

RE-EXAM - 2016-2017  
ORGANIC CHEMISTRY

Q.P. Code : 527502

(2 Hours)

[ Total Marks : 40 ]

- N.B. :** (1) All Questions are compulsory.  
(2) Attempt all subquestions together.

1. (a) Give the identification tests for n-Propanol, Benzaldehyde 2
- (b) Give distinguishing tests for 3
  - (i) Acetophenone and benzophenone
  - (ii) Ethanol and phenol
  - (iii) Aniline and nitrobenzene
- (c) Complete the following reactions (Any ten) 10
  - (i) 2 Moles of benzaldehyde  $\xrightarrow{\text{CN}^-}$
  - (ii) 4-Methylbenzoic acid  $\xrightarrow{\text{LiAlH}_4}$
  - (iii) Phenol  $\xrightarrow{\text{i) NaOH/CO}_2, \text{H}^+/\text{H}_2\text{O}}$
  - (iv) Phenanthrene  $\xrightarrow{\text{Potassium dichromate/H}_2\text{SO}_4}$
  - (v) Acetaldehyde + nitroethane  $\xrightarrow{\text{OH}^-}$
  - (vi) Propanoyl chloride + t-butanol  $\longrightarrow$
  - (vii) Acetophenone oxime  $\xrightarrow{\text{H}^+}$
  - (viii) Naphthalene  $\xrightarrow[450^\circ\text{C}]{\text{O}_2/\text{V}_2\text{O}_5}$
  - (ix) Aniline  $\xrightarrow{\text{NaNO}_2/\text{HCl, low temp}} \xrightarrow{\text{CuCN}}$
  - (x) Propanamide  $\xrightarrow{\text{NaOBr}}$
  - (xi) Phthalic acid  $\xrightarrow{200^\circ\text{C}}$

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2. (a) Answer any two of the following :-

- (i) Give the mechanism involved in the conversion of benzoyl chloride to aniline by curtius reaction.
- (ii) Write the product formed and mechanism involved when 2,3-diphenylbutane - 2, 3-diol treated with acid.
- (iii) Suggest two different pathways to bring about conversion of benzaldehyde to cinnamic acid.

2. (b) Attempt the following conversion.

- (i) Benzene to anthracene
  - (ii) Phenol to salicylaldehyde
- (c) (i) State the types of strains present in cyclopropane.
- (ii) Explain energy profile diagram for various conformers of cyclohexane.

3. (a) Complete the following reactions.

- (i) Cyclopropylmethyl ketone  $\xrightarrow{\text{F}_3\text{CCO}_2\text{H}}$
- (ii) Two moles of ethyl acetate  $\xrightarrow{\text{NaOAc, H}_2\text{O}}$
- (iii) Acetaldehyde  $\xrightarrow{\text{Phenyl hydrazine}}$
- (iv) Propanoic acid + ethanol  $\xrightarrow{\text{H}^+/\text{heat}}$

3. (b) Write the mechanism of the following reactions with suitable examples (any two)

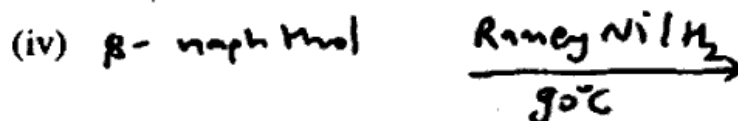
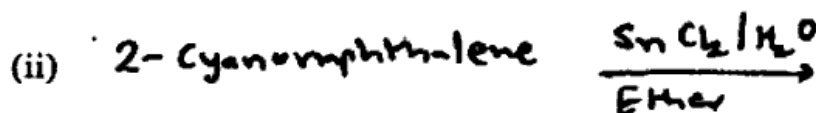
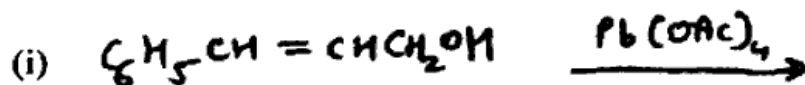
- (i) Dieckmann condensation
  - (ii) Benzil-benzilic acid rearrangement
  - (iii) Steven's rearrangement
- (c) Explain electrophilic substitution on phenol with reference to nitration and bromination reactions.

4. (a) Attempt the following conversions (any two)

- (i) t-Butyl alcohol to trimethylacetic acid
- (ii) Salicylaldehyde to catechol
- (iii) Diethylmalonate to propionic acid

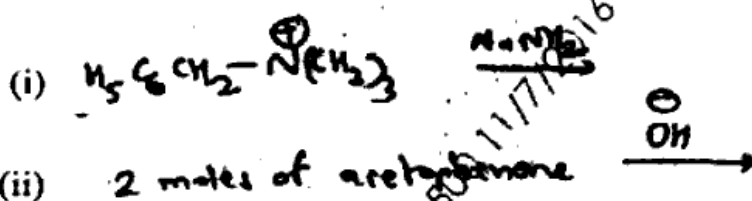
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(b) Complete the following reactions

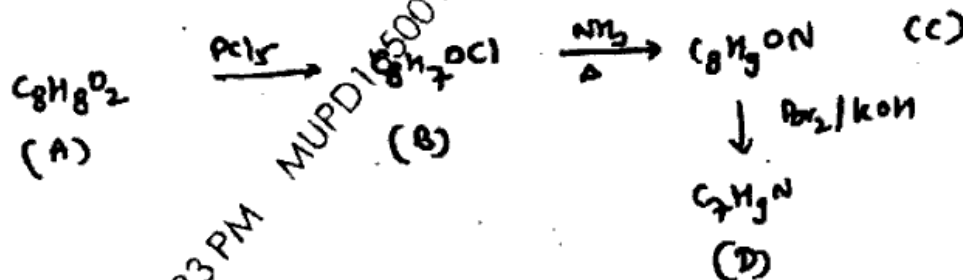


- (c) (i) Draw all possible conformers of n-butane 1  
 (ii) Comment on optical activity of cis- and trans-1,2-dimethylcyclohexane 2

5. (a) Give the final product and mechanism of the reaction. 4



(b) Complete the following pathway. Identify A, B, C, D.



Compound A is soluble in saturated  $\text{NaHCO}_3$  with effervescence

- (c) Give two methods of syntheses of methylphenylether and discuss its reactions with  $\text{HI}$ . 3

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6. (a) What are  $\alpha$  - haloketones? Write a note on a rearrangement involving  $\alpha$  - haloketones with base. Mention clearly about the intermediates formed and their stability. 4
- (b) Write the products formed when cyclohexanone reacts with 4
- (i)  $\text{Ph}_3\text{P} = \text{CHCH}_3$
  - (ii) 2, 4-DNP
  - (iii) Al - isopropoxide
  - (iv)  $\text{K}_2\text{Cr}_2\text{O}_7$
- (c) Write the products of reaction of anthracene with 3
- (i) Na / Isoamyl alcohol ,  $\text{H}^+ \Delta$
  - (ii)  $\text{HNO}_3 - \text{H}_2\text{SO}_4$
  - (iii)  $\text{H}_2\text{SO}_4$
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