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

SPECIAL SUPPLEMENTARY EXAMINATION APRIL 2018

**M.Sc : CHEMISTRY : IV SEMESTER**

**CH 0312 : Organic Synthesis**

(For supplementary candidates)

Do not write the register number on the question paper

Please attach the question paper along with the answer script.

**Time: 3 hrs Maximum marks: 100**

***Note: This question paper has THREE printed pages and THREE parts.***

**PART A**

Answer any **TEN** of the following: (2 x 10 = 20 marks)

1. How will you prepare 4-dimethylaminopyridine? Write one synthetic application of the compound.
2. What is Nef reaction? Give an example.
3. Write the mechanism of Wolf – Kishner reduction reaction.
4. How will you generate dichlorocarbene using phase transfer catalysts? How does dichlorocarbene react with alkenes?
5. Give an example of Darzen’s reaction.
6. How do you bring about the following conversion:



1. Explain the terms: synthon and synthetic equivalent.
2. How is a trialkylsilylenol ether prepared? Give an example of its application in alkylation.
3. Give a reaction involving the preparation of an enamine and its application in synthesis.
4. What is ‘latent functionality’? Explain with an example.
5. Give any two applications of aliphatic nitro compunds in synthesis.
6. Explain ‘chemoselectivity’ with an example.

**PART B**

Answer any **FIVE** of the following: (12 x 5 = 60 marks)

1. Propose the synthesis for each of the following using:
2. ii)

 

Robinson annelation Mukaiyama reaction

iii) iv)

 McMurryolefination

Stork enamine reaction

1. With a suitable example, explain the mechanism of the following reactions:
2. Stobbe condensation reaction
3. Noyori reaction
4. Mitsunobu reaction (4 marks each)
5. Bring about the following conversions:

i)

1. 



iii)



iv)

 (3 marks each)

1. a) What is Sharpless asymmetricepoxydation? Give an example. Write the role of each reagent in the reaction.

b) Explain, with examples, how the following reactions are employed in ring synthesis: i) Robinson annelation ii) Claisen ester condensation (6+6)

1. a) Discuss any three principles of Green chemistry with suitable illustrations.

b) Write a note on ‘two-group C-C disconnections’ involving 1,3- and 1,5-difunctionalised compounds. (6+6)

1. a) Discuss theregioselectivity in alkylation of enolates with suitable examples.

b) What are protecting groups? Explain their role in the protection of any two functional groups with examples. (6+6)

1. a) Discuss ‘two-group C-X disconnections’ by taking 1,1- and 1,2- difunctional compounds as examples.

b) Explain how the kinetic and thermodynamic factors outplay in the formation of 3 to 6 membered rings. (6+6)

**PART C**

Answer any **FOUR** of the following: (5 x 4 = 20 marks)

1. Predict the structure of the major product(s) formed in the following reactions:

i)



ii)



iii)

 (1.5+2+1.5)

1. Predict the reagent(s) required for the following conversions:

i)



ii)



iii)

 (1.5+1.5+2)

1. a) Synthesise the following using Horner-Wadsworth-Emmons reaction.



b)Starting from methyl acetoacetate (CH3COCH2CO2Me), show the preparation of

2-hexanone (2.5+2.5)

1. Apply disconnection approach and arrive at a plausible synthesis of the following compound:



1. Carry out the following conversion:

