

ORGANIC CHEMISTRY

(Common with B.Sc., B.Sc. Biotechnology, B.Sc. Industrial
Microbiology Semester-III) – II
Paper - I

Time Allowed : Three Hours]

[Maximum Marks : 35

Note : The candidates are required to 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 marks.

Section : A

- (a) Discuss the preparation of alcohols from Ketones using two reducing agents laying emphasis on the mechanism of the reaction involved in each case.

(b) What happens when 1-Propanol reacts with :
(i) a small amount of Conc. H_2SO_4 at 393 K
(ii) ethanoic acid in the presence of Conc. H_2SO_4 acid ?
- (a) How does GLYCEROL react with the following : 5,2
(i) Excess of HI (ii) Oxalic acid at 383 K and 503 K (iii) $KHSO_4$?
- (a) What is CUMENE ? How can it be converted into phenol ? 4,3

- (b) Give the mechanism of : (i) GATERRMANN Synthesis (ii) HAUBEN-HOESCH reaction. 2,5
4. (a) What happens when Phenol is treated with : (i) Bromine water (ii) CO_2 at 400 K, 5 atm pressure in presence of Alkali. (iii) ACETIC ANHYDRIDE and PYRIDINE ?
- (b) Introduction of $-\text{NO}_2$ group in aromatic nucleus increases the acidity of Phenols but introduction of $-\text{CH}_3$ groups in the nucleus decreases the acidity of Phenols. Explain giving reasons. 3,4
- Section : B**
5. Discuss the mechanism of halogenation of Ketones under acidic and basic condition. Explain why under acidic conditions, halogenation stops after introduction of one halogen atom but under basic conditions, it continues till all the α -hydrogens are substituted. 7
6. (a) How can you prepare Aldehydes and Ketones from : (i) ACID CHLORIDE (ii) 1,3-DITHANE ?
- (b) How can you prepare Ketones from ? (i) CARBOXYLIC ACIDS (ii) NITRILES ? 4,3
7. (a) Discuss the mechanism of : (i) BENZOIN Condensation (ii) BAEYER-VILLIGER oxidation.
- (b) pH control is very important addition of ammonia derivatives to Aldehydes and Ketones. Explain. 5,2
8. (a) What are Phosphorous YLIDES ? How are these formed ? Explain their reaction with carbonyl compounds. 4,3
- (b) Write a short note on MANNICH reaction. **Section : C**
9. Explain briefly :
- (a) Give the IUPAC name of the only primary alcohol that gives a positive IODOFORM test.
- (b) Why are aldehydes stronger reducing agents than Ketones ?
- (c) Arrange the following in order of increasing acidity : water, phenol, ethyl alcohol and benzoic acid.
- (d) How can SALICYLIC acid be prepared from PHENOL ?
- (e) Name the reagent which can be used to distinguish between 1,2 PROPANEDIOL and 1,3-PROPANEDIOL.
- (f) Complete the reaction : $2\text{HCHO} + \text{NaOH} \rightarrow$
- (g) Write the structure of the Phenol with M.F. $\text{C}_7\text{H}_8\text{O}$ which on treatment with Br_2 water readily gives a precipitate of $\text{C}_7\text{H}_5\text{OBr}_3$. 7×1=7