

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – WINTER 2013****Subject Code: 132805****Date: 10-12-2013****Subject Name: Organic Chemistry****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. Homolytic bond fission produces _____.
 2. Acetaldehyde is the only aldehyde which gives _____ reaction.
 3. Aromaticity in a system can be proven by _____ Rule.
 4. The isomerism which is simply due to difference in the arrangement of atoms within the molecule is termed _____ isomerism.
 5. An ion containing _____ charged carbon centre is called carbonium ion.
 6. _____ is the necessary condition for a molecule to exhibit optical isomerism.
 7. _____ Distillation is used in industry for the recovery of various essential oils from plants and flowers.
- (b)** Define the following terms: **07**
- (1) Tetravalency of carbon (2) Electronegativity
(3) Poly nuclear aromatic hydrocarbons (4) Heterocyclic compounds
(5) Laevorotatory (6) Enantiomers (7) Electrophiles
- Q.2 (a)** Describe homolytic and heterolytic fission of covalent bonds. How do these lead to the formation of carbonium ions and carbanions? **07**
- (b)** 1. Differentiate between electromeric effect and inductive effect. **04**
2. Write Aufbau Principle, Hund's Rule of maximum Multiplicity and Pauli's Exclusion Principle. **03**
- OR**
- (b)** 1. Explain mechanism of Electrophilic addition reaction with example. **04**
2. Define the terms: substrate, attacking reagent and intermediates **03**
- Q.3 (a)** Explain direct oxidation methods of alcohols to prepare aldehydes and ketones with examples. Mention the physical properties of aldehydes and ketones. **07**
- (b)** 1. Explain ammonolysis of acid chlorides, acid anhydrides and esters to form amides with example. **04**
2. Explain hydrolysis of esters to prepare carboxylic acids with example. **03**
- OR**
- Q.3 (a)** Explain Cumene process to prepare phenol commercially. Mention the reactions of phenol with zinc dust and ammonia with necessary reaction conditions. **07**
- (b)** 1. Write a note on reaction of primary and secondary amines with Grignard Reagents with examples. **04**
2. Write a note on carbylamine reaction of Aniline with equation. **03**
- Q.4 (a)** Write the preparation, properties and uses of Anthracene. **07**
- (b)** 1. Explain nitration and Friedel-Crafts Acylation of Thiophene. **04**

	2. Explain oxidation of Furfural to prepare Furan.	03
	OR	
Q.4	(a) Write the preparation, properties and uses of Naphthalene.	07
	(b) 1. Write preparation methods of Pyrrole from Acetylene and Furan.	04
	2. Just write the equations of nitration, sulphonation and bromination of Pyridine.	03
Q.5	(a) Give an account of the optical isomerism of Tartaric acid with necessary structures.	07
	(b) Explain in detail about the purification methods of organic solid compounds.	07
	OR	
Q.5	(a) Define the following terms: (1) Stereoisomerism (2) Nuclear isomerism (3) Functional isomerism (4) Cis isomer (5) Asymmetric carbon atom (6) Racemic mixture (7) Diastereomers	07
	(b) Give brief account of different distillation methods of purification of organic liquid compounds.	07
