# RAMAKRISHNA MISSION VIDYAMANDIRA

**(Residential Autonomous College affiliated to University of Calcutta)**

**B.A./B.Sc. THIRD SEMESTER EXAMINATION, MARCH 2021**

**SECOND YEAR [BATCH 2019-22]**

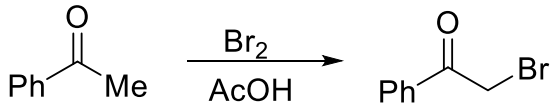
Date : 16/03/2021 **CHEMISTRY [HONOURS]**

Time : 11.00 am – 1.00 pm **Paper : VI [CC 6]** Full Marks : 50

**Attempt one question from each unit**

## Unit – I [13 marks]

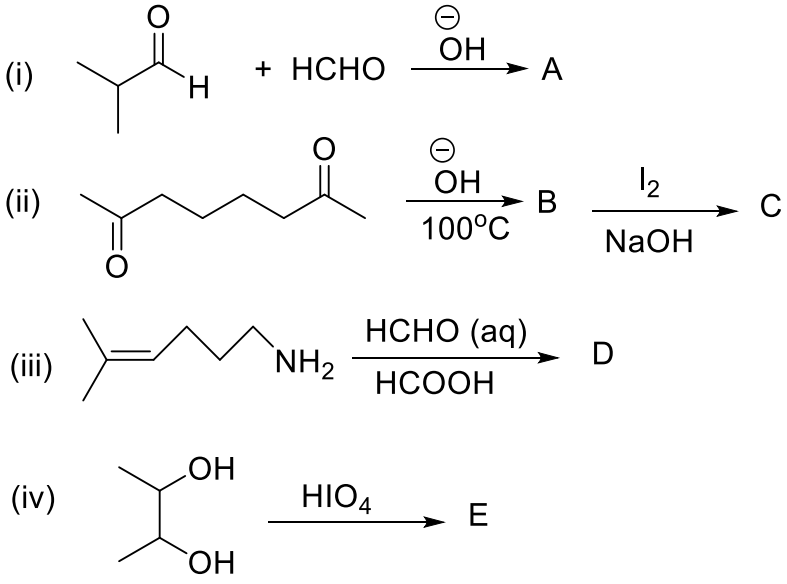
1. a) In Perkin reaction Styrene is a side product along with Cinnamic acid. Propose a mechanism which can explain both the products formation. [3]



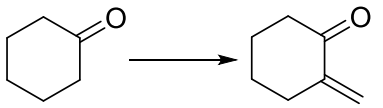

b) Give mechanism of the above reaction. Explain why the reaction is stopped at the monobromination stage. [2]

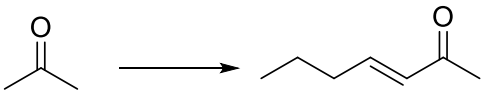
c) *p*-N,N-Dimethylaminobenzaldehyde fails to undergo benzoin condensation with KCN/EtOH, but the condensation takes place when mixed with benzaldehyde - Explian. [3]

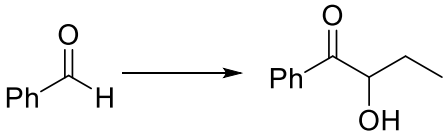
d) Predict the structure of the products from (A) to (E) in the following reactions (mechanism is not necessary). [5×1]

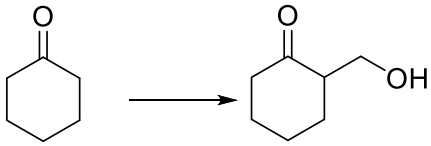


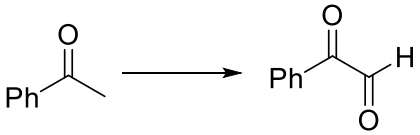
2. a) Carry out the following conversions: [2×5]

i) 

ii) 

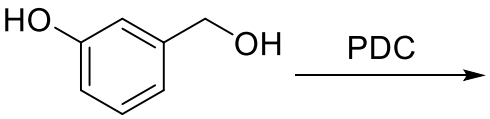
iii) 

iv) 

v) 

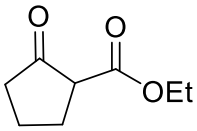
b) Explain the observation that cyclopropane forms a stable hydrate. [2]

c) Predict the product of the following reaction: [1]



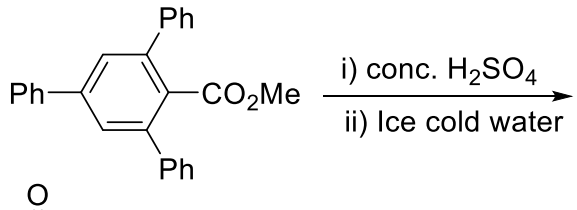
## Unit – II [12 marks]

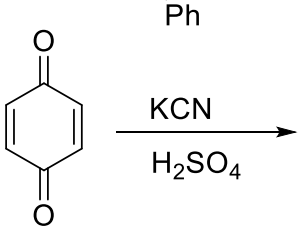
3. a) Outline the synthesis of the following compound as directed. [4]

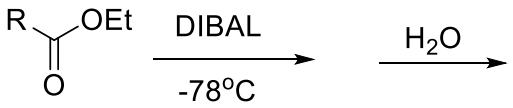


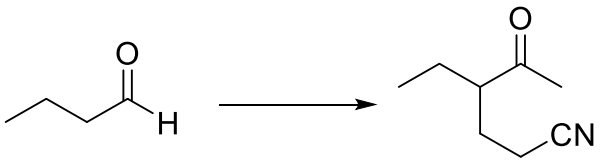
(By Dieckmann cyclisation reaction using DEM)

b) Predict the products in the following reactions with plausible mechanism: [2×3]

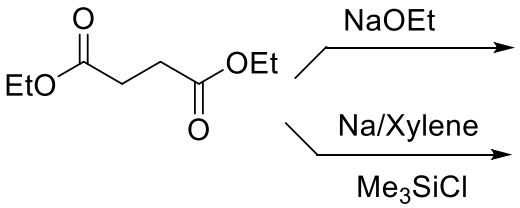
i) 

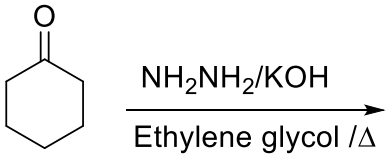

ii) 

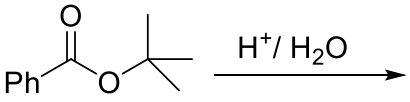

iii) 


c) Convert: 
 [2]

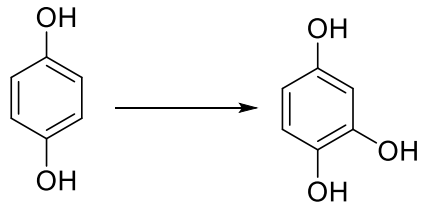
4. a) Predict the product of the following reactions giving plausible mechanism. [4×2]

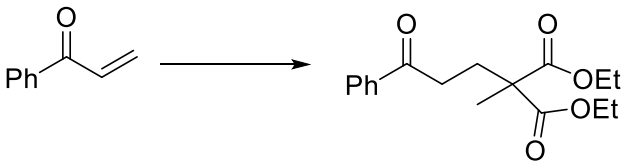
i) 


ii) 


iii) 

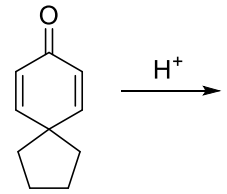

b) Carry out the following conversions: [2×2]

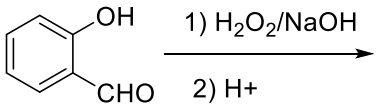
i) 

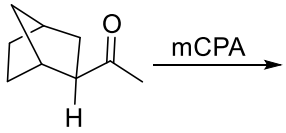

ii) 

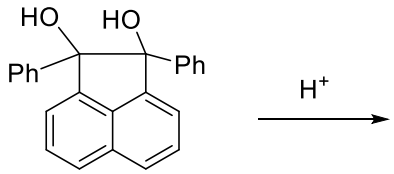
## Unit – III [13 marks]

5. a) Complete the following reactions with mechanism: [2×4]

i) 


iii) 

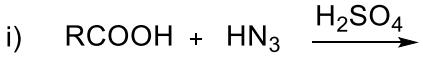

ii) 

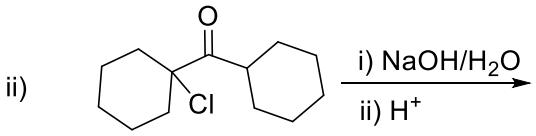

iv) 

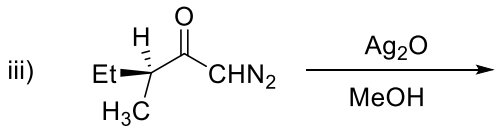

b) Justify or Criticize: Hoffmann bromamide degradation is an intramolecular rearrangement. [2]

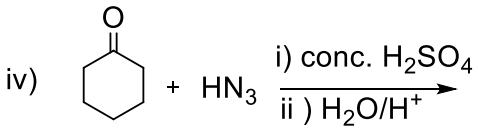
c) When diazoacetic ester is allowed to decompose in presence of benzene, cycloheptatrienecarboxylic ester is formed – explain the reaction with mechanism. [3]

6. a) Predict the product formation and also explain the mechanism: [2×4]

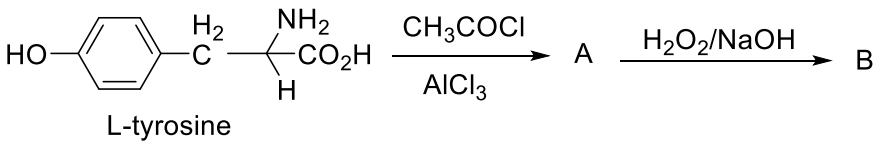
i) 


ii) 

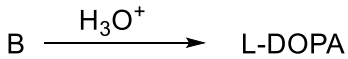

iii) 


iv) 


b) Identify the structure of (A) and (B) for the following reactions (no mechanism needed) [2]



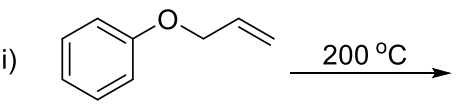

L-tyrosine

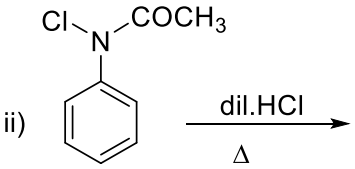


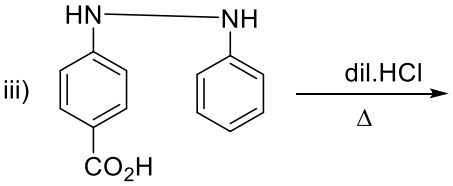
c) Give two synthetic use of diazomethane. [1.5×2]

## Unit – IV [12 marks]

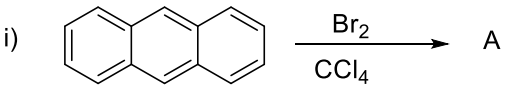
7. a) Complete the following reactions with mechanism: [2×3]

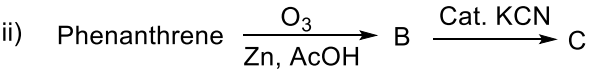
i) 


ii) 


iii) 

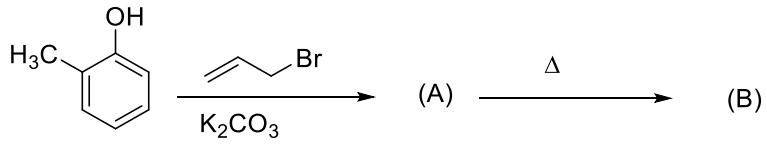

b) Predict the products for the following reactions from (A) to (C) : [1×3]

i) 


ii) 


c) Account for the fact that Sulphonation of naphthalene would give two different products at two different temperatures. [3]

8. a) Predict the products for the following reactions from (A) and (B) and also give mechanism for formation of B. [2+2]




b) Write down the Bardhan sengupta synthesis of phenanthrene. What will happen when phenanthroquinone is heated with KOH? [2+2]

c) Complete the following conversions: [2+2]

i) Napthalene ⟶ phenanthrene

ii) Napthalene ⟶ anthracene

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