

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. Ph. - SEMESTER-I • EXAMINATION – SUMMER-2016**

**Subject Code: 910101****Date: 27/05/2016****Subject Name: Advanced Organic Chemistry - I****Time: 10:30 AM to 1:30 PM****Total Marks: 80****Instructions:**

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

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|------------|-----|---|-----------|
| <b>Q.1</b> | (a) | Write a short note on orbital hybridization and resonance.  | <b>06</b> |
|            | (b) | Define electronegativity and hyperconjugation.  | <b>05</b> |
|            | (c) | Explain the effect of inductive and electrostatic on chemical reactivity.                                       | <b>05</b> |
| <b>Q.2</b> | (a) | Explain nucleophilic substitution reaction in aliphatic system.   | <b>06</b> |
|            | (b) | How neighboring group influencing on nucleophilic substitution.   | <b>05</b> |
|            | (c) | Discuss generation and reactions of nitrogen ylides.  | <b>05</b> |
| <b>Q.3</b> | (a) | What is aromaticity? Write a note on aromatic nucleophilic addition reaction.                                   | <b>06</b> |
|            | (b) | Write a note on free radical reactions with its rearrangements.   | <b>05</b> |
|            | (c) | Give the differences between SN <sub>1</sub> and SN <sub>2</sub> reactions.                                     | <b>05</b> |
| <b>Q.4</b> | (a) | Discuss Hoffman and Saytzeff's rule for elimination reactions.  | <b>06</b> |
|            | (b) | How stereochemistry involved in addition reaction.  | <b>05</b> |
|            | (c) | Write a note on Pinacol rearrangement reaction.   | <b>05</b> |
| <b>Q.5</b> | (a) | What are the different reactive forms of Carbon? Discuss the fate of generation and stability of any two forms. | <b>06</b> |
|            | (b) | Define tautomerism. Discuss with suitable examples about influence of it on reactivity.                         | <b>05</b> |
|            | (c) | Write a note on Cram's rule.  | <b>05</b> |
| <b>Q.6</b> | (a) | What are ylides. Write a note on the generation and reaction involving phosphorus ylides.                       | <b>06</b> |
|            | (b) | Write a note on photochemical reactions.  | <b>05</b> |
|            | (c) | Write about bond angle and bond length in detail.   | <b>05</b> |
| <b>Q.7</b> | (a) | Write in details about AAC <sub>2</sub> and BAC <sub>2</sub> mechanism of hydrolysis of ester.                  | <b>06</b> |
|            | (b) | Write a short note on Claisen condensation and Hofmann rearrangement.   | <b>05</b> |
|            | (c) | Describe antimarkonikov's addition with suitable examples.  | <b>05</b> |

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