9/12/19 M

[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : 7394 **J**

Unique Paper Code : 32171302

Name of the Course : **B.Sc.(Hons.) Chemistry**

Name of the Paper : C VI - Organic Chemistry - II

Semester : III

Time : 3 Hours ***Maximum Marks : 75***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt any **five** questions.

(c) **All** questions carry equal marks.

1. (a) An organic compound A ($C_9H_{10}O$) reacts with iodine and aq. Sodium hydroxide to give iodoform and sodium salt of an acid B ($C_8H_8O_2$). B on reaction with chlorine and red phosphorous forms compound C ($C_8H_7O_2Cl$). Hydrolysis of C followed by acidification gives compound D. Identify A, B, C, & D with the reactions involved. Name the reaction by which B is converted to C. Write the mechanism for conversion of A to B. 10

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(b) Write one test along with reaction involved for distinction between the following pairs of compounds : 2.5×2=5

(i) 1-Pentanol and 2-pentanol

(ii) Acetaldehyde and benzaldehyde

2. How will you prepare the compounds a, b, & c from ethyl acetoacetate and d & e from diethyl malonate ? 3×5=15

(a) 3-Methylpentan-2-one

(b) Succinic acid

(c) 2-Methylhexanoic acid

(d) Cinnamic acid

(e) 5-Ethylbarbituric acid

3. Explain the following : 3×5=15

(a) The rate of hydrolysis of the carboxylic acid derivatives is

$CH_3COCl > (CH_3CO)_2O > CH_3CONH_2$.

(b) S_N1 reactions are accompanied by racemization as well as inversion of configuration.

(c) o-Nitrophenol is a weaker acid than p-nitrophenol.

(d) Reactivity of aryl halidas towards nucleophilic substitution increases with the substitution of nitro group at *ortho*-and *para*-positions.

(e) t-Butyl methyl ether is prepared by reaction of methyl chloride and sodium t-butoxide rather than from t-butyl chloride and sodium methoxide.

4. Write the products for the following along with equations : 3×5=15

(a) When oxalic acid, succinic acid and adipic acid are heated separately.

(b) Ethyl acetate is treated with sodium ethoxide followed by reaction with one mole of ethyl iodide in the presence of sodium metal.

(c) Phenol is heated with carbon dioxide under presure in the presence of sodium hydroxide followed by reaction with acetic anhydride in the presence of acid catalyst.

(d) Acetone when reacted with hydroxyl amine followed by treatment with Conc. H_2SO_4.

(e) Maleic acid and fumaric acid are treated separately with dil. $KMnO_4$.

5. How will you carry out the following conversions ? 3×5=15

(a) Ethanoic acid to Propanoic acid

(b) Benzene to ethoxybenzene

(c) Acetone to 2-methyl-2-butanol

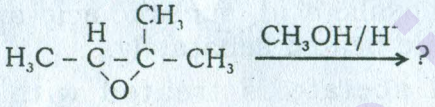
(d) Benzaldehyde to benzamide

(e) Aniline to fluorobenzene

6. Complete the following reactions. Write the mechanism of the reaction involved. 5×3=15

(a) $CH_3CH_2CHO \xrightarrow{\text{Dil. NaOH}} ?$

(b) $C_6H_5CHO \xrightarrow{\text{Aq. Alc. KCN}} ?$

(c)  $\xrightarrow{CH_3OH/H^+} ?$

7. Write short notes on any **three** of the following with emphasis to (i) the functional group that undergoes these reactions, (ii) products formed, (iii) reaction conditions and (iv) mechanism. 5×3=15

(a) Baeyer-Villiger oxidation

(b) Cannizzaro reaction

(c) Fries rearrangement

(d) Benxil-benzilic acid rearrangement

(e) Michael addition