

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

**SET
A**

Duration : 3 hrs.

Full Marks : 70

Time : 30 min.

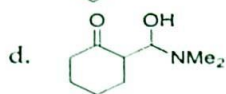
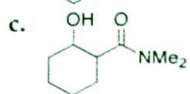
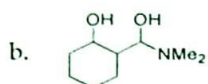
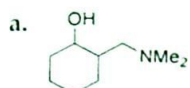
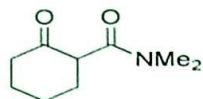
(Objective)

Marks : 20

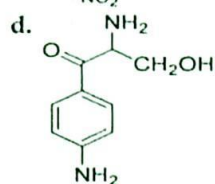
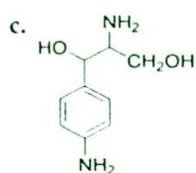
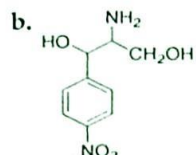
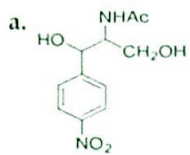
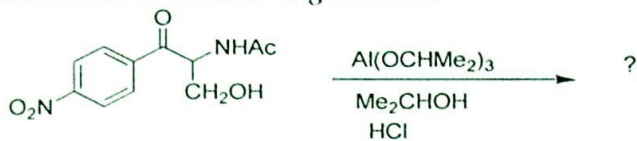
Choose the correct answer from the following:

1X20=20

1. What is the main reduction product of the following compound with NaBH_4 in CH_3OH ?



2. The major product formed in the following reaction is



3. The reaction involving the conversion of a carbonyl compound to its corresponding alkene is known as

a. Clemmensen reduction
c. MPV reduction

b. Wolff-Kishner reduction
d. Shapiro reaction

4. Product (A) formed in the following reaction is



- a.
- b.
- c.
- d.

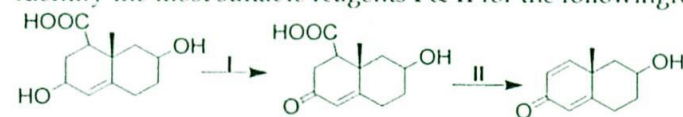
5. Choose the appropriate reagent used for the following conversion.



- a. $\text{LiAlH}_4, \text{H}_3\text{O}^+$
 b. $\text{NaBH}_4, \text{H}_3\text{O}^+$
 c. $\text{RhCl}(\text{PPh}_3)_3, \text{H}_2 / \text{Benzene}$
 d. $\text{N}_2\text{H}_4, \text{KOH}$
6. Oxidation of menthol to formic acid by Jones-reagent is an electron transfer process involving
- a. eight electrons
 b. six electrons
 c. four electrons
 d. two electrons
7. 'A' of the following reaction will be

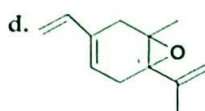
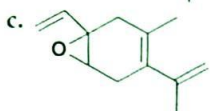
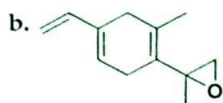
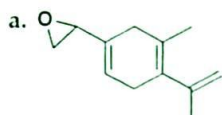


- a. PDC/DCM
 b. PCC/DCM
 c. MnO_2
 d. PCC- NaOAc /DCM
8. Identify the most suitable reagents I & II for the following reactions.



- a. I = Felizon's reagent & II = $\text{Mn}(\text{OAc})_3$
 b. I = PCC & II = OsO_4, NMO
 c. I = MnO_2 & II = $\text{Pb}(\text{OAc})_4$
 d. I = Felizon's reagent & II = OsO_4, NMO

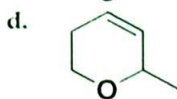
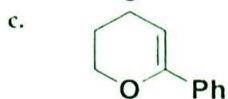
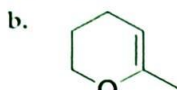
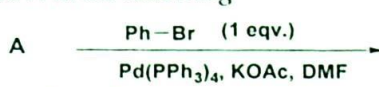
9. Product of the following reaction is



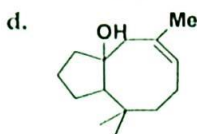
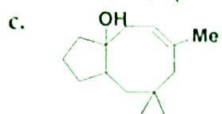
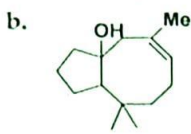
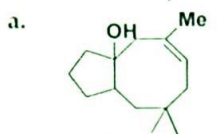
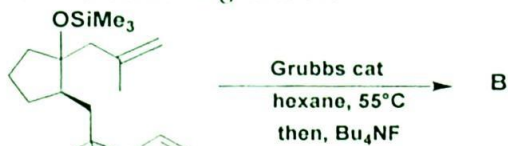
10. Which one of the following is known as Normant Cuprate?



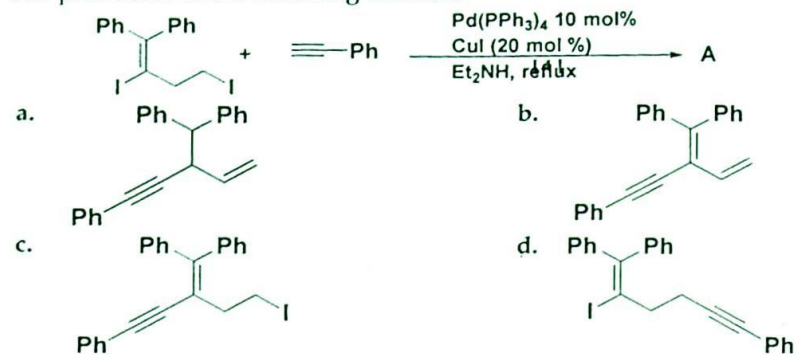
11. Reactant A in the following



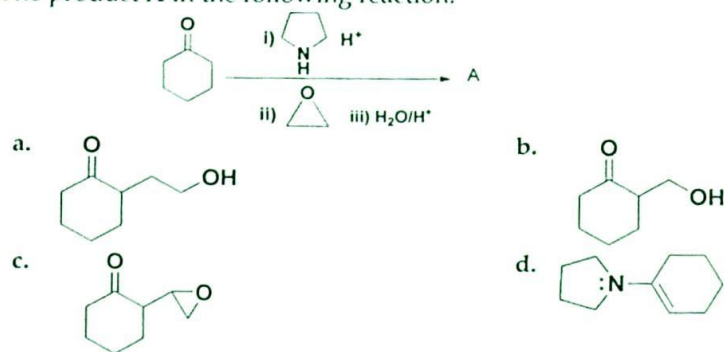
12. Product B in the following reaction:



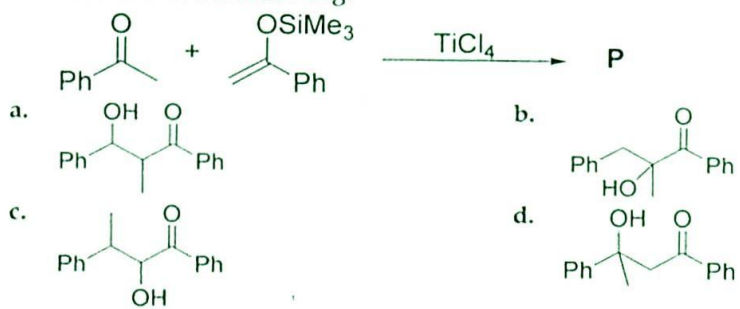
13. The product A in the following reaction:



14. The product A in the following reaction:



15. Structure of P in the following:



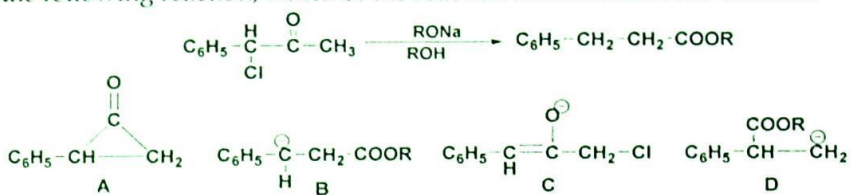
16. The coenzyme NAD⁺ is known to have derived from

- a. Vitamin B₁ b. Vitamin B₂
 c. Vitamin B₃ d. Vitamin B₅

17. In the biochemical reaction, the enzyme used is -



- a. Pyruvate dehydrogenase b.) Lactate dehydrogenase
 c. Transferase d. Lactate decarboxylase
18. Which of the following types of specificity of enzyme is considered as the highest specificity shown by any class of enzyme in the living world?
 a. substrate specificity b. geometrical specificity
 c. group specificity d. optical specificity
19. Which of the following types of specificity of enzyme is considered as the highest specificity shown by any class of enzyme in the living world?
 a. substrate specificity b. geometrical specificity
 c. group specificity d. optical specificity
20. In the following reaction, which of the reaction intermediates are formed?



- a. B & C b. C & D
 c. A & B d. A & D

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(Descriptive)

Time : 2 hrs. 30 mins.

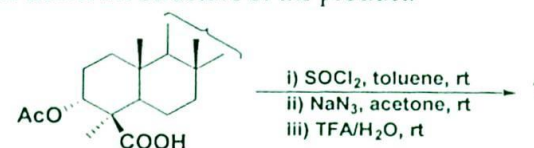
Marks : 50

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

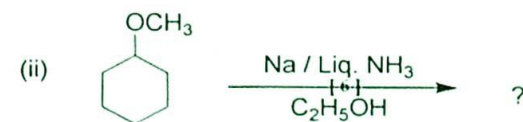
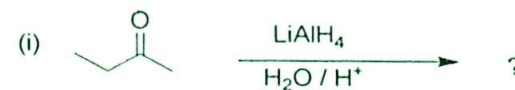
1. a. What is Clemmensen reduction? Explain with examples. 3+3+2+2
=10
- b. In pinacol-pinacolone rearrangement, it is observed that an alkyl or methyl group migrates from the adjacent carbon to the carbocation centre which is already tertiary. Justify. What is the driving force in the pinacol-pinacolone rearrangement?
- c. Write the suitable reagent and the mechanism of the following transformation



- d. Write down the structure of the product:

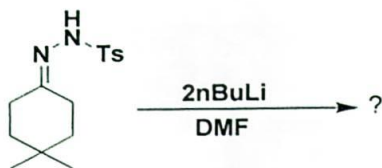


2. a. Explain about the stereochemistry of heterogeneous hydrogenation citing examples. 3+3+4
=10
- b. What is Wilkinson catalyst? What is its use explain with examples.
- c. Predict the products formed in the following reactions with suitable mechanism:



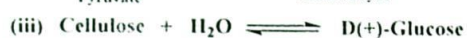
3. a. What is the role of tributyltin hydride? Explain with examples.
 b. Predict the product formed in the following reaction?

3+2+5
=10



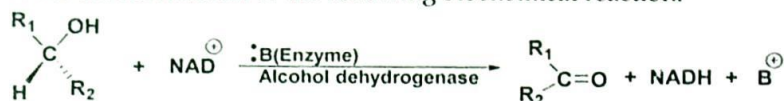
- c. The S_N2 hydrolysis of 1-bromo-2,2-dimethylpropane (neopentyl bromide) which is 1°-alkyl halide, is observed to be slow. However, if the same reaction is carried out under conditions favouring S_N1 mode, the product obtained is not the expected 2,2-dimethylpropan-1-ol, but 2-methylbutan-2-ol. Give reasons why?
4. a. Discuss the role of coenzymes in carrying out the biochemical reactions
 b. Name the enzymes in the following biochemical reactions

2+3+2+3
=10



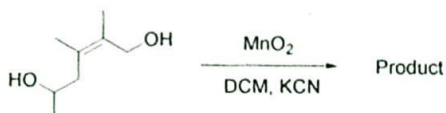
c. What is TPP? Give its structure.

d. Write the mechanism of the following biochemical reaction.



5. a. Write the major product of the following reaction with justification

2



- b. Explain the Prevost's and Woodward's dihydroxylation reactions with examples.

4

c. Write the products of the following reactions with justification. 2+2=4

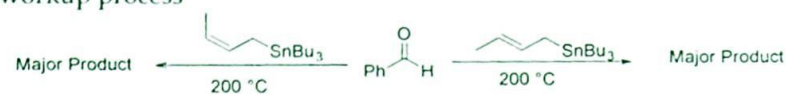


5. a. Write the products of the following reactions with mechanism 3+3+4

=10



b. Write the products with justification of the following reactions after workup process

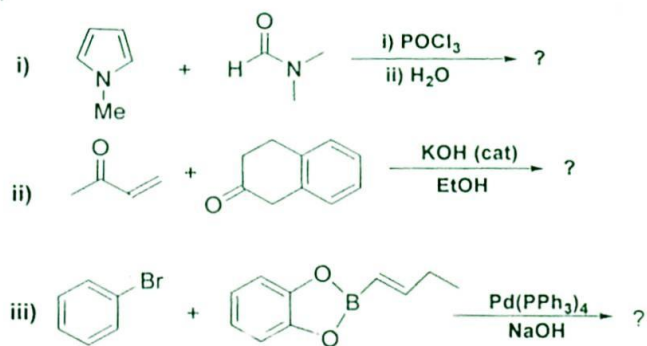


c. How to do the following transformation? Explain.



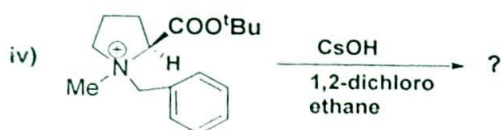
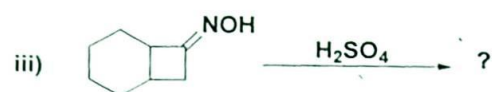
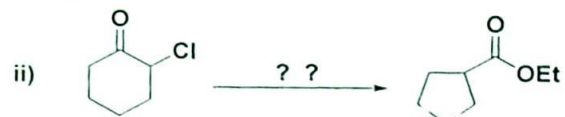
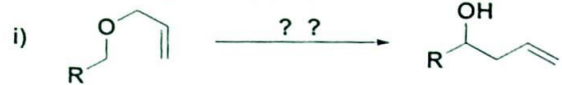
7. Write down the product in the following reaction. Give mechanism of the reaction involved. 3+4+3

=10



8. Complete the following with appropriate mechanism.

2.5×4
=10



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