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 :** | **15CH3020** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Supramolecular Chemistry and Green Chemistry** | **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. | Draw the structures related to weak interactions mentioned below and arrange them in the ascending order of their bond energy.  **Covalent bond, hydrogen bond, ion-ion, ion-dipole, pi interaction, hydrophobic ,dipole- dipole, metal-ligand, induce dipole- induced dipole, induced dipole- dipole, Halogen bond** | CO1 | **15** |
| b. | Build few supramolecular assemblies using the following schematic representations. | CO2 | **5** |
| **(OR)** | | | | |
| 2. | a. | Define the following concepts and illustrate with one Example  a) Self Assembly , b) High dilution synthesis, c) Chelate effect, d) Co operativity, d)Binding Constant | CO1 | **15** |
| b. | Differentiate clathrand-clathrate, cavitant cavitate with schematic diagram and an example. | CO2 | **5** |
| 3. |  | Define the following concepts and illustrate with one Example  a)Complementarity , b)Pre-organisation, c) Molecular recognition, d) Lock-key model, d)Induced fit model | CO1 | **20** |
| **(OR)** | | | | |
| 4. | a. | Discuss the Host-guest Chemistry of following Molecules   1. Calixerene 2. Cucurbituril 3. Crown Ether 4. Cryptand 5. Cyclodextrin | CO1 | **15** |
|  | b. | Differentiate macrocyclic and acyclic hosts with few examples. Discuss their stability. | CO2 | **5** |
| 5. | a. | Justify the Nobel prize-2016 in chemistry awarded to Prof Jean Pierre Sauge, Sir Fraser Stoddart and Prof. B L Beringa, for their contribution towards the development of  Molecular machines. | CO1 | **15** |
|  | b. | Explain the structure and function of Zeolite. | CO2 | **5** |
| **(OR)** | | | | |
| 6. | a. | Write a note on the following   1. Molecular machine 2. Molecular Motor 3. Molecular Shuttle 4. Molecular switch 5. Molecular Sensor | CO1 | **15** |
|  | b. | Discuss the various types of Molecular logic gates . | CO2 | **5** |
| 7. | a. | Discuss the mechanism of supramolecular catalysis. | CO1 | **15** |
|  | b. | Discuss the role Crown ethers as Phase transfer catalyst. | CO2 | **5** |
| **(OR)** | | | | |
| 8. |  | Write a note on the following research group’s contribution in supramolecular catalysis   1. Reebek 2. Sanders 3. Fujita 4. Raymond 5. Breslow | CO1 | **20** |
|  | | **Compulsory:** |  |  |
| 9. |  | Define Green chemistry. Disscuss the Principles of Green Chemistry with examples | CO2 | **20** |

ALL THE BEST