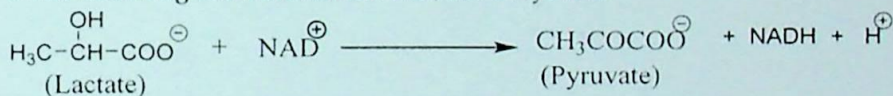
8. The most suitable condition for the following reaction is



- a. PCC oxidation
b. Etard oxidation
c. Wacker Oxidation
d. PDC oxidation
9. Product of the following reaction is

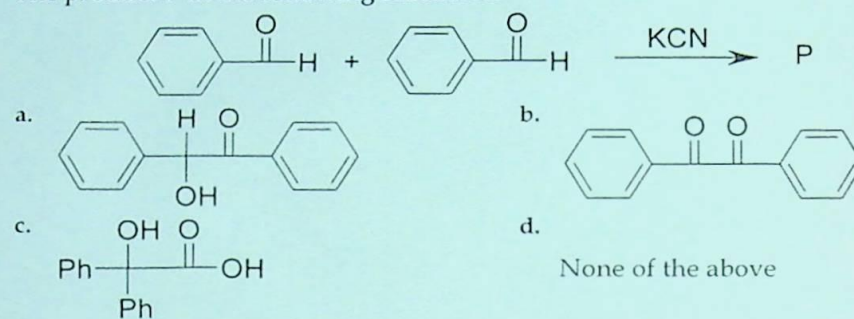


- a. Acetophenone
b. Benzophenone
c. Diphenylmethanol
d. Benzaldehyde
10. The most suitable reagent for the synthesis of benzophenone from CO_2 is
- a. 2eq PhMgBr
b. 2eq Ph_2CuLi
c. 2eq PhLi
d. 2eq Ph_2CuMgBr
11. Ligase is an enzyme which
- a. catalyzes the joining of two molecules by forming a new chemical bond
b. catalyzes the breaking of a chemical bond
c. catalyzes transfer of a fundamental group from one molecule to another
d. catalyzes the hydrophilic cleaning of atom
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
- $$\text{Glucose} + \text{ATP} \longrightarrow \text{Glucose-6-Phosphate} + \text{ADP}$$
- a. Oxidoreductase
b. Transferase
c. Ligase
d. Lyase
14. The rearrangement of 1,2-diketones to form α -hydroxy-carboxylic acids using a base is known as
- a. Benzil-benzilic acid rearrangement
b. Pinacol-pinacolone rearrangement
c. Wagner-Meerwein rearrangement
d. Wolf rearrangement

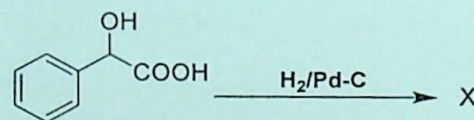
15. The product P in the following reaction is



16. The reagent involve in Wolff-Kishner reduction is

- a. LiAlH_4 b. Zn-Hg/HCl
c. $\text{NH}_2\text{NH}_2 \cdot \text{OEt}$ d. Na, NH_3
17. In McMurray coupling reaction two carbonyl groups form
a. Carbon-Carbon single bond b. Carbon-Carbon double bond
c. Carbon-Carbon triple bond d. Carbon-Nitrogen single bond
18. Alkyne when treated with Lindlar's catalyst produce majorly
a. E-alkene b. Z-alkene
c. Both E- and Z-alkene d. Alkane

19.



For above reaction, the product 'X' is

- a. Benzyl alcohol b. 2-phenyl acetic acid
c. 2-cyclohexyl acetic acid d. none of these
20. Pt/H_2 is used as a
a. Homogeneous catalyst b. Oxidizing agent
c. Catalytic poison d. Heterogenous catalyst

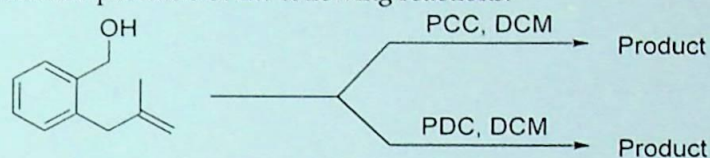
(PART-B : Descriptive)

Time : 2 hrs. 40 min.

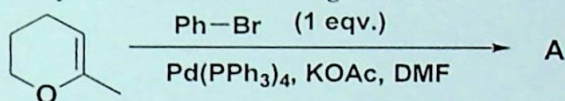
Marks : 50

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

1. a. Write the products of the following reactions. 2

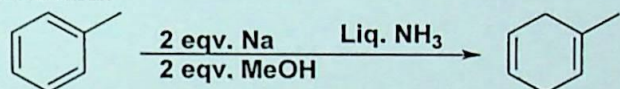


- b. Write final product in the following reaction: 2

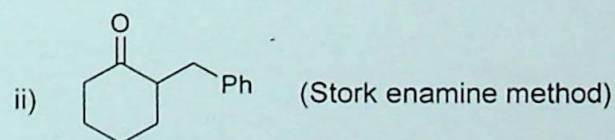
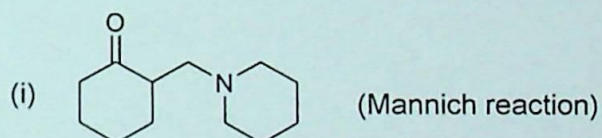


- c. What is apo-enzyme and holoenzyme? Explain. 3

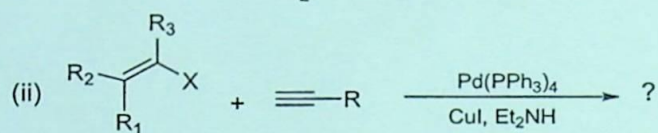
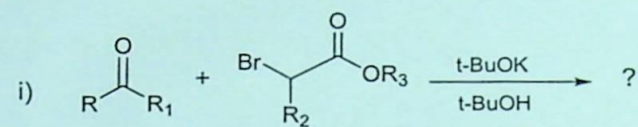
- d. Which name reaction is related to the following reaction? Show the mechanism 1+2=3



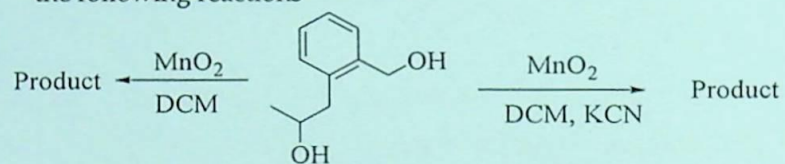
2. a. How can you synthesise the following using the reaction mentioned, give mechanism: 2+3=5



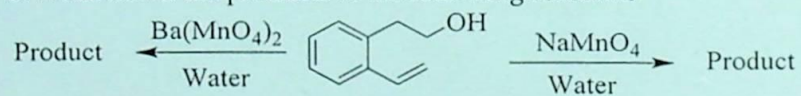
- b. Write down the product formed in the following reaction with mechanism: 2+3=5



- 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

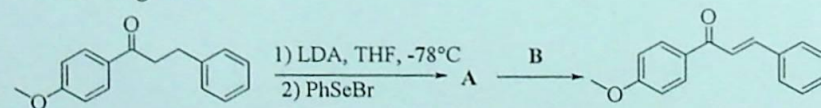


- b. Write down the products of the following reactions 2

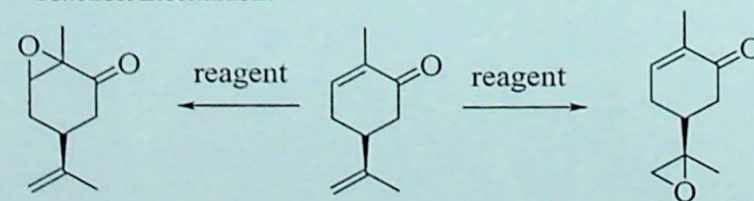


- c. Explain the Prevost's and Woodward's dihydroxylation reactions with suitable examples 3

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



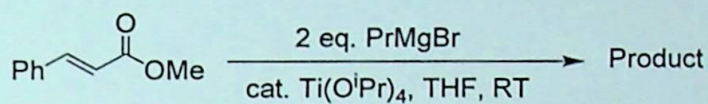
- b. Write the reagents of the following reactions and justify your answer with reaction mechanism 2



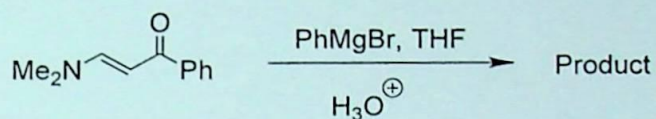
c. Write the products of the following reactions with reaction mechanisms

3+2=5

(I)



(II)

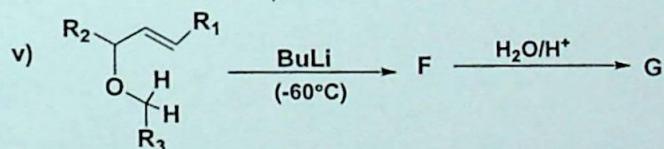
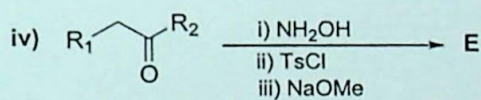
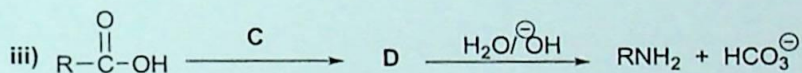
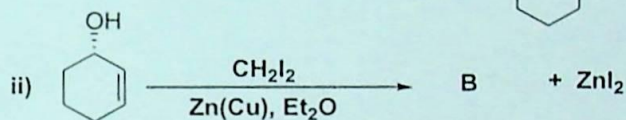
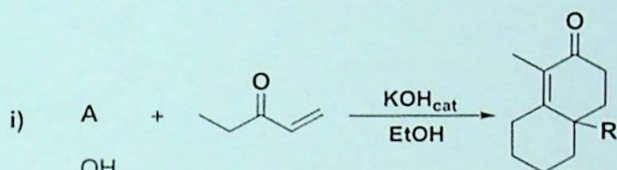


5. Complete the following reactions: (Write down the structure of reactant/product/reagent 'A' to 'G')

2+2+1+

1+2+1+

1=10

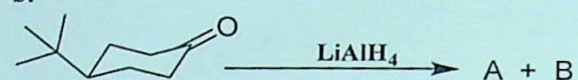


6. a. What is MPV reduction? Write down the detailed mechanism of MPV reduction with a suitable example.

5+3+2

=10

b.



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

c. Write down the structure of DIBAL-H.

7. a. What is NAD^+ ? Write its structure. 2

b. Explain the mechanism of enzyme action. 2

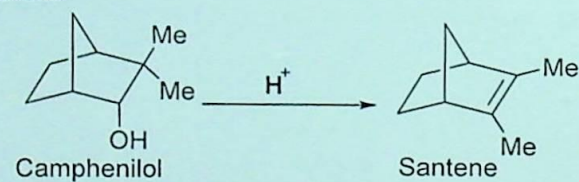
c. Write the structure of the following. 3

i. Lipoic acid

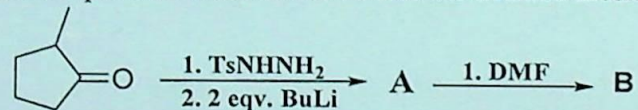
ii. CoASH

iii. TPP

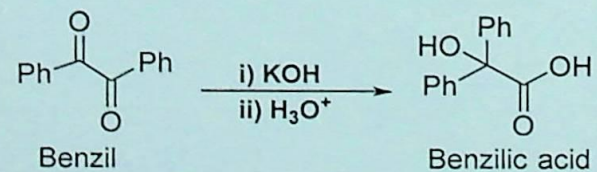
d. What is Wagner Meerwein rearrangement? Justify the formation of the product santene from camphenilol through mechanism. 3



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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