

**5803**

**8**

(iii) Hinsberg's test

(iv) Henry reaction

(v) Benzoin Condensation

(5×3=15)

(2000)

[This question paper contains 8 printed pages.]

**Your Roll No.....**

**Sr. No. of Question Paper : 5803**

**K**

Unique Paper Code : 2172012302

Name of the Paper : DSC Carbonyls, Carboxylic  
Acids, Amines, Nitro  
Compounds, Nitriles, Isönitriles  
And Diazonium Salts

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

Semester : III

Duration : 3 Hours

Maximum Marks : 90

**Instructions for Candidates**

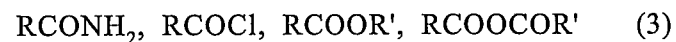
1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **SIX** Questions out of **EIGHT**.
3. All parts of a question should be attempted together.
4. Each question carries **15** marks.

P.T.O.

1. (a) A resolvable amine (A) is subjected to Hoffman Exhaustive Methylation with MeI to give (B). (B) When subjected to Hoffman Elimination gives an alkene (C). On reductive ozonolysis the isolated alkene (s) yield on equimolar mixture of Methanal and Butanal. Deduce the structure of A, B and C. Write the all reactions. (6)

(b) Write action of heat on  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  hydroxyacids. (4)

(c) Write the relative order of the following acid derivatives towards nucleophilic substitution reactions



(d) Which is more acidic :

Malonic Acid or Acetic Acid (2)

2. (a) Write the synthesis of the following from Acetoacetic ester **OR** malonic ester (**any three**)

(i)  $\gamma$ -Keto valeric acid

(ii) Acetyl Acetone

(ii) Nitriles are less basic than primary amine.

(iii) Cope elimination of amine oxide is cis elimination reaction.

(iv) Strong acidic or strong basic condition prevent coupling reactions of arylamines.

(3×2=6)

(b) Synthesise Ethyl acetoacetate by Claisen condensation. Write the mechanism involved.

(4)

(c) What is an active methylene compound? Give one examples other than Malonic ester and Ethyl acetoacetate. (3)

(d) N-Ethyl, N-methyl amine is chiral but non resolvable. However  $\text{C}_6\text{H}_5\text{N}^+(\text{CH}_3)(\text{C}_2\text{H}_5)(\text{C}_3\text{H}_7)\text{Cl}^-$  is resolvable. (2)

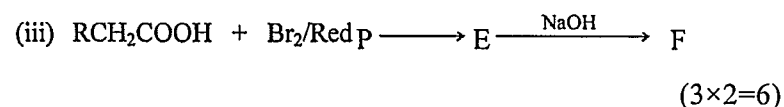
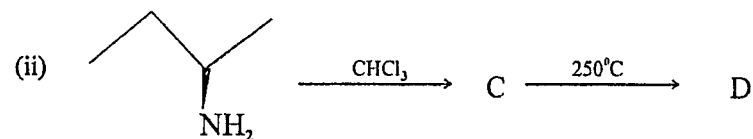
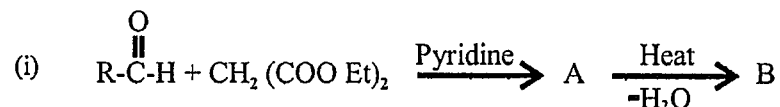
8. Write short notes (**any three**)

(i) Benzilic acid rearrangement

(ii) Hoffmann Bromamide reaction

5803

6



(b) Convert the following :

(i) Aniline to 1, 3, 5 – tribromobenzene

(ii) Acetanilide to o-dinitrobenzene (2×2=4)

(c) Explain why acid chloride is more reactive than alkyl halide towards nucleophilic substitution reactions. (3)

(d) How will you convert nitrobenzene into p-amino phenol. (2)

7. (a) Explain any three :

(i) How can one distinguish between aniline, diethyl amine and triethylamine using Nitrous acid? Give the reaction involved.

5803

3

(iii) Adipic Acid

(iv) α-Methyl succinic acid (3×2=6)

(b) How will you differentiate between?

(i)  $\text{C}_6\text{H}_5\text{COCH}_3$  and Cyclohexanone

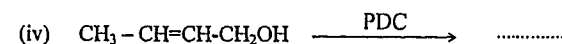
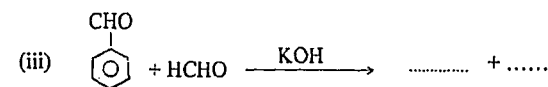
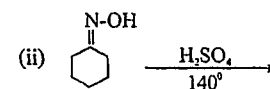
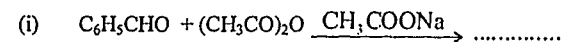
(ii)  $\text{C}_6\text{H}_5\text{CONH}_2$  and  $\text{C}_6\text{H}_5\text{NH}_2$  (2×2=4)

(c) Write the increasing order of reactivity towards nucleophile addition reaction give reason :

$\text{HCHO}$ ,  $\text{CH}_3\text{COCH}_3$ ,  $\text{CH}_3\text{CHO}$  (3)

(d) Why the presence of a small amount of acid increases the nucleophile addition reaction in carbonyl compounds. (2)

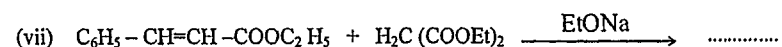
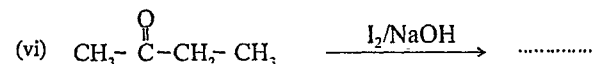
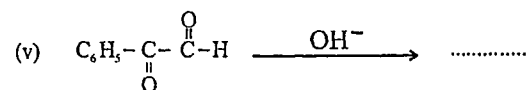
3. Predict the product and name of reaction involved :



P.T.O.

5803

4



(15)

4. (a) An organic compound A ( $\text{C}_4\text{H}_9\text{NO}$ ) on treatment with bromine and aq. NaOH forms compound B ( $\text{C}_7\text{H}_9\text{N}$ ). (B) on treatment with  $\text{NaNO}_2$  and dil HCl gives C ( $\text{C}_3\text{H}_8\text{O}$ ) along with the evolution of  $\text{N}_2$  gas. (C) forms Iodoform with Iodine and aq.  $\text{Na}_2\text{CO}_3$ . Identify (A), (B), (C). Give sequence of reaction and name reaction involved in (A) to (B). (6)

(b) Convert (Any two)

(i) Aniline to Fluorobenzene

(ii) Aniline to p-Nitroaniline

(iii) Nitrobenzene to m-Nitrophenol. (2×2=4)

(c) Explain :

Addition of Ammonia derivatives to carbonyl compounds requires an optimum pH 3.5. (3)

5803

5

(d) Write Sandmeyer's reaction to synthesise Iodobenzene. (2)

5. (a) Arrange the following in order of decreasing basic strength (Give Reason) :

(i) o-Anisidine

(ii) p-Nitro aniline

(iii) o-Nitro aniline

(iv) Aniline (6)

(b) Nitrobenzene and Aniline do not undergo Friedal Craft reaction explain. (4)

(c) Explain how Hoffman Elimination can be used for distinguishing 2-methyl pyrrolidine and 3-methyl pyrrolidine. (3)

(d) Write the specific role of cyanide ion in Benzoin condensation. (2)

6. (a) Complete any two of the following reaction. Write the name reaction wherever involved.

P.T.O.