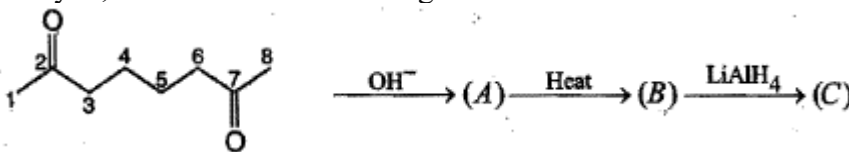
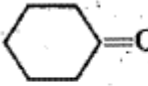
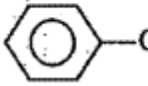


Name:			
Enrolment No:			
UPES End Semester Examination, Dec. 2025 Course: Chemistry of Functional Groups Program: BSc Chemistry Course Code: CHEM2040 Instructions: 1. Read all the questions carefully and attempt questions of one section in one place. 2. Question 9 in Section B and Question 11 in Section C have internal choice questions. 3. Use of Calculator is allowed. Semester: III Time: 03 hrs. Max. Marks: 100			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q1	Discuss the reactivity order of carbocations in SN1 and SN2 reactions.	4	CO1
Q2	Differentiate between a nucleophile, base, and a leaving group with suitable examples.	4	CO1
Q3	Provide a detailed mechanism for Iodoform Reaction. What is the utility of this reaction in functional group identification ?	2+2	CO2
Q4	Write the stepwise mechanism of Benzoin condensation.	4	CO2
Q5	Identify A, B and C in the following reaction. 	2+1+1	CO1
SECTION B (4Qx10M=40Marks)			
Q6	How will you differentiate between the following. a. Acetaldehyde and acetone b. Ethyl alcohol and acetone c. Diethyl ether and acetone	4+3+3	CO1
Q7	How will you reduce ketones to secondary alcohols with aluminum isopropoxide in propan-2-ol solution ? Provide a mechanism for this reaction.	10	CO1
Q8	Analyze the effect of solvents on the reactivity of alkyl halides with suitable examples.	10	CO2

Q9	Justify the statement: Basicity of amines varies in gas phase and in aqueous solution. OR Compare the basicity of the following. (a) $\text{H}_2\text{C}=\text{CHCH}_2\text{NH}_2$, (b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$, (c) $\text{HC}\equiv\text{CCH}_2\text{NH}_2$.	5+5	CO3
SECTION C (2Qx20M=40Marks)			
Q10	Complete the following reactions. (i) $\text{CH}_3\text{NH}_2 + \text{CHCl}_3 + \text{KOH} \xrightarrow{\text{Heat}}$ (ii) $\text{RNH}_2 + \text{CHCl}_3 + \text{KOH} \xrightarrow{\text{Heat}}$ (iii) $\text{C}_2\text{H}_5\text{NH}_2 + \text{C}_2\text{H}_5\text{I}(\text{excess}) \longrightarrow$ (iv) $\text{C}_2\text{H}_5\text{NH}_2 + \text{NaNO}_2 + \text{HCl} \longrightarrow$ (v) $\text{CH}_3\text{CONH}_2 + \text{Br}_2 + \text{NaOH} \longrightarrow$	4+4+4+4+4	CO2
Q11	Complete the following reactions. (a)  $\xrightarrow{\text{Dil. NaOH}}$ (A) $\xrightarrow{\text{Sn(Hg)} + \text{Conc. HCl}}$ (B) (b)  $\xrightarrow{\text{NaOH}}$ (C) $\xrightarrow{\Delta, \text{NaHSO}_4}$ (D) $\xrightarrow{\text{H}_2/\text{Ni}}$ (E) OR How will you chemically separate a mixture of amines ? Provide the name of the reagent and the reactions involved.	10+10	CO3