Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April / May – 2017**

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| **Code :** | **15CH3003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ORGANIC REACTION MECHANISM AND STEREOCHEMISTRY** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Compare and contrast inductive effect and electromeric effect taking suitable examples. | CO1 | 8 |
| b. | Discuss the structure of carbine. Explain any three methods of generation of a nitrene intermediate and a ylide. | CO1 | (3+9) |
|  | (OR) |  |  |
| 2. | a. | What is resonance? Highlight the rules of resonance with suitable examples. | CO1 | (3+7) |
| b. | Explain the characteristic reactions of free radicals and carbine. | CO1 | (5+5) |
| 3. | a. | How are carbanions generated? Discuss their characteristic reactions. | CO1 | (5+5) |
|  | b. | Write briefly on the salient features of Hyperconjugative effect and markonikoff’s rule. | CO1 | (5+5) |
|  |  | (OR) |  |  |
| 4. | a. | What are ylids? Mention their types with examples. | CO1 | (3+3) |
|  | b. | Compare and contrast the structure of a carbonium ion and carbanion ion. | CO1 | 10 |
|  | c. | Mention any two characteristic reaction of carbanions. | CO1 | 4 |
| 5. | a. | Compare and contrast the mechanism of SN1 and SN2 reactions. | CO1 | 10 |
|  | b. | Briefly discuss on the varius parameters that affect an SN2 reaction. | CO1 | 10 |
|  |  | (OR) |  |  |
| 6. | a. | Explain the various mechanistic path that an nucleophilic aromatic substitution can adopt. | CO1 | 12 |
|  | b. | Explain the mechanism of following reactions  (i) Friedel crafts acylation (ii) Sulphonation of benzene | CO1 | 8 |
| 7. | a. | How are addition reactions classified? Give examples. | CO1 | 8 |
|  | b. | Discuss the salient features of the following reactions.  (i) Hydrogenation using OsO4. (ii) HBr addition to propylene.  (iii) Hydrboration to But-1-ene | CO1 | (4x3=12) |
|  |  | (OR) |  |  |
| 8. | a. | Differentiate between an enantiomer and diastereomer with examples. | CO1 | 5 |
|  | b. | Assign R, S notation to the chiral centres in the following compounds  (i)  (ii) | CO1 | 6 |
|  | c. | Assign E, Z notation to the following  (i)  (ii) | CO1 | 6 |
|  | d. | Which is the most stable conformer of cyclohexanes and why? | CO1 | 3 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Illustrate the operation of Saytzer rule and Hoffmann rule with suitable examples. | CO1 | 8 |
|  | b. | Differentiate between stereospecific reaction and a stereoselective reaction with appropriate examples. | CO1 | 7 |
|  | c. | Write a short note on the conformations of 1,3 disubstituted cyclohexanes. | CO1 | 5 |