



Date:

Registration number:

ST JOSEPH'S UNIVERSITY, BENGALURU-27
M.Sc. (Chemistry) - III SEMESTER
SEMESTER EXAMINATION: OCTOBER 2023
(Examination conducted in November/December 2023)
OCH9123: ORGANIC SYNTHESIS-I
(For current batch students only)

Time: 2 hours

Maximum Marks: 50

This question paper contains 3 printed pages and 3 parts

PART-A

Answer any EIGHT of the following:

(8 x 2 = 16)

1. What is Stobbe condensation? Give an example.
2. Write the structure of Dess-Martin periodinane. Mention any one application of this compound.
3. Give an example of metal-catalyzed oxidation of C-X (X = halogen) bond to C=O bond.
4. What is Gilman reagent? How is it generated?
5. Write the general scheme for Hiyama coupling reaction.
6. Give any two advantages of a supported catalyst.
7. What is a transfer hydrogenation reaction?
8. Write the general mechanism for metal mediated C-H activation reaction.
9. Mention the two types of metal oxide support. Cite an example in each case.
10. Give an example for the synthesis of organic compounds by cathodic reduction.

PART-B

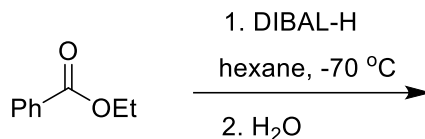
Answer any TWO of the following:

(2 x 12 = 24)

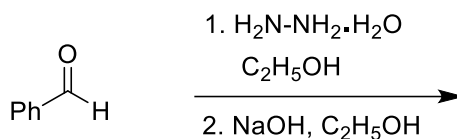
11. (a) Explain the Schlenk equilibrium observed in organomagnesium compounds.
(b) What is Simmons-Smith reagent? Discuss its preparation and application in organic synthesis.
(c) Give the structures of a Grubbs' and Schrock's catalysts for the alkene metathesis reaction. Give an advantage of each.
(d) Discuss the effect of ligand steric properties in the individual steps in catalytic cycle of palladium catalyzed cross coupling reactions.
(3+3+3+3)

12. (a) Complete the following reactions. Explain the mechanism for both the reactions.

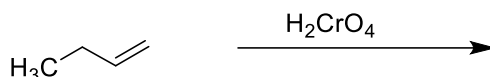
(i)



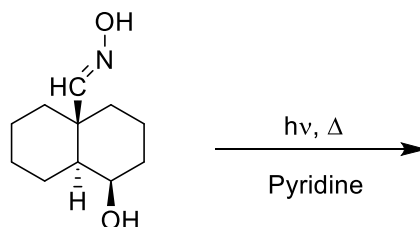
(ii)



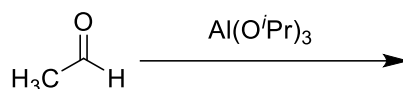
(b) Predict the major product for the following reaction. Illustrate the mechanism.



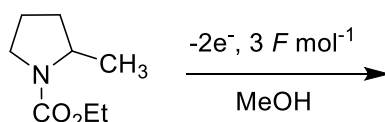
(c) Identify the major product for the following reaction. Write the mechanism. (5+4+3)



13. (a) Complete the following reaction. Explain the mechanism:



(b) Identify the major product for the following reaction. Illustrate the mechanism.



(c) Discuss the methods of immobilizing transition metal catalysts onto a solid support.

(d) Describe the insertion and migratory insertion reactions with an example each.

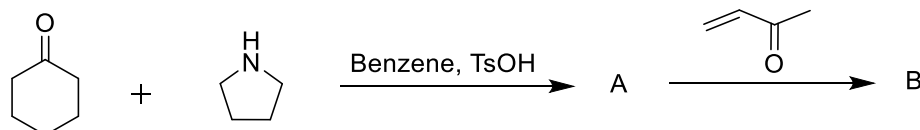
(3+3+3+3)

PART-C

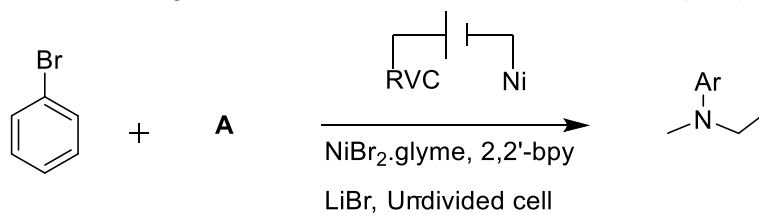
Answer any TWO of the following:

(2 x 5 = 10)

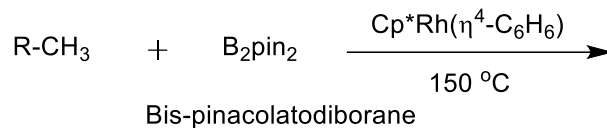
14. a) Identify A and B in the following reaction.



b) Identify **A** for the following reaction. (3+2)

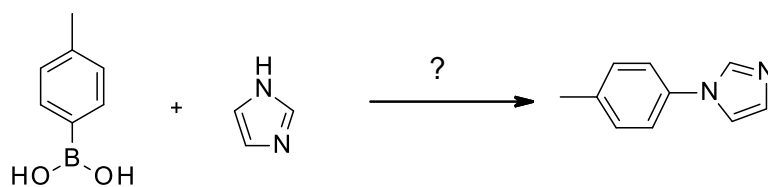


15. (a) Write the major product for the following reaction with suitable mechanism.

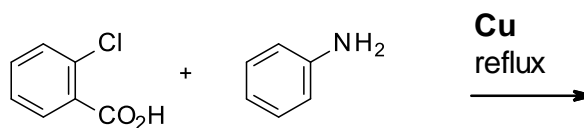


(b) Complete the following transformations. (3+2)

(i)



(ii)



16. Predict **A-E** in the following reactions

