

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2942

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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.)

Semester : IV

Duration : 2 Hours

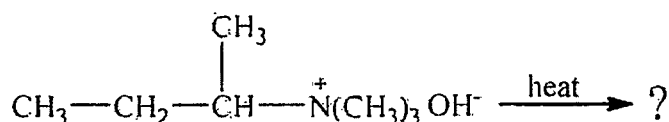
Maximum Marks : 60

Instructions for Candidates

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

1. (a) How will you prepare ethylamine from Gabriel Phthalimide Synthesis?

(b) Complete the following reaction :-

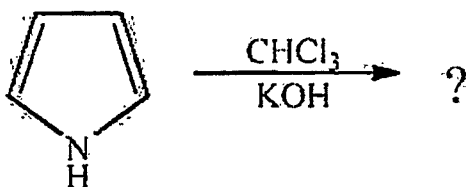
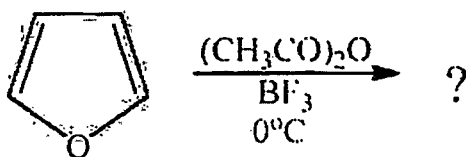
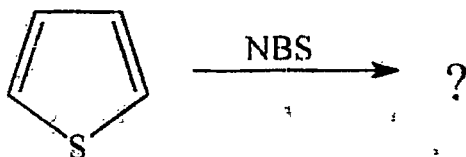


Name the reaction and write the mechanism involved.

- (c) Write the mechanism of alkaline hydrolysis of ethylacetate.
 - (d) Furan is the only five membered heteroaromatic compound which undergo Diels-Alder reaction. Justify the statement. (4,4,4,3)
2. (a) How will you separate the mixture of ethylamine and trimethylamine?
 - (b) What happens when aniline is treated with benzoyl chloride in presence of NaOH? Name the reaction and write the mechanism involved.
 - (c) Write short note on Reformatsky reaction.

P.T.O.

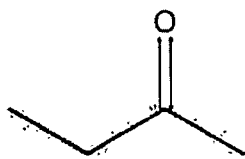
(d) Complete the following reactions :-



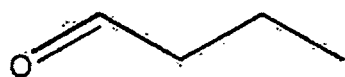
(4,4,4,3)

3. (a) Write the product/s formed on oxidation of the following carbonyl compounds with hot alkaline KMnO_4 followed by treatment with dil. HCl :

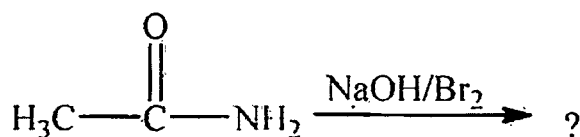
(i)



(ii)



(b) Name the following reaction and complete it with mechanism involved



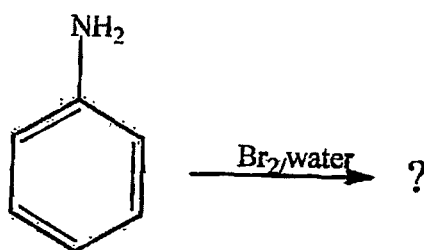
(c) How will you convert the following :-

(i) Furan to Furoic acid

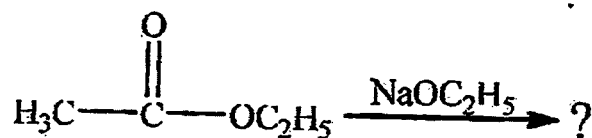
(ii) Pyridine to 2-ethyl pyridine

(d) Which of the form, keto or enol of ethylacetoacetate is steam volatile and why?
(4,4,4,3)

4. (a) Explain the product formed in the following reaction with mechanism :-



(b) Complete the following reaction :-



Write the name of the reaction and the mechanism involved.

(c) How will you synthesize furan from Paal Knorr synthesis?

(d) How will you distinguish aniline and diethylamine?
(4,4,4,3)

5. (a) Explain the order of reactivities of the following acid derivatives towards nucleophilic acyl substitution reactions acid chloride, acid amide, acid anhydride and esters.

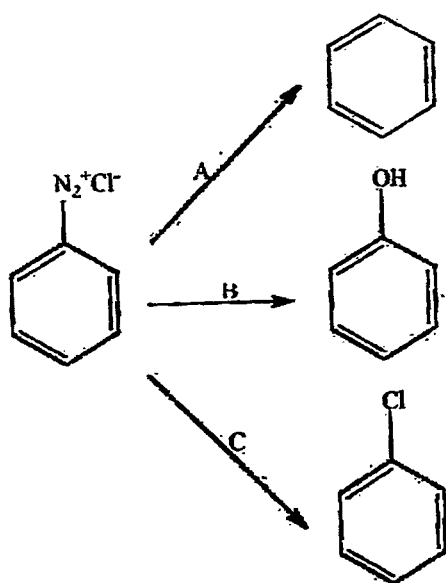
(b) Explain Perkin's reaction with its mechanism.

(c) How will you convert ethyl acetoacetate into

(i) 2,4-hexadione and

(ii) Succinic acid

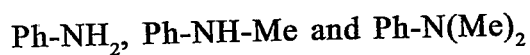
(d) Write the reagents A, B and C in the following reactions :- (4,4,4,3)



6. (a) Pyridine undergoes nucleophilic substitution reaction in addition to electrophilic substitution reaction. Justify the dual behaviour of Pyridine.

(b) How will you prepare crotonic acid from ethyl acetoacetate?

(c) Write down the increasing order of the basic strength of the following bases in gaseous phase:-



Explain the order.

(d) Why does aniline not undergo Friedel-Crafts reaction despite having a strongly activating $-\text{NH}_2$ group? (4,4,4,3)