

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER • 2014****Subject Code: 130404****Date: 26-05-2014****Subject Name: Organic Chemistry and Unit Processes****Time: 02.30 pm - 05.00 pm****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)** Answer the following: **14**
- (i) What do you understand by hybridization?
 - (ii) Define 'asymmetric carbon' with a suitable example.
 - (iii) What is 'invert sugar'? Explain.
 - (iv) Explain why chloroacetic acid is stronger acid than acetic acid.
 - (v) Define 'saponification value'.
 - (vi) Give two chlorinating agents.
 - (vii) What is 'transesterification'? State one use of it.
- Q.2 (a)** With reactions, discuss the chemical properties of carboxylic acids. **07**
- (b)** Using the concept of hybridization, explain the bonding in methane and ethylene. Also show that the hybridization concept gives a better description of geometry of molecules. **07**
- OR**
- (b)** What do you understand by 'stereoisomerism'? With suitable example, discuss about its classification. **07**
- Q.3 (a)** Describe the method for the manufacture of sucrose (table sugar) from cane, with flow chart. **07**
- (b)** Discuss about the structure, preparation and properties of glucose. **07**
- OR**
- Q.3 (a)** State the uses of acetic acid. Describe quick vinegar process for the preparation of acetic acid, with a neat experimental setup. **07**
- (b)** What do you understand by nucleophilic substitution reaction? With suitable examples of each type, discuss its classification. **07**
- Q.4 (a)** Discuss about the refining, the properties and the uses of nickel. **07**
- (b)** Describe the mechanism of esterification of carboxylic acid. **07**
- OR**
- Q.4 (a)** What is 'steel'? Giving properties of each type, how steels are classified depending upon carbon content. **07**
- (b)** Give an ore of titanium. Stating the properties and uses, briefly describe the extraction of titanium from its ore. **07**
- Q.5 (a)** Describe the continuous nitration of benzene using nitric acid- fortified spent acid, with process flow diagram. **07**
- (b)** State two sulfonating agents. Cite one application of sulfonation reaction. Also discuss the process with a neat process flow diagram. **07**
- OR**
- Q.5 (a)** With a neat process flow diagram, describe the continuous counter current hydrolysis of fats. **07**
- (b)** State one alkylating agent. Cite an application of alkylation reaction. Also describe the process with reaction. **07**
