

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 8457

C

Roll No.....

Unique Paper Code : 217303

Name of the Paper : CHHT-306 : Organic Chemistry – II

Name of the Course : B.Sc. (H) Chemistry, Part II
(Admission of 2010 and onwards)

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. An organic compound A (C_2H_4O) forms precipitate with 2,4-Dinitrophenylhydrazine and gives positive haloform and Tollen's reagent tests. Compound A reacts with dilute sodium hydroxide to form compound B ($C_4H_8O_2$) which on heating with acetic acid as catalyst form two isomeric compounds C and D (C_4H_6O). Compound C and D form cyanohydrins with HCN and also react with bromine. Identify A, B, C, D, E and F and write all the reactions involved. Name the reaction involved with mechanism for the conversion of compound A to compound B. (15)

2. (a) How will you synthesize the following from Diethylmalonate or Ethylacetoacetate :

(i) 4-Methyl uracil

(ii) Succinic acid

(iii) Acetyl Acetone

(3,3,3)

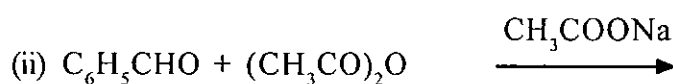
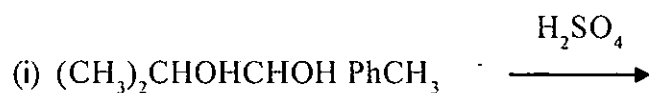
P.T.O.

(b) Explain the following :

(i) Ortho-chloroanisole and meta-chloroanisole give the common product with NaNH_2 and Liq. NH_3 .

(ii) Benzylchloride is more reactive than ethylchloride towards nucleophilic substitution reactions. (3,3)

3. (a) Complete the following reactions and give the name of the reaction with mechanism :



(b) (i) Why CN^- is highly specific base in Benzoin Condensation.

(ii) Give reasons and arrange the following in increasing order of reactivity towards nucleophilic reactions.



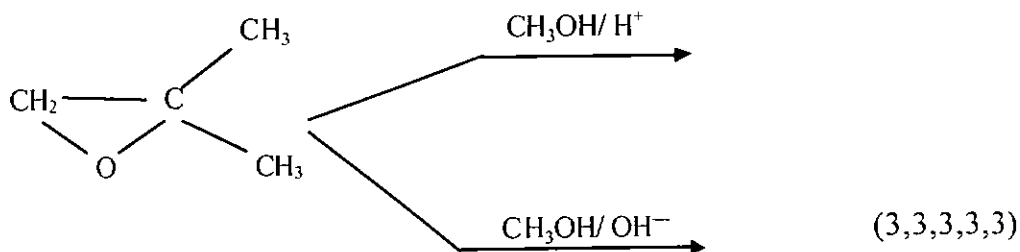
4. (i) What is the effect of heat on α , β , and γ -hydroxy acids ?

(ii) Explain with one example the stereochemical aspects of SN_1 reaction.

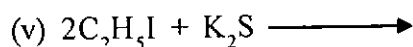
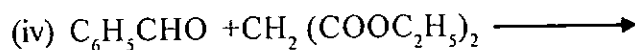
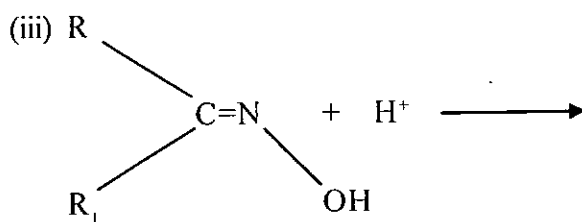
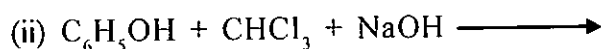
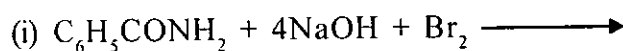
(iii) How will you synthesize cumene from phenol ?

(iv) Phenols are stronger acids than alcohols. Explain with resonating structures.

(v) Write the products and explain the reasons for the reaction given below :



5. (a) Give the products of the following reactions :



(b) Methoxybenzene gives phenol and methyl iodide on reaction with HI. Why iodobenzene and methyl alcohol are not formed in this reaction. (3)

6. (a) How will you distinguish 1° , 2° and 3° alcohols ?

(b) How will you prepare 2-methylpropan-2-ol from Grignard reagent ?

(c) What happens when citric acid is heated at $150^\circ C$?

(d) Ethylisobutyrate does not undergo claisen condensation in presence of sodium ethoxide. Explain.

- (e) Acid derivatives do not form 2,4- Dinitrophenylhydrazone though they have carbonyl group. (3,3,3,3,3)

7. Write short notes on **any three** of the following giving emphasis to

- (i) Functional group which undergo these reactions
- (ii) Product formed
- (iii) Reaction conditions and mechanism
- (iv) Freis rearrangement
- (v) Haloform reaction
- (vi) Cannizzaro reaction
- (vii) Alkaline hydrolysis of esters (5,5,5)