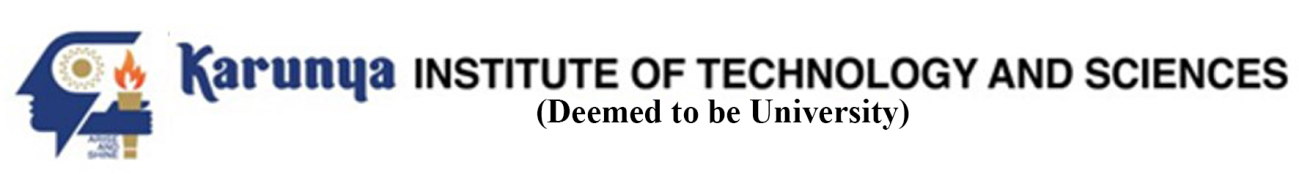
Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| --- | --- | --- | --- |
| **Code :** | **17CH3003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ORGANIC REACTION MECHANISM AND STEREOCHEMISTRY** | **Max. marks :** | **100** |

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | | | | **Outcome** | **Marks** |
| 1. | a. | State Huckel’s rule. | | | | CO1 | 3 |
| b. | Why is Hammett equation called as a LFER? | | | | CO2 | 5 |
| c. | Discuss the significance of the σ and ρ in the Hammett equation. | | | | CO2 | 12 |
|  | (OR) | | | |  |  |
| 2. | a. | Write the Taft equation and explain the various parameters involved in it. | | | | CO2 | 5 |
| b. | Compare and contrast hyperconjugative effect and inductive effect with suitable examples. | | | | CO1 | 8 |
| c. | Differentiate between  i) Antiaromatic and a non-aromatic compound.  ii) Primary kinetic isotopic effect and secondary kinetic isotopic effect. | | | | CO2 | 7 |
|  |  |  | | | |  |  |
| 3. | a. | Explain why   1. The reaction rate of CH3I with N3- at 0o is increased 4.5X104 fold on transfer from methonal (t=33) to DMF (t=37) 2. Vinyl halids and halogenobenzenes are very unreactive towards nucleophiles. 3. Solvolysis (+) C6H5CH(CH3)Cl leads to 98% racamisation while solvolysis of (+)C6H13CHMeCl leads to 34% racemisation. | | | | CO3 | 15 |
| b. | What is an SNi reaction? Give an example. | | | | CO3 | 5 |
|  |  | (OR) | | | |  |  |
| 4. | a. | Discuss the mechanistic details of an SN1 and SN2 reaction with suitable examples. | | | | CO4 | 10 |
| b. | Explain the effect of a Nucleophilic and the leaving group on the rate of an SN1 and SN2 reaction? | | | | CO4 | 10 |
|  |  |  | | | |  |  |
| 5. |  | Discuss the mechanism of the following reactions. | | | |  |  |
|  | a) Friedel craft acylation reaction. | | | | CO4 | 7 |
|  | b) Sulphonation reaction of benzene. | | | | CO4 | 6 |
|  | c) Michaels addition reaction. | | | | CO4 | 7 |
|  |  | (OR) | | | |  |  |
| 6. | a. | Compare and contrast the mechanistic features of an E1 and E2 reaction? | | | | CO3 | 10 |
| b. | What is Markovnikoff’s rule? | | | | CO3 | 2 |
| c. | Give the mechanism of addition of HOCl and HBr on But-1-ene. | | | | CO4 | 8 |
|  |  |  | | | |  |  |
| 7. | a. | What is a wheland intermediate and a mesenheimer complex? | | | | CO3 | 4 |
| b. | Discuss the mechanism of Electrophilic substitution on an aromatic system taking suitable examples. | | | | CO3 | 10 |
| c. | Assign E or Z configuration to the following | | | | CO5 | 6 |
|  | i) |  | ii) |  |  |  |
|  |  | (OR) | | | |  |  |
| 8. | a. | Discuss the conformations and stability of disubstituted cyclohexanes. | | | | CO5 | 8 |
| b. | What is Curtin-Hammett principle? | | | | CO6 | 3 |
| c. | Outline an Diastereoselective and enantioselective synthesis? | | | | CO6 | 9 |
|  |  |  | | | |  |  |
|  | | **Compulsory:** | | | |  |  |
| 9. | a. | Discuss the mechanistic finer details of | | | |  |  |
|  | i) Diels –Alder addition. | | | | CO4 | 6 |
|  | ii) cyanoethylation reaction. | | | | CO4 | 6 |
| b. | Discuss the stereo isomerism in Biphenyls. | | | | CO6 | 8 |