SEM - IV (BGG)
Re-Exam
SH-2016
OC-II

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 2
n-Propanol, Benzaldehyde

(b) Give distinguishing tests for 3
(i) Acetophenone and benzophenone
(ii) Ethanol and phenol
(iii) Aniline and nitrobezene

(c) Complete the following reactions (**Any ten**) 10

(i) 2 Moles of benzaldehyde $\xrightarrow{CN^{\ominus}}$

(ii) 4-Methylbenzoic acid $\xrightarrow{LiAlH_4}$

(iii) Phenol $\xrightarrow{i)\ NaOH/CO_2,\ ii)\ H^{\oplus}/H_2O}$

(iv) Phenanthrene $\xrightarrow{Potassium\ dichromate/H_2SO_4}$

(v) Acetaldehyde + nitroethane $\xrightarrow{OH^{\ominus}}$

(vi) Propanoyl chloride + t-butanol $\longrightarrow$

(vii) Acetophenone oxime $\xrightarrow{H^{\oplus}}$

(viii) Naphthalene $\xrightarrow[450^{\circ}C]{O_2/V_2O_5}$

(ix) Aniline $\xrightarrow{NaNO_2/HCl,\ low\ temp}$ $\xrightarrow{CuCN}$

(x) Propanamide $\xrightarrow{NaOBr}$

(xi) Phthalic acid $\xrightarrow{200^{\circ}C}$

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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. 4
   (i) Benzene to anthracene
   (ii) Phenol to salicyldehyde

   (c) (i) State the types of strains present in cyclopropane. 1
   (ii) Explain energy profile diagram for various conformers of cyclohexane. 2

3. (a) Complete the following reactions. 4

   (i) Cyclopropylmethyl ketone $\xrightarrow{F_3CCO_3H}$

   (ii) Two moles of ethyl acetate $\xrightarrow{NaOC_2H_5}$

   (iii) Acetaldehyde $\xrightarrow{\text{Phenyl hydrazine}}$

   (iv) Propanoic acid + ethanol $\xrightarrow{H^+/\text{heat}}$

3. (b) Write the mechanism of the following reactions with suitable examples **(any two)** 4
   (i) Dieckmann condesation
   (ii) Benzil-benzilic acid rearrangement
   (iii) Steven's rearrangement

   (c) Explain electrophilic substitution on phenol with reference to nitration and bromination reactions. 3

4. (a) Attempt the following conversions **(any two)** 4
   (i) t-Butyl alcohol to trimethylactic acid
   (ii) Salicyldehyde to catechol
   (iii) Diethylmalonate to propionic acid

(b) Complete the following reactions

(i) $C_6H_5CH=CHCH_2OH \xrightarrow{Pb(OAc)_4}$

(ii) 2-Cyanonaphthalene $\xrightarrow[Ether]{SnCl_2/H_2O}$

(iii) Anisole $\xrightarrow{Na/Liq.NH_3}$

(iv) β-naphthol $\xrightarrow[90^\circ C]{Raney\ Ni/H_2}$

(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

(i) $C_6H_5CH_2-\overset{\oplus}{N}(CH_3)_3 \xrightarrow{NaNH_2}$

(ii) 2 moles of acetophenone $\xrightarrow{OH^-}$

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

$C_8H_8O_2$ (A) $\xrightarrow{PCl_5}$ C_8H_7OCl (B) $\xrightarrow[\Delta]{NH_3}$ C_8H_9ON (C) $\xrightarrow{Br_2/KOH}$ C_7H_9N (D)

Compound A is soluble in saturated $NaHCO_3$ with effervescence

(c) Give two methods of syntheses of methylphenylether and discuss its reactions with HI. 3

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6. (a) What are α - haloketones? Write a note on a rearrangement involving α - haloketones with base. Mention clearly about the intermediates formed and their stability. **4**

(b) Write the products formed when cyclohexanone reacts with **4**

(i) $Ph_3P = CHCH_3$

(ii) 2, 4-DNP

(iii) Al - isopropoxide

(iv) $K_2Cr_2O_7$

(c) Write the products of reaction of anthracene with **3**

(i) Na / Isoamyl alcohol , H^+ Δ

(ii) $HNO_3 - H_2SO_4$

(iii) H_2SO_4
