Register Number:
Date: 17-11-2020

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27

M.Sc. Chemistry - III SEMESTER

SEMESTER EXAMINATION: NOVEMBER 2020
OCH 9119 – ORGANIC SYNTHESIS I

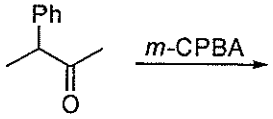
Time- 2 1/2 hrs **Max Marks-70**

This paper contains THREE printed pages and THREE parts

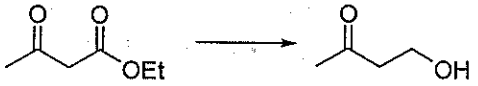
PART-A

Answer any SIX out of the following EIGHT questions: **6 X 2 = 12 Marks**

1. What is Peterson olefination reaction? Give an example.
2. State any two the advantages of mechanochemical synthesis of a Schiff's base over conventional synthesis in terms of the principles of green chemistry.
3. Give an example for a radical mediated C(sp^2) – H functionalisation reaction.
4. Write the structure of major product formed in the following reaction and justify.



5. What is a Gilman reagent and Corey–Posner/Whitesides–House reaction?
6. What is a pre-catalyst and active catalyst? Cite a suitable example.
7. How will you bring about the following conversion?



8. What is the C-H activation and state its importance in organic chemistry.

PART-B

Answer any FOUR out of the following SIX questions: **4 X 12 = 48 Marks**

9. (a) Compare the greenness of the microwave assisted synthesis of benzylalcohol from benzylchloride with the conventional method.
   (b) Calculate the atom economy of the following reaction. Consider the atomic masses of C = 12, O = 16 and H =1 respectively.

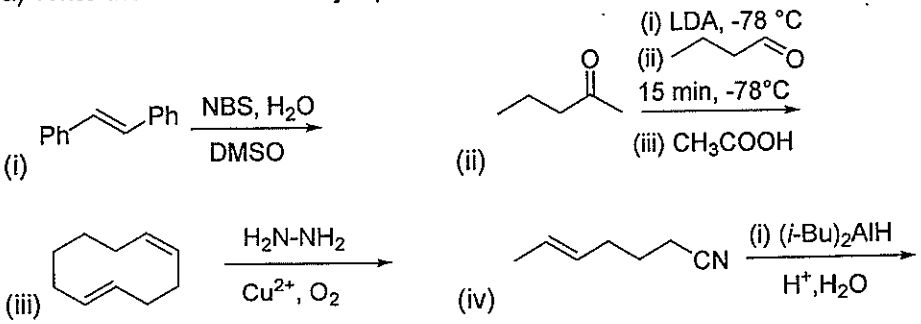
   (c) Describe about the importance of chelating ligands like tetramethylethylenediamine (TMEDA) in lithiation reactions with suitable examples.

(4+4+4)

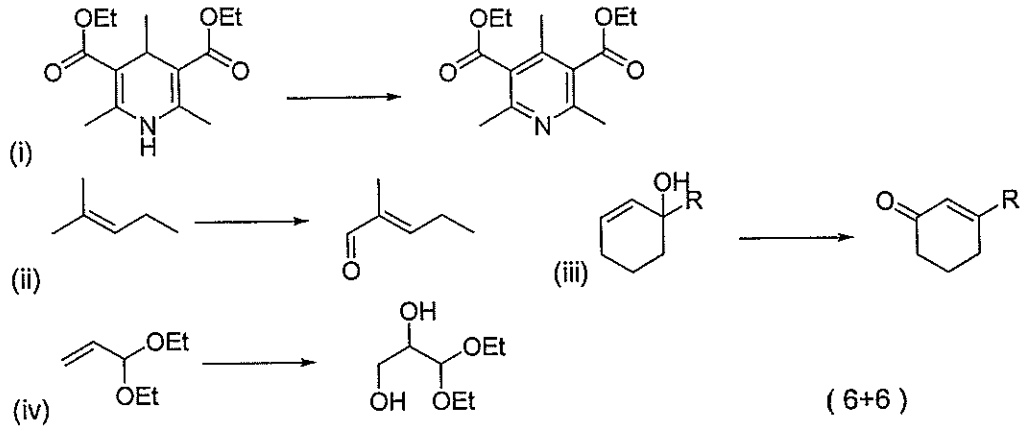
10. Explain the following reactions using a suitable example each.
    i) Ugi reaction

ii) Corey – Bakshi – Shibata reaction
iii) Hofmann – Loffler – Freytag reaction
iv) Des – Martin oxidation reaction (3+3+3+3)

11. a) Write the structure of major product formed in the following reactions:



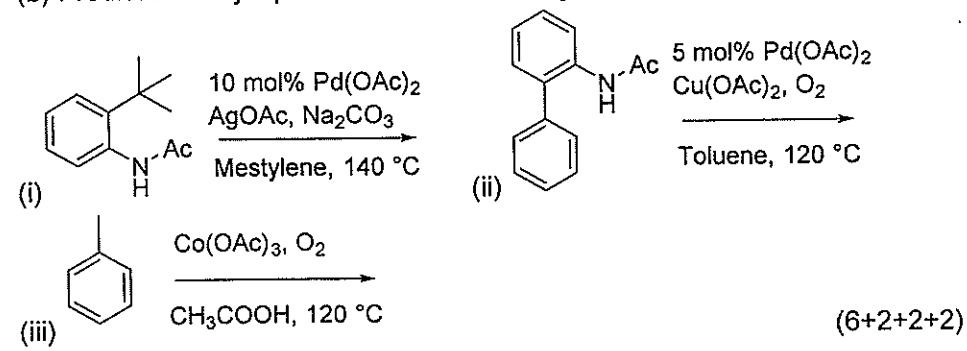
b) Predict the reagent(s) required for the following conversions:



(6+6)

12. Explain the mechanism of the following reactions using a suitable example each:
i) Acyloin reaction
ii) Stobbe condensation reaction
iii) Mannich reaction (4+4+4)

13. (a) Discuss about the palladium catalysed C-H activation in pyrrole.
(b) Predict the major products in the following reactions



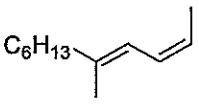
(6+2+2+2)

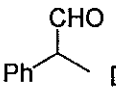
14. Construct the suitable catalytic cycle for the following transition metal catalysed reactions.
(i) Noyori assymetric hydrogenation
(ii) Mizaroki-Heck coupling reaction (6+6)

PART-C

Answer any TWO out of the following THREE questions: 2X 5 = 10 Marks

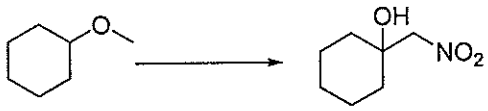
15. How will you synthesise the following compounds using the reactions mentioned below?

(i) 

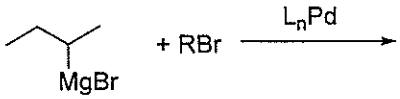
Suzuki coupling reaction; (ii) 

Darzen reaction

16. How will you bring about the following conversion?



17. Predict the major product(s) of the following transformations, when (i) R = Ph, L = PPh_3; (ii) R = Ph, L = diphenylphosphinoferrocene (dppf); (iii) R = PhCH=CH, L = PPh_3;(iv) R = PhCH=CH, L =dppf.



End of the Question Paper