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 – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14CH2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BASIC REACTION MECHANISM** | **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. | Under what conditions Nucleophilic aromatic substitution can be carried out? Give specific examples. | CO1 | 10 |
| b. | Discuss the mechanistic details of a SN2 reaction? How does the structure of the substrate affect its rate? | CO2 | 10 |
|  | **(OR)** |  |  |
| 2. | a. | What is a neighbouring group participated reaction? Illustrate with examples? | CO1 | 10 |
| b. | Explain the mechanism of the following reactions?  (i) Nitration of benzene (ii) Alkylation of benzene | CO2 | 10 |
| 3. | a. | State Hammett eqation and explain the parameters in it? | CO1 | 7 |
|  | b. | Explain SE2 mechanism with an example? | CO2 | 5 |
|  | c. | How does the solvent and leaving group affect the rate of an SN1 reaction? | CO1 | 8 |
|  |  | **(OR)** |  |  |
| 4. | a. | Explain the salient features of an SE1 mechanism? | CO1 | 8 |
|  | b. | Giving specific examples to bringout the salient features of a ‘Syn’ addition and ‘anti’ addition reactions. | CO2 | (6+6) |
| 5. | a. | Briefly explain the following  (i) Hydroxylation reaction (ii) Hydrogenation reaction (iii)Hydration reaction | CO2 | 15 |
|  | b. | Give a proof for the formation of a ‘benzyne’ intermediate? | CO3 | 5 |
|  |  | **(OR)** |  |  |
| 6. | a. | Write the rate equation of a SN1 and SN2 reaction? | CO1 | 5 |
|  | b. | Discuss the effect of Nucleophile on the rate of a SN1 and SN2 reaction? | CO3 | 8 |
|  | c. | Give the application of Hammett equation? | CO3 | 7 |
| 7. | a. | What is a α-Elimination reaction? | CO2 | 4 |
|  | b. | Discuss the stereochemistry of the products in a SN1 and SN2 reaction? | CO1 | 8 |
|  | c. | What is a non-polar addition reaction? Give example. | CO1 | 8 |
|  |  | **(OR)** |  |  |
| 8. | a. | What is a Meisenheimer complex? Give the mechanism in which it is formed? | CO3 | 8 |
|  | b. | What is Markonikoff’s rule? Illustrate with an example? | CO1 | 7 |
|  | c. | Give the significance of ‘σ’ in the Hammett equation? | CO3 | 5 |
|  | | **Compulsory:** |  |  |
| 9. |  | Compare and contrast E1 and E2 elimination reaction? Highlight the various factors favouring the rate of E1 and E2 reactions? | CO1 & CO2 | (8+12) |