

B.M.S. COLLEGE FOR WOMEN
BENGALURU-560004

III SEMESTER END EXAMINATION-APRIL – 2024

M.Sc. CHEMISTRY - ORGANIC SYNTHESIS
(CBCS Scheme - F+R)

Course Code: MCH302T
Duration: 3 Hours

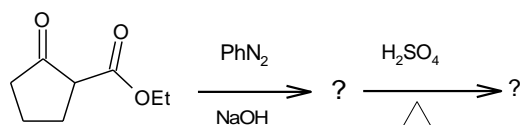
QP Code: 13007
Max. Marks: 70

Instruction: Answer Question No. 1 and any FIVE of the remaining.

1. Answer any *TEN* questions

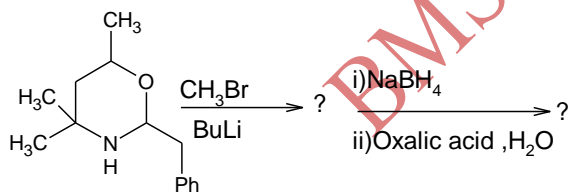
(2X10=20)

a) Identify the product of the following reaction:

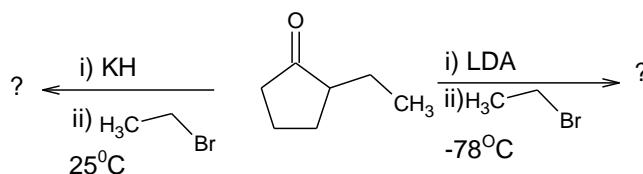


b) Give an example of Shapiro reaction

c) Write the intermediate and product formed in the following reaction:



d) Predict the products of the following reaction:



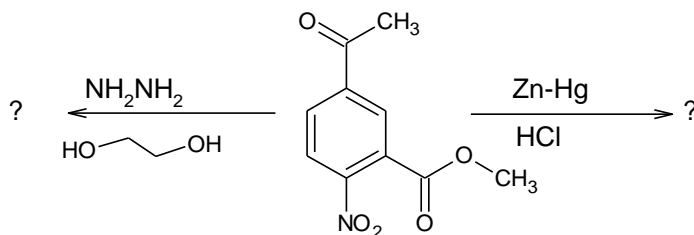
e) Mention an application of corey-chaykovsky reagent.

f) Discuss Umpolung with an example.

g) What happens when naphthalene is subjected to Birch reduction?

h) Illustrate Pummer reaction with an example.

i) Identify the products of the following reactions:

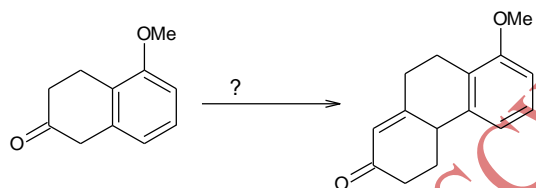


j) Define asymmetric amplification.

k) Calculate the enantiomeric excess of a mixture containing 7% of (+) 2-butanol and 93% of (-)-2-butanol if $[\alpha]_{25}^D$ of (+)-2-butanol is 13.5° .

l) Mention an application of (R,R)-DIOP in asymmetric synthesis.

2. a) Outline the steps involved in the following transformation using suitable reagents:



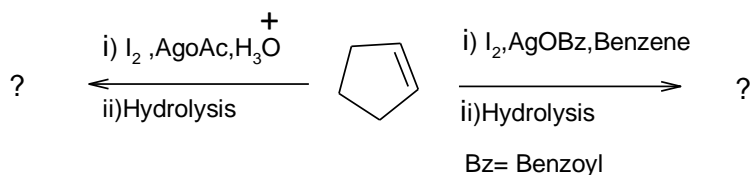
b) Guess the product with a reasonable mechanism for the following reaction:



c) What is Japp-Lingermann reaction? Give its mechanism.

(4+3+3=10)

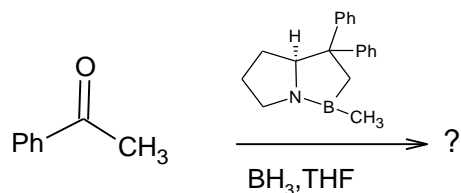
3. a) Sketch the stereochemistry of the products formed in the following reactions with suitable mechanism:



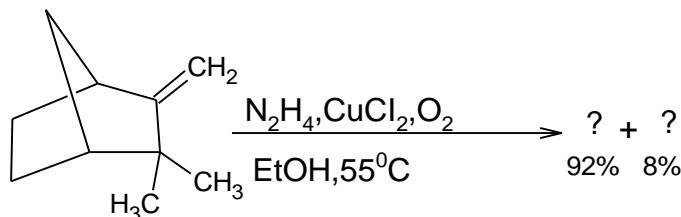
b) Discuss the mechanism and synthetic applications of Oppenauer oxidation.

(5+5=10)

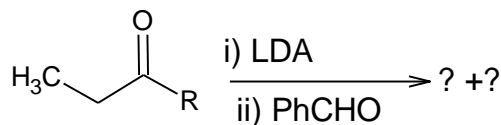
4. a) Give the stereochemistry of the product with proper mechanism for the following reaction:



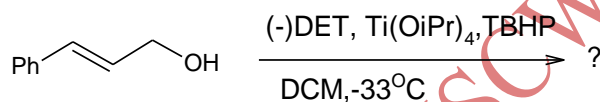
b) Identify the major product of the following reaction with a suitable reason: **(6+4=10)**



5. a) Predict the diastereoselectivity observed in the following aldol reaction when R = ethyl and R = t-butyl group.

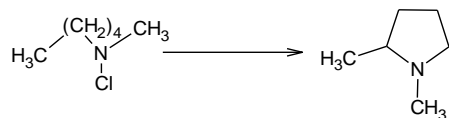


b) Write a reasonable mechanism for the following asymmetric epoxidation:



(5+5=10)

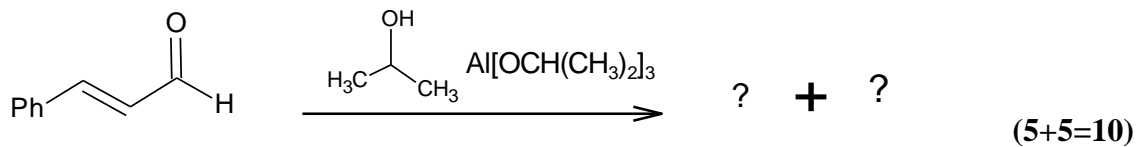
6. a) Outline the steps involved in the following transformations and propose suitable reagents.



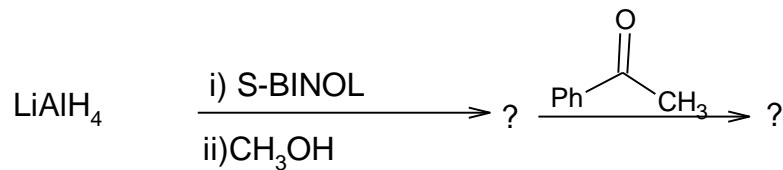
b) Discuss the oxidative decarboxylation of acids by lead tetraacetate with the help of suitable examples. **(5+5=10)**

7. a) Enumerate the synthetic applications of DDQ

b) Predict the product with a reasonable mechanism for the following reaction:

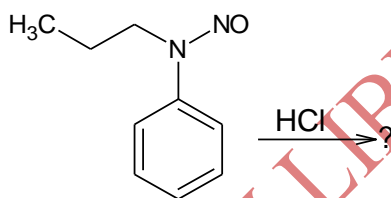


8. a) Identify the intermediate and stereochemistry of the product formed in the following asymmetric reduction reaction:



b) Write a note on polymer bound catalysis in asymmetric induction.

c) Formulate the product in the following reaction with suitable mechanism:



(3+3+4=10)
