

St. Joseph's College (Autonomous), Bengaluru – 27

End Semester Examination, April, 2018

IV Semester M.Sc. Chemistry

CHDE 0417 – Organic Synthesis

Time: 2½ hours

Max. Marks:70

Note: This question paper has 3 pages and 3 sections

PART A

Answer any SIX of the following:

6 X 2 = 12

1. Mention any two conditions that favour C-alkylation over O-alkylation during alkylation reactions of enolates.
2. What is 'latent functionality'? Explain with an example.
3. What are imine anions? Give an example of their application in alkylation of aldehydes.
4. What is chemoselectivity? Explain with an example.
5. What is Dieckmann condensation reaction? Give an example.
6. Write the mechanism of Woodward dihydroxylation reaction.
7. How will you bring about the following conversion?



8. How will you synthesise the following olefin using Peterson's olefination reaction?

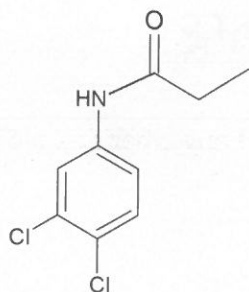


PART B

Answer any FOUR of the following:

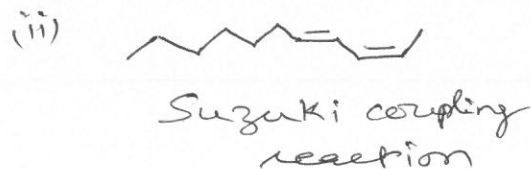
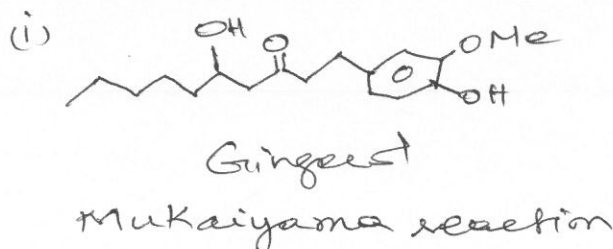
4 X 12 = 48

9. a) Write a note on 'two-group C-C disconnections' involving 1,3- and 1,5-difunctionalised compounds.
b) Predict the structures of A to F in the following reactions:



b) Discuss the role of protecting groups by taking the protection of three different functional groups. Explain with an example for each functional group. (6+6)

12.a) How will you synthesise the following compounds ^{using} the reactions mentioned below: (6+6)



b) What is Sharpless asymmetric hydroxylation reaction? Give an example. Explain the role of each reagent in the reaction. (6+6)

13. Write mechanism of the following reactions using suitable examples:

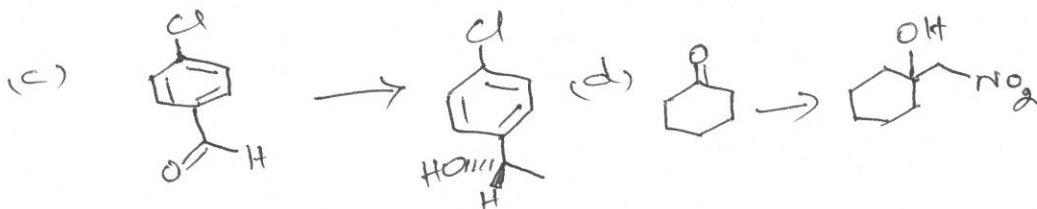
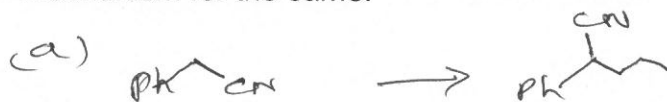
a) Hofmann-Löffler-Freytag reaction

b) Shapiro reaction

c) Ugi reaction.

(3x4)

14. Predict the reagent(s) required for the following conversions and write mechanism for the same: (3x4)

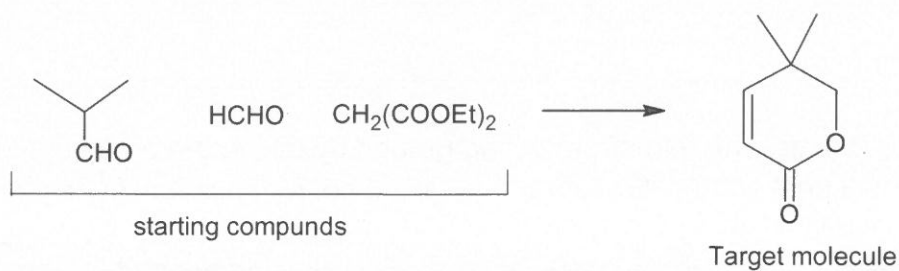


PART C

Answer any TWO of the following:

2 X 5 = 10

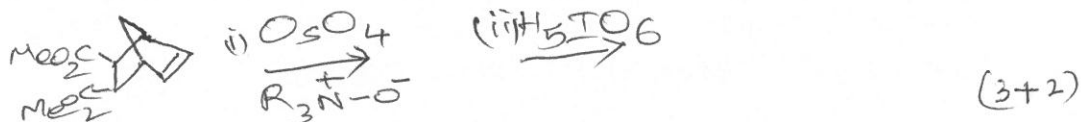
15. Using the indicated starting materials and any other organic compound/reagent you may need, give the synthesis of the target molecule:



16. a) Carry out the following conversion:



- b) Predict the structure of major product formed in the following reaction.



17. Write structure of any tripeptide and explain its synthesis using Merrifield resin method.

-----End of questions-----