Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2133501 Date: 18/12/ 2014

Subject Name: Organic Chemistry

Time: 02:30pm – 05:00pm Total Marks: 70

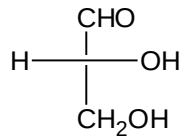
Instructions:

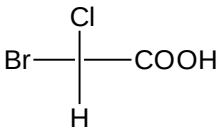
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

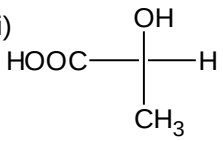
Q.1 **(a)** Explain SN_2 mechanism in detail. **07**

(b) Draw the flow chart showing the chemical reactions of phenol. **07**

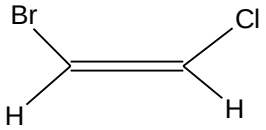
Q.2 **(a)** (i) Assign R and S configuration for **07**

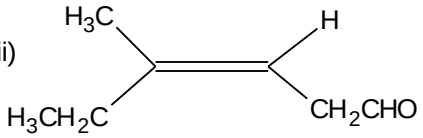
(i) 

(ii) 

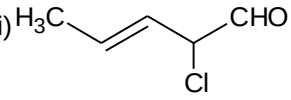
(iii) 

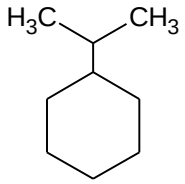
(ii) Assign E and Z configuration for

(i) 

(ii) 

(iii) Give IUPAC names for

(i) 

(ii) 

(b) Write a note on inductive effect and Hyperconjugation. **07**

OR

(b) Write a note on Mesomeric effect and explain Resonance energy . **07**

Q.3 **(a)** Give generation, structure and reactions of Carbonium ion. **07**

(b) Explain the mechanism of Hydroboration-oxidation reaction in detail. **07**

OR

Q.3 **(a)** Give generation, structure and reactions of Carbanion. **07**

(b) Explain the mechanism of Benzidine rearrangement and Pinacol-Pinacolone rearrangement. **07**

Q.4 **(a)** Classify isomers. Explain the principle and working of polarimeter. **07**

(b) Explain walden inversion. Write a note on meso compounds. **07**

OR

Q.4 **(a)** Explain enantiomers, diastereoisomers and enantiomers. **07**

(b) Define Stereospecific and Stereoselective reactions. Write a note on conformational analysis of cyclobutane and cyclohexane. **07**

Q.5 **(a)** What will happen when Benzene sulphonic acid reacts with fuming sulphuric acid, bromine, PCl_5, sodium hydroxide, nitric acid, $SOCl_2$. Show the reactions with IUPAC names of all the products (wherever possible). **07**

(b) Explain the following name reactions with detailed mechanism & applications **07**
(i) Hofmann reaction (ii) Ozonolysis

OR

Q.5 **(a)** What will happen when aniline reacts with Acetyl chloride, Methyl iodide, Benzaldehyde, Nitrous acid, Potassium dichromate, Bromine and Sulphuric acid. Show the reactions with IUPAC names of all the products(wherever possible). **07**

(b) Explain the following name reactions with detailed mechanism & applications **07**
(i) Cannizaro reaction (ii) Hydrogenation

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