

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE SEM-III Examination May 2012**  
**Subject code: 132805**  
**Subject Name: Organic Chemistry**

Date: 12/05/2012

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) Fill in the blanks: 07**
1. When isomerism is caused by the different arrangements of atoms or groups in space the phenomenon is called \_\_\_\_\_.
  2. Organic liquids which are immiscible with water but volatile in steam and possessing fairly high vapour pressure are purified by \_\_\_\_\_ distillation.
  3. A measure of the tendency of an atom in a molecule to attract electrons to itself is called its \_\_\_\_\_.
  4. An ion containing a positively charged carbon centre is called a \_\_\_\_\_ ion.
  5. Williamson synthesis is the method of preparation of \_\_\_\_\_ from alkyl halides on treatment with metal alkoxides.
  6. According to Huckel Rule a system having aromatic character will have \_\_\_\_\_  $\pi$  electrons.
  7. Chirality is the necessary condition for a molecule to exhibit \_\_\_\_\_ isomerism.
- (b) Define the following terms: 07**
- (1) Carbanions
  - (2) Bond length
  - (3) Racemic mixture
  - (4) Electrophile
  - (5) Enantiomers
  - (6) Electromeric effect
  - (7) Protic solvent
- Q.2 (a) What are the general physical properties of phenols? Explain different methods of preparation of alcohols. 07**
- (b) 1. How bond fission occurs in a covalent bond? 04**  
**2. Write a note on vacuum distillation. 03**
- OR**
- (b) 1. Explain inductive effect in detail. Compare it with electromeric effect. 04**  
**2. Explain crystallisation method for purification of organic solid compounds. 03**
- Q.3 (a) Write a brief account of optical activity in organic compounds with examples. Explain the terms dextrorotatory, laevorotatory and meso as applied to optical isomers. 07**
- (b) 1. Explain Huckel Rule for six member and five member heterocyclic compounds with suitable examples. 04**  
**2. Differentiate between substitution and addition organic reactions with examples. 03**

**OR**

- Q.3** (a) Write the preparation, properties and uses of Anthracene. **07**  
(b) 1. Explain fractional distillation. **04**  
2. Write preparation and properties of Furan. **03**
- Q.4** (a) Explain general methods of preparation of carboxylic acids. Give the points of difference of aldehyde and ketone. **07**  
(b) Define the following: **07**  
1. Bonding molecular orbital  
2. Shell  
3. Sigma bond  
4. Pauli's Exclusion Principle  
5. Resonance  
6. Hybridization  
7. Bond length
- OR**
- Q.4** (a) Write the preparation, properties and uses of Naphthalene. **07**  
(b) Write the general methods of preparation and general and chemical properties of alkyl halides. **07**
- Q.5** (a) Explain preparation, properties and reactions of Pyrrole and Pyridine. **07**  
(b) 1. Explain the chemistry of Sodium Fusion Test for elemental analysis of organic compound. **04**  
2. Explain preparation, properties and uses of amides. **03**
- OR**
- Q.5** (a) Explain in detail about Electrophilic and Nucleophilic Addition Reactions. **07**  
(b) 1. Write preparation, properties and uses of Thiophene. **04**  
2. How solubility test to characterize organic compound is carried out in laboratory? **03**

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