

M.Sc. CHEMISTRY
SECOND SEMESTER
ORGANIC CHEMISTRY II
MSC – 202 OLD COURSE [REPEAT]

**SET
A**

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

Time : 30 min.

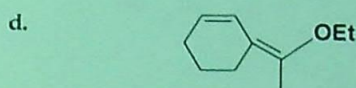
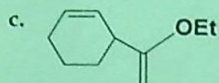
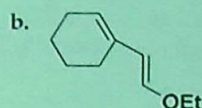
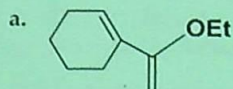
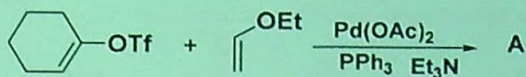
(Objective)

Marks : 20

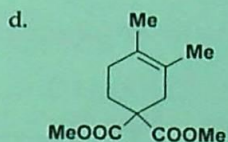
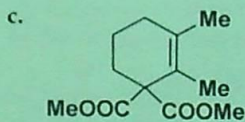
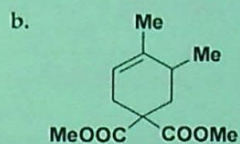
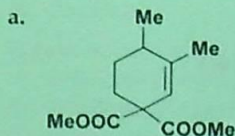
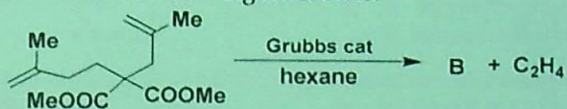
Choose the correct answer from the following:

1X20=20

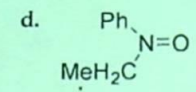
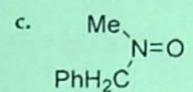
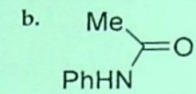
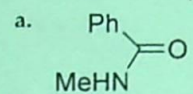
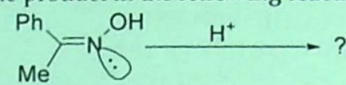
1. Product 'A' in the following



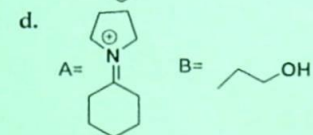
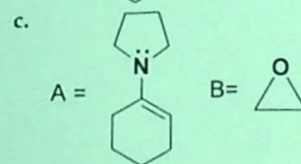
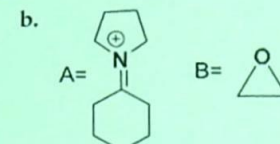
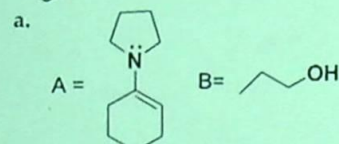
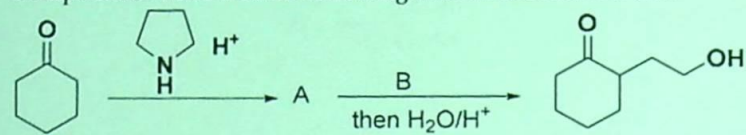
2. The product 'B' in the following reaction is:



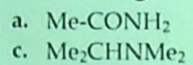
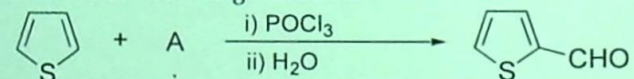
3. What will be the product in the following reaction?



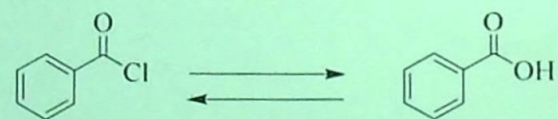
4. Compounds A and B in the following scheme of reactions are:



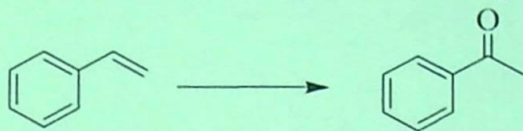
5. The reactant A in the following reaction is



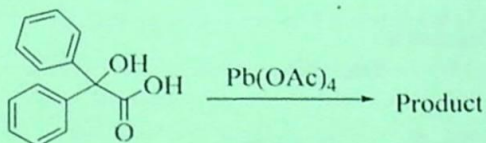
6. Which statement is true for the following reactions?



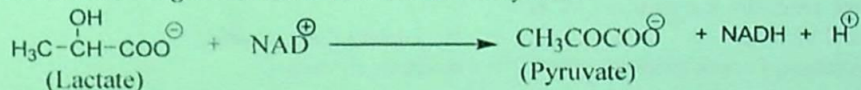
- a. Forward reaction is an oxidation reaction & backward reaction is a reduction reaction.
 - b. Both the forward & backward reactions are non-redox, substitution reactions.
 - c. Forward reaction is a reduction reaction & backward reaction is an oxidation reaction
 - d. Both the reactions are redox reactions.
7. MnO_2 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

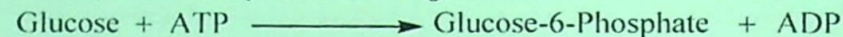


- a. Acetophenone
 - b. Benzophenone
 - c. Diphenylmethanol
 - d. Benzaldehyde
10. The most suitable reagent for the synthesis of benzophenone from CO_2 is
- a. 2eq PhMgBr
 - b. 2eq Ph_2CuLi
 - c. 2eq PhLi
 - d. 2eq Ph_2CuMgBr
11. Ligase is an enzyme which
- a. catalyzes the joining of two molecules 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

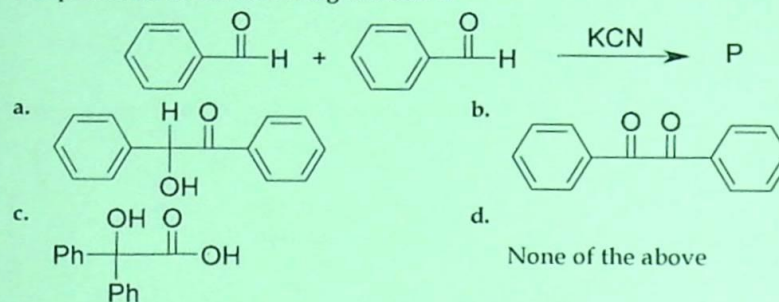


- a. Pyruvate dehydrogenase
- b. Lactate hydrogenase
- c. Lactate dehydrogenase
- d. Lactate decarboxylase

13. The enzyme that catalyses the following reaction is



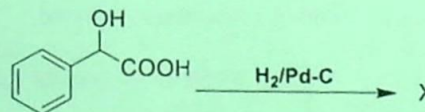
- a. Oxidoreductase
b. Transferase
c. Ligase
d. Lyase
14. The rearrangement of 1,2-diketones to form α -hydroxy-carboxylic acids using a base is known as
- a. Benzil-benzilic acid rearrangement
b. Pinacol-pinacolone rearrangement
c. Wagner-Meerwein rearrangement
d. Wolf rearrangement
15. The product 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

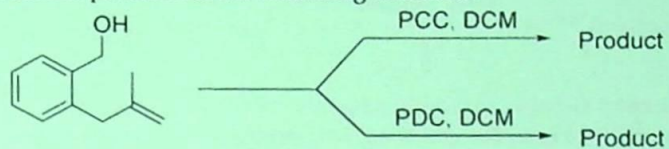
(Descriptive)

Time : 2 hrs. 30 min.

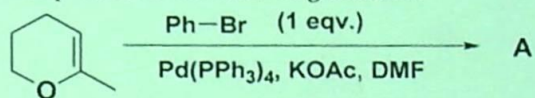
Marks : 50

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

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

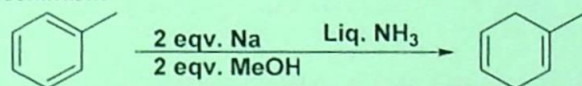


- b. Write final product in the following reaction: 2

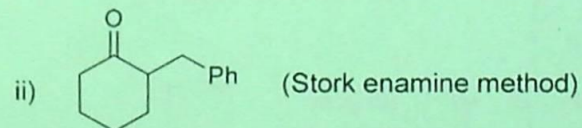
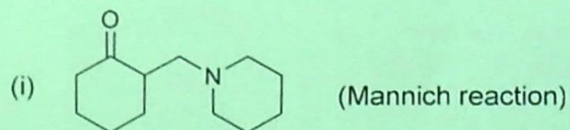


- c. What is apo-enzyme and holoenzyme? Explain. 3

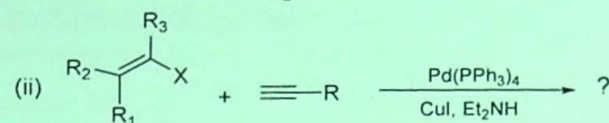
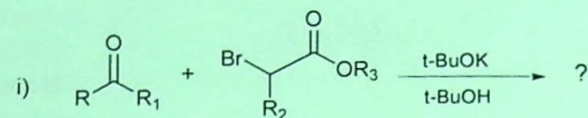
- d. Which name reaction is related to the following reaction? Show the mechanism 1+2=3



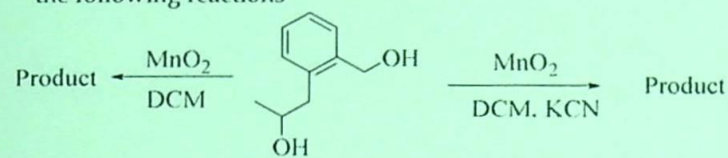
2. a. How can you synthesise the following using the reaction mentioned, give mechanism: 2+3=5



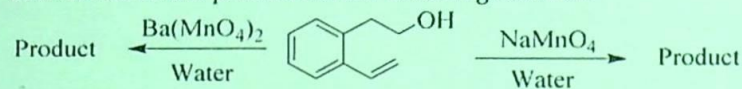
b. Write down the product formed in the following reaction with mechanism: 2+3=5



3. 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

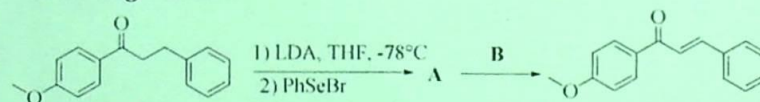


b. Write down the products of the following reactions 2

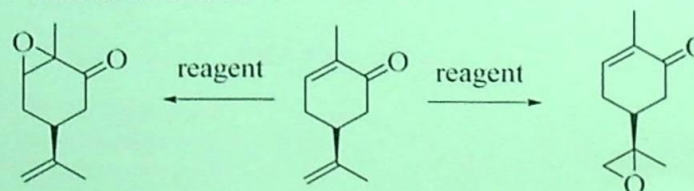


c. Explain the Prevost's and Woodward's dihydroxylation reactions with suitable examples 3

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

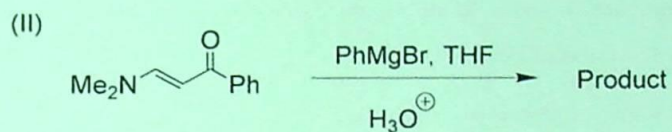
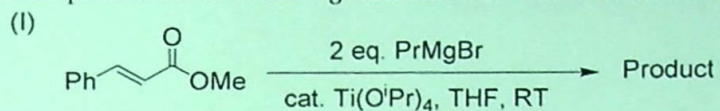


b. Write the reagents of the following reactions and justify your answer with reaction mechanism 2



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

3+2=5

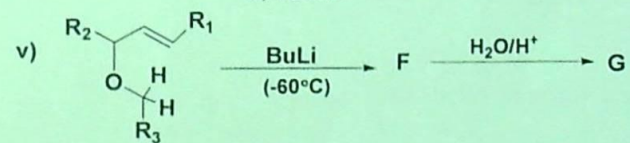
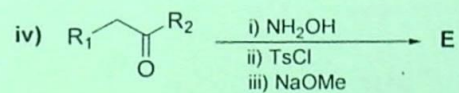
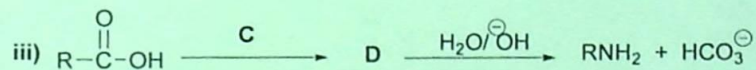
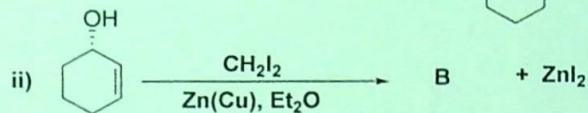
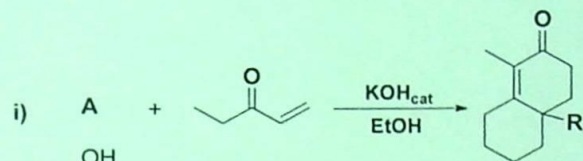


5. Complete the following reactions: (Write down the structure of reactant/product/reagent 'A' to 'G')

2+2+1+

1+2+1+

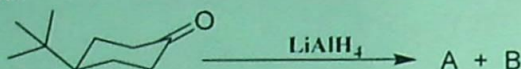
1=10



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.

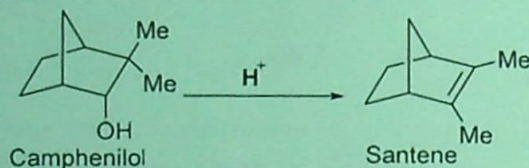
3

- Lipoic acid
- CoASH
- TPP

d. What is Wagner Meerwein rearrangement?

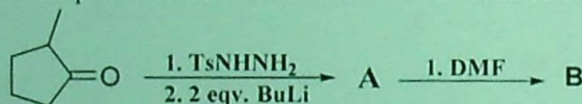
Justify the formation of the product santene from camphenilol through mechanism.

3



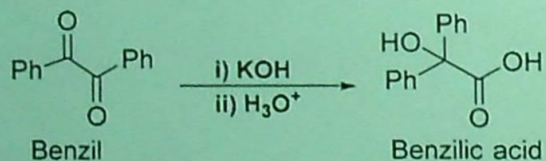
8. a. Write the product A and B and discuss the detailed mechanism.

5



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

5



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