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Unique Paper Code	:	32171302_OC
Name of the Paper	:	Chemistry C-VI Organic Chemistry-II Oxygen Containing Functional Groups
Semester	:	III
Name of the Course	:	B.Sc. (H) Chemistry
Duration	:	3 hours
Maximum Marks	:	75

Instructions for Candidates:

(i) Attempt four questions in all. Question No. 1 is compulsory.
(ii) Give reactions wherever possible clearly indicating the reagent(s) involved.

1. (12,6,3)

(a) An organic compound A ($C_6H_{12}O_2$) on reduction with $LiAlH_4$, yielded two compound B and C. Compound B on oxidation gave compound D, which on treatment with aqueous alkali and subsequent heating furnished compound E. The latter on catalytic hydrogenation gave compound C. The compound D was oxidized to give compound F, which was found to be a monobasic acid (molecular formula wt. = 60 g). Deduce the structure of compounds A-F, write the reactions involved and give the mechanism of formation of compound E from compound D. Also give the name of the reaction involved.

(b) How you will distinguish the following, Give visible test:

(i) Chlorobenzene and Chloroethane

(ii) Propnaldehyde and Benzaldehyde

(iii) Phenol and *p*-Cresol

(c) What happens when Benzamide is heated with Bromine and sodium hydroxide. Write the product, mechanism, and name of the reaction involved

2. (9,9)

(a) How will you prepare the following using ethyl acetoacetate synthesis:

(i) 3-Methylpentan-2-one

(ii) Pentane-1,5-dioic acid

(iii) *n*-Butyric acid

(b) How will you prepare the following using Diethyl malonate synthesis:

(i) 2-Methyl hexanoic acid

(ii) Succinic acid

(iii) 5,5-Diethyl barbituric acid

3. (12,6)

(a) Explain the following:

(i) '-R' group at ortho and para position facilitates aryl halides towards Aromatic Nucleophillic Substitution Reaction

(ii) The role of pH during the reaction of carbonyl compounds with ammonia and its derivatives.

(iii) Enol form of ethylacetoacetate is more stable than that of ethyl acetate.

(iv) The rate of hydrolysis of carboxylic acid derivatives is:

$CH_3COCl > (CH_3CO)_2O > CH_3CONH_2$

(b) How will you carry out the following conversions (Attempt any *two*):

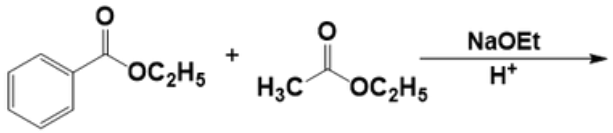
(i) Phenol to Asprin

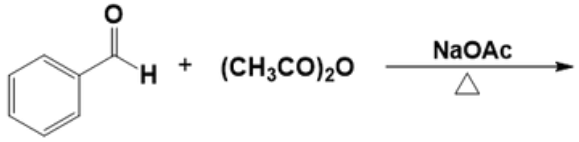
(ii) Propanal to 2-butanol

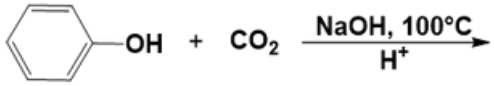
(iii) Propanoic acid to lactic acid

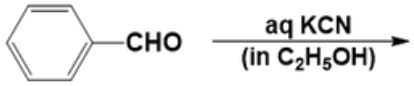
4.

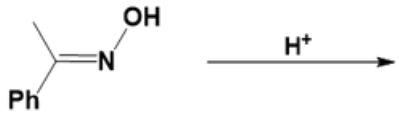
(a) Complete the following reactions. Give the name of the reaction along with the mechanism (Attempt any *four*): (4 x 4.5 = 18)

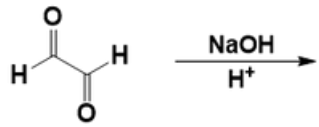
(i) 

(ii) 

(iii) 

(iv) 

(v) 

(vi) 

5. (15, 3)
(a) What happens when:
(i) Alpha, beta, and gamma hydroxy acids are heated separately.

(ii) Glycerol is treated with periodic acid.

(iii) Chloro benzene is heated with Soda amide.

(iv) 2,3-Dimethyl butan-2,3-diol is treated with H2SO4.

(v) Ethylene oxide when treated with Phenyl Magnesium Bromide followed by acidification.

(b) Prepare the following:

(i) Phenetole

(ii) Methyl *tert*-butyl ether

6. Write a short note on any *three* of the followings: (6x3 = 18)

(a) Michael Addition

(b) Fries Rearrangement

(c) Baeyer-Villiger Oxidation

(d Keto-enol Tautomerization

) Reformatsky Reaction

(e)

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