

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.Ph. - SEMESTER- III EXAMINATION – WINTER -2020**

**Subject Code:2230004****Date: 08/03/2021****Subject Name: Pharmaceutical Chemistry IV (Organic Chemistry I)****Time: 10:30AM TO 12:30PM****Total Marks: 54****Instructions:**

1. Attempt any **THREE** questions from Q-1 to Q-6.
2. **Q.7** is compulsory to attempt.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks.

- Q.1** (a) Give structural formula of the following compounds. **06**  
 1. Cinnamyl alcohol, 2. 1,2-butadiene, 3. Diallylether,  
 4. Isobutene, 5. Benzyl bromide, 6. Phenanthrene.
- (b) Define nitrene. Explain structure and reactions of nitrene. **05**  
 (c) Enumerate different methods for preparation of alkanes. Explain Corey House synthesis of alkane. **05**
- Q.2** (a) Comments on following statements. **06**  
 1. Aromatic compounds undergo electrophilic substitutions only.  
 2. Acetylene is more acidic than ethane.  
 3. Epoxides are more reactive than ether.
- (b) Differentiate: SN1 and SN2 reactions. **05**  
 (c) What is Huckel's rule? Write the structure of 3 heterocyclic compounds that follow this rule. **05**
- Q.3** (a) Explain following terms giving suitable examples. **06**  
 1. Aromaticity, 2. Nucleophile, 3. Hybridization,  
 4. Bond polarity, 5. Inductive effect, 6. Hyperconjugation.
- (b) State and explain: Antimarcovnikov addition, Saytzeff's rule. **05**  
 (c) Write the mechanism and limitations of Friedal-Crafts acylation of benzene. **05**
- Q.4** (a) Comments on following statements. **06**  
 1. Alkenes undergo electrophilic addition reactions.  
 2. 1, 3-butadiene is more stable than 1, 2-butadiene.  
 3. Friedal Craft Alkylation of Nitrobenzene is difficult.
- (b) Differentiate: E1 and E2 reactions. **05**  
 (c) Write about reactions of Anthracene. **05**
- Q.5** (a) Enumerate different methods for preparation of ethers. Explain Williamson's synthesis of ether in detail. **06**  
 (b) Differentiate: Chlorination and Bromination of alkanes. **05**  
 (c) Explain Haworth synthesis of Naphthalene. **05**
- Q. 6** (a) Write detail notes on molecular orbital theory. **06**  
 (b) Enlist reactive intermediates of carbon. Write a note on carbocation. **05**  
 (c) How will you distinguish between primary, secondary and tertiary alcohol? **05**
- Q.7** (a) Write a note on following. **06**  
 1. Intramolecular and intermolecular forces, 2. SP hybridization.
- OR**
- (a) Explain different types of bonds giving examples. **06**
- OR**
- (a) Explain bonding and antibonding orbitals. **06**

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