

ORGANIC CHEMISTRY-II

(Common with B.Sc. Biotechnology, Industrial Microbiology : Part - III)
Semester-III

Time : Three Hours]

[Maximum Marks : 35

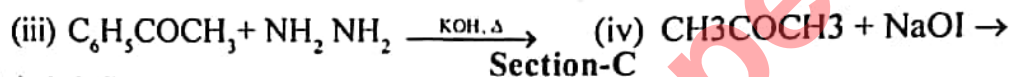
Note : Attempt two questions each from Section A and B carrying 7 marks each, and the entire Section C consisting of 7 short answer type questions carrying 1 mark each.

Section-A

- I. (a) Discuss at least two methods by which primary, secondary and tertiary alcohols can be distinguished. 5.2
(b) Explain why acid catalysed dehydration of tert. butyl alcohol occurs faster than n-butyl alcohol.
- II. (a) How is Glycerol react with the following :
(i) Excess of HI. (ii) Oxalic acid at 383K and 503K. (iii) KHSO_4 . 4.3
(b) Discuss the mechanism of Pinacol-Pinacolone rearrangement.
- III. (a) Ortho and Para Nitro-phenols are more acidic than m-Nitrophenol. Explain. 4.3
(b) Discuss the mechanism of Reimer-Tiemann reaction.
- IV. (a) Phenol + $\text{C}_2\text{H}_5\text{COCl} \rightarrow \text{A} \xrightarrow{\text{AlCl}_3/\text{CS}_2} \text{B} + \text{C}$ What are A, B and C ? What familiar rearrangement is involved in the formation of B and C from A ? Give its accepted mechanism. 4.3
(b) Give the mechanism of Gattermann synthesis.

Section-B

- V. What is Aldol condensation ? Discuss the mechanism of acid and base catalysed Aldol condensation reactions. What is the important difference between the two ? Illustrate your answer with examples. 7
- VI. (a) What are Acetals ? Explain, giving an example, how they can be used as protecting group. 4.3
(b) Write a note on Mannich reaction.
- VII. (a) Discuss the mechanism of the following :
(i) Benzoin condensation. (ii) Knoevenagel condensation. 5.2
(b) α -hydrogens of carbonyl compounds are acidic while β -hydrogens are not. Explain.
- VIII. (a) Write a note on Wittig reaction.
(b) Complete the following reactions :
(i) $\text{C}_6\text{H}_5\text{CHO} + \text{Conc. NaOH} \rightarrow$ (ii) $\text{C}_6\text{H}_5\text{COCH}_3 + \text{Cl}_2 (\text{excess}) + \text{NaOH} \xrightarrow[\text{100}^\circ\text{C}]{\text{100}^\circ\text{C}}$



3,4

Section-C

IX. Explain briefly :

- Why formaldehyde does not respond to Aldol condensation ?
- How will you distinguish between 2-Pentanone and 3-Pentanone ?
- Aldehyde reduce Fehling solution but Ketones do not. Explain.
- What happens when Ethylene glycol is treated with $P + I_2$ or HI ?
- How is Glycol obtained from Propylene.
- Out of Phenol and Ethanol which is more acidic, and why ?
- What happens when Phenol is heated with Phthalic Anhydride in the presence of conc. H_2SO_4 acid ?

$7 \times 1 = 7$