

(3 Hours)

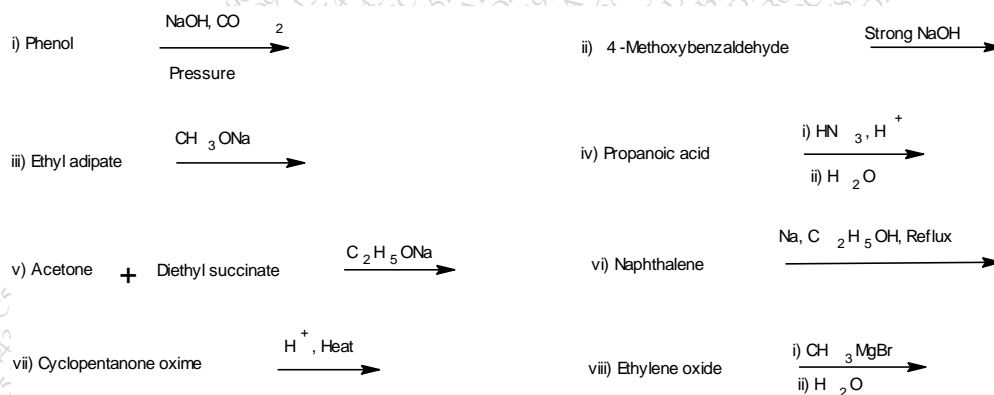
[Total Marks: 70]

**N.B.: 1. All questions are compulsory****2. Figures to right indicate full marks****Q1) A] Answer the following questions**

- i) Briefly discuss the following terms: Dihedral angle, ring flipping (2)
- ii) Give any one functional group identification tests of benzaldehyde and ester (2)
- iii) Draw all possible resonating structures for anthracene (1)

**B] State true or false**

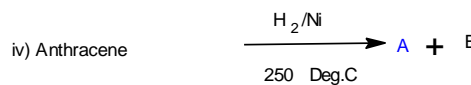
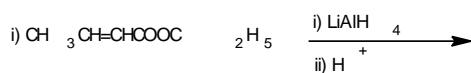
- i) Aldehydes undergo electrophilic addition reaction (4)
- ii) Electrophilic substitution of naphthalene is preferred at  $\alpha$ -position
- iii) Cis-cyclohexane-1,4-diol exist predominantly in chair form
- iv) Lucas test is the confirmatory test for alcohols

**C] Give the products for the following reactions (Any six) (6)**

Q2) A] Give the mechanism of any two rearrangement of the following (4)

- i) Favorski rearrangement
- ii) Pinacol-pinacolone rearrangement
- iii) Steven alkylation

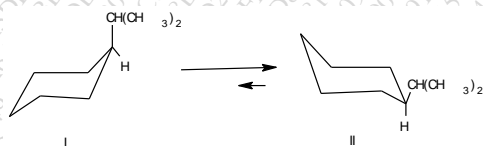
B] Complete the following reactions (4)



C] Give any two methods for preparation of amines. What is diazotization? (3)

Q3)A] Draw important conformers of n-butane and explain their relative stability (3)

B] Account for the following observation (3)



For Isopropyl cyclohexane conformer I is present only 3% while II is 97% at room temperature (2)

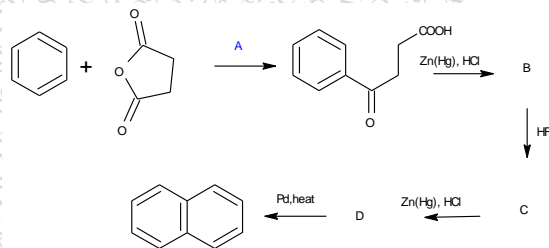
C] Attempt the following conversions (Any three) (6)

- i) Ethyl acetate to ethyl acetoacetate
- ii) Trimethylbenzylammonium chloride to ortho-methyl dimethyl benzylamine
- iii) o-methylbenzophenone to anthracene (getting repeated down Q4, you can change benzene to Elbs reaction)
- iv) n-butanol to n-pentane

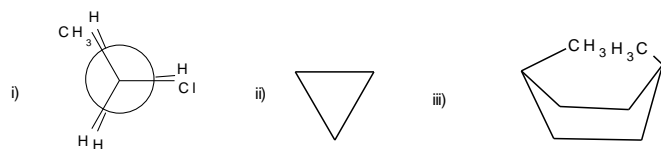
Q4) A] i) Give any two methods of preparation of methyl ethyl ether (2)

ii) By using diethyl malonate as a starting material how will you obtain 2,2-dimethylethanoic acid (2)

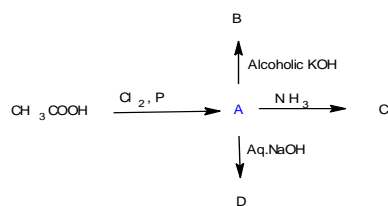
B] Complete the following pathway and identify A,B, C and D (4)



C] State the type of strain in each the following (3)



Q5) A] Complete the following reaction pathway (Alcohol, phenol and amide conversions) (4)



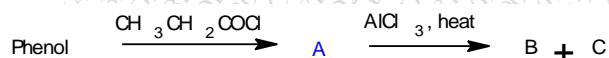
B] Give the mechanism of acid catalyzed Beckman's rearrangement using suitable example and which different catalysts can be used? (4)

C] Explain Hinsberg's test for aliphatic amines with suitable examples. (3)

Q6)A] Convert the following (4)

- i) Aniline to Iodobenzene
- ii) Ethyl pentanoate to pentanol
- iii) Salicylaldehyde to catechol
- iv) Acetophenone to cinnamic acid

B] Complete the following reaction pathway (3)



C] Describe simple chemical tests to distinguish (Any 4) (4)

- i) Propionic acid and pentyl alcohol
- ii) Ethyl butanoate and butanoic acid
- iii) Benzamide and benzoic acid
- iv) Benzyl alcohol and phenol
- v) Acetophenone and formaldehyde