

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

# GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III (Biotechnology) Examination December 2009

**Subject code: 130404**

**Subject Name: Organic Chemistry and Unit Processes**

**Date: 21 /12 / 2009**

**Time: 11.00 am – 1.30 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) What are organic reactions? Classify organic reactions and explain substitution reaction along with examples. **06**
- (b) Give functional derivatives of carboxylic acids with examples. **04**
- (c) Give the metallurgy of iron? **04**

- Q.2**
- (a) What is meant by unit process? What is its utility for industrial purpose? Explain nitration. **06**
- (b) Mention general steps involved in metallurgy with suitable examples. **04**
- (c) Convert: **04**
- i) Toluene to benzyl chloride
  - ii) Naphthalene to 1,8 – di nitro naphthalene

**OR**

- (b) Give physico-chemical applications of Uranium. **04**
- (c) Fill in the blanks: **04**
- i) Substitution reaction takes place in \_\_\_\_\_ type of hydrocarbons.
  - ii) Carbohydrates are \_\_\_\_\_ aldehydes and ketones.
  - iii) Glucose is \_\_\_\_\_ type of sugar.
  - iv) Transfer of electron results to \_\_\_\_\_ bonds.

- Q.3**
- (a) How can the mechanism be studied for organic compounds? Explain in detail. **06**
- (b) Explain hybridization taking place in methane and ammonia molecule. **04**
- (c) Mention principle involved in concentration techniques for metals. **04**

**OR**

- Q.3**
- (a) What is hybridization? Mention types of hybridization with suitable examples. **06**
- (b) Explain oxidation reaction with suitable examples. **04**
- (c) What is thermite process? What is its utility? **04**

- Q.4**
- (a) What are carbohydrates? Classify giving suitable examples and explain the structure of glucose in detail. **06**
- (b) How is also hexoses converted to keto hexoses? **04**
- (c) Explain Walden inversion with example. **04**

**OR**

- Q.4** (a) Explain alkylation on the basis of unit processes. **06**  
(b) What is flux? What is its nature? Name the substance formed when flux combines with gangue impurity in metallurgical processes. **04**  
(c) Explain amination by aminolysis. **04**

- Q.5** (a) What is optical activity? Explain in detail with ray diagram. **06**  
(b) What are carboxylic acids and give IUPAC names of straight chain saturated compounds containing carbon atom 16 and 18. **04**  
(c) Explain halogenations on the basis of unit process with examples. **04**

**OR**

- Q.5** (a) Explain: **06**  
i) Enantiomerism and distereomerism  
ii) Racemic modification.  
(b) Mention physico – chemical property of steel with its application. **04**  
(c) Explain concept of Chirality. **04**

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