

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3000

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Unique Paper Code : 2172542402

Name of the Paper : DSC: Functional group Organic Chemistry – I

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

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

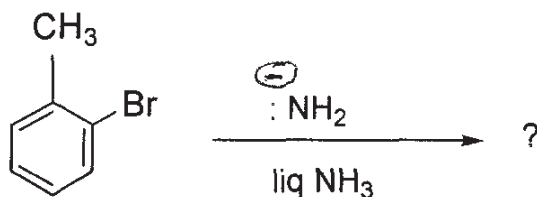
1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions.
3. Each question carries equal marks.

1. Give explanation for the following :

- (i) How will you prepare chlorobenzene by Sandmeyer reaction? Write the reaction steps.
- (ii) Write the chemical reaction of acetone with semicarbazide.
- (iii) Compare the acidic strength of alcohols and phenols? Give reason.
- (iv) How can you prepare the following compounds from the given alkyl halide C_2H_5Br :
 - (a) Nitrite and
 - (b) Nitro
- (v) Write the mechanism of Williamson ether synthesis. (3×5)

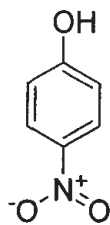
P.T.O.

2. (i) An unknown organic compound (A) gives H_2 on reacting with sodium metal? It also gives Iodoform test and forms an aldehyde on oxidation with acidic potassium dichromate. The molecular formula of the formed aldehyde is C_2H_4O . Name the compound(A) and give the equations of these reactions.
- (ii) Vinyl halides do not undergo S_N1 and S_N2 reaction. Explain the reason behind this.
- (iii) What is the directive effect of $-OH$ group on the aromatic ring in phenol? Write the bromination reaction of phenol step by step. (5,5,5)
3. (i) Why are aldehydes more reactive than ketones towards nucleophilic addition reactions?
- (ii) Write the mechanism of Pinacol-Pinacolone rearrangement.
- (iii) Give the mechanism of S_N1 reactions in alkyl halide. Arrange the following alkyl halides in decreasing order of reactivity towards S_N1 reaction.
- $(CH_3)_2CH-X$ $(CH_3)_3C-X$ CH_3-CH_2-X (5,5,5)
4. (i) Give the product of the following reaction with step-by-step mechanism. Write the name of the reaction:

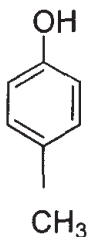


- (ii) How will you prepare 2-methylpropan-2-ol and propan-2-ol from Grignard reagent?

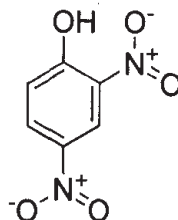
(iii) Arrange the following phenols in decreasing order of acidity. Give reason.



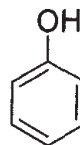
(a)



(b)



(c)



(d)

(5,5,5)

5. Write short note on **any three** of the following :

(i) Aldol condensation

(ii) Clemmensen reduction

(iii) Meerwein-Ponndorf-Verley reduction

(iv) Wittig reaction

(5,5,5)

6. Complete the following reactions and write the products of the reaction :

(1×15)

