

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III (New) EXAMINATION – WINTER 2015

Subject Code:2130501**Date:18/12/2015****Subject Name: Organic Chemistry and Unit Process****Time: 2:30pm to 5:00pm****Total Marks: 70****Instructions:**

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

- Q.1 Short Questions 14**
- 1 What is free radical? Give examples.
 - 2 A reaction in which unsaturated hydro carbon participates is called _____ .
 - 3 What are Enantiomers?
 - 4 What are Racemic mixtures?
 - 5 Common name of Ethanoic Acid is _____.
 - 6 What is esterification?
 - 7 A five membered heterocyclic compound containing oxygen atom is called_____.
 - 8 Non-hydrosible carbohydrates are called_____.
 - 9 Give the general formula of Amino acid and Zwitter ion.
 - 10 What is an antiseptic?
 - 11 Benzene is colourless while Nitrobenzene is pale yellow in colour. Why?
 - 12 What are nitrating agents?
 - 13 Malachite Green is which type of dye?
 - 14 What is thermal cracking?
- Q.2 (a) Explain Carbonium ion, Carbanion and Carbenes. 03**
(b) Differentiate between Nucleophile and Electrophile. 04
(c) What is an organic mechanism? Explain Friedel-Craft reactions with suitable illustrations. 07
- OR**
- (c) Explain nucleophilic substitution reaction with suitable illustrations. 07**
- Q.3 (a) What is stereo chemistry? Explain optical activity. 03**
(b) Explain optical isomerism in tartaric acid. 04
(c) Explain nitration reaction in detail and what are industrial applications of oxidation process. 07
- OR**
- Q.3 (a) What are heterocyclic compounds? Give name of five membered and six membered heterocyclic compounds with their formulae. 03**
(b) Mention physico-chemical properties of Furan. 04
(c) Give mechanism and application of Cannizzaro reaction and Wolf-Kishner reaction. 07
- Q.4 (a) What are carboxylic acids? What are acid amide and esters? 03**
(b) What are carbohydrates? Classify them with examples. 04
(c) Discuss preparation and properties of carboxylic acids. 07
- OR**
- Q.4 (a) What are proteins? Mention qualitative tests of proteins. 03**
(b) How will you convert glucose to fructose? 04
(c) What is a colour? Explain various theories governing colour. 07

- Q.5** (a) Define : Dyes, Pigments and Antibiotics **03**
(b) Explain Azodyes and Vatdyes. **04**
(c) Give synthesis of aspirin and paracetamol. **07**

OR

- Q.5** (a) Define : Knocking, Octane number and Cetane number **03**
(b) What are the requisites of an ideal fuel? **04**
(c) Explain fractional distillation of crude oil with a labeled diagram. Also give applications of each fraction. **07**
