8.12.18 (M)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 42 **IC**

Unique Paper Code : 32171302

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

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

Semester : III

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. **All** questions carry equal marks.

1. (a) An organic compound **A** (C_4H_8O) reacts with hydroxylamine to give two isomeric compounds **B** and **C** (C_4H_9ON). Compound **B** and **C** when treated with sulphuric acid separately, give compounds **D** and E (C_4H_9ON) respectively. Identify **A, B, C, D** & E and write all the reactions involved. Name the reaction by which **B** is converted to **C** along with the mechanism. (10)

P.T.O.

(b) Write one test with reaction involved for distinction between the following pairs of compounds.

(i) Benzyl alcohol and phenol

(ii) Acetaldehyde and acetone (2×2.5)

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

(a) 3-Methylpentan-2-one

(b) Pentane-l,5-dioic acid

(c) n-Butyric acid

(d) Adipic acid

(e) 5,5-Diethylbarbituric acid

3. Explain the following : (5×3)

(a) Maleic acid is stronger than fumaric acid. However the second dissociation of fumaric acid occur more readily than maleic acid.

(b) S_N2 reactions involve complete inversion of configuration.

(c) Phenol is a weaker acid than *p*-nitrophenol.

(d) Vinyl chloride is less reactive than ethyl chloride towards nucleophilic substitution reactions.

(e) Methoxy benzene is prepared by reaction of methyl chloride and sodium phenoxide rather than from chlorobenzene and sodium methoxide.

4. Write the products for the following along with equations : (5×3)

(a) When α-, β-, and γ- hydroxy acids are heated separately.

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

(c) Phenol is heated with chloroform in the presence of sodium hydroxide followed by reaction with alkaline $KMnO_4$.

(d) 2-Phenyl-1-ethanol is treated with dil. NaOH.

(e) Formic acid and malonic acid are hearted separately.

5. How will you carry out the following conversions? (5×3)

(a) Propanoic acid to lactic acid

(b) Phenol to aspirin

(c) Propanal to 2-butanol

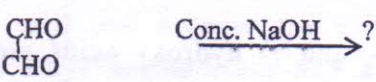
(d) Phenylacetaldehyde to phenylacetamide

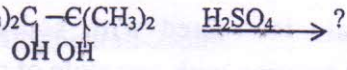
(e) Aniline to iodobenzene.

P.T.O.

6. Complete the following reactions. Write the mechanism of the reaction involved. (3×5)

(a) $C_6H_5CONH_2 \xrightarrow{Br_2/NaOH} ?$

(b) 

(c) 

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. (3×5)

(a) Benzoin condensation

(b) Perkin reaction

(c) Wittig reaction

(d) Claisen rearrangement

(e) Dieckmann reaction