

(b) Write a short notes on any **three** of the following :

(i) Alkaline Ester Hydrolysis

(ii) Hell-Volhard Zelinsky Reaction

(iii) Claisen Condensation

(iv) Reformatsky Reaction

(c) Explain, why acid halides are more reactive than acid anhydrides. (2,3,3,3,4)

[This question paper contains 8 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4002

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Unique Paper Code : 2172512401

Name of the Paper : DSC : Chemistry of Carboxylic Acids & their Derivatives, Amines and Heterocycles

Name of the Course : B.Sc. (Prog.) LS/PS/IC/ Electronic Sciences

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

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

1. Write the synthesis of any **five** of the following compounds using Ethyl Acetoacetate.

(a) *n*-Butanoic acid

(b) Butanone-2

(c) Succinic acid

(d) Adipic acid

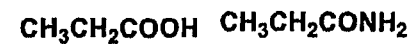
(e) Methyl ketone

(f) Crotonic acid

(3,3,3,3,3)

2. (a) Write the reaction for the synthesis of Tribromobenzene from aniline.

(b) Write the reaction of Diazotization and explain the mechanism.



i

ii



iii

- (e) Explain, acidic hydrolysis of furan led to the formation of furan hydrochloride salt which turns into brown resin in presence of O_2 .

(2,3,3,3,4)

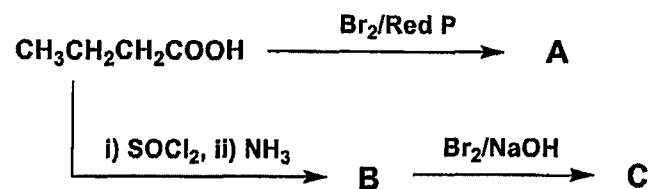
6. (a) Arrange the following in increasing order of their acidic Strength.

(i) $\text{CH}_3\text{CH}(\text{Cl})\text{COOH}$,

(ii) $\text{CH}_3\text{CH}(\text{NO}_2)\text{COOH}$,

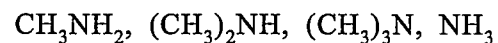
(iii) $\text{CH}_3\text{CH}(\text{CH}_3)\text{COOH}$,

(iv) $\text{CH}_3\text{CH}(\text{Br})\text{COOH}$



(2,3,3,3,4)

5. (a) Put the amines in their increasing order of basicity under gas phase :



- (b) Explain, why trichloroacetic acid is stronger acid than acetic acid?

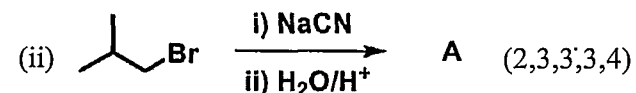
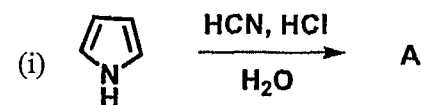
- (c) How will you synthesize phenol from benzenediazonium chloride.

- (d) Write the IUPAC name of the following heterocyclic compounds :

- (c) Explain, why Pyrrole behaves as both weak acid and weak base?

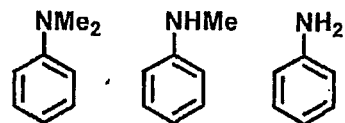
- (d) Arrange pyrrole, thiophene and furan in decreasing order of their aromaticity. Justify your answer.

- (e) Complete the following reactions and specify A?



3. (a) Pyridine undergoes nucleophilic substitution at position 2 and 4, explain.

(b) Explain basicity order of following amines :



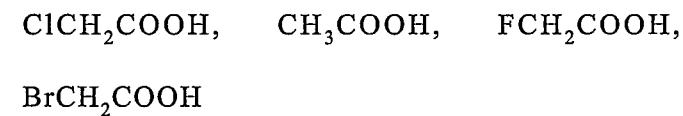
(c) Write the reaction involved when Furan treated with maleic anhydride and name the reaction.

(d) Write the name, reaction and mechanism for the synthesis of primary amines when acetamide reacts with Br_2 under alkaline condition.

(e) Distinguish between primary, secondary and tertiary amines by using benzene sulfonyl chloride.

(3,3,3,3,3)

4. (a) Arrange the following compounds in order of their increasing acidity :



(b) Explain Chichibabin reaction with suitable example.

(c) How do you synthesize 2,5-dimethyl pyrrole using Paal-Knorr Synthesis?

(d) Why tertiary amines with three different groups to nitrogen atoms do not show optical activity? Explain by taking a suitable example.

(e) Complete the following sequence of reactions giving structures of A, B and C. Also give the name of reaction.