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 – 2017**

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| **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 using the weak interactions which are mentioned below and arrange them in the ascending order of their bond energy.  Ion-ion, induce dipole- induced dipole, Covalent bond, hydrogen bond, metal-ligand, ion-dipole, pi interaction, hydrophobic ,dipole- dipole, induced dipole- dipole, Halogen bond. | CO1 | 12 |
| b. | Construct few supramolecular assemblies using hydrogen bonding and metal-ligand interaction. | CO2 | 8 |
| (OR) | | | | |
| 2. | a. | 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 | 15 |
| b. | Differentiate cavitant-cavitate and clathrand-clathrate with suitable example. | CO2 | 5 |
|  |  |  |  |  |
| 3. |  | Define the following concepts and illustrate with one suitable example  i) Template synthesis, ii) High dilution synthesis, iii) Chelate effect, iv) Co operativity, v) Self Assembly | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | Discuss the Host-guest Chemistry of following supramolecules  i. Crown Ether. ii. Calixerene. iii. Lariat ethers. iv. Cryptand. v. Cyclodextrin. | CO1 | 15 |
|  | b. | Differentiate macrocyclic and acyclic hosts with few examples and discuss their stability. | CO2 | 5 |
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| 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 molecular muscles. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Write a note on the following :  i. Molecular Motor. ii. Molecular Tweezer. iii. Molecular Shuttle.  iv. Molecular switch. v. Molecular Sensor. | CO1 | 15 |
|  | b. | Discuss the various types of Molecular logic gates. | CO2 | 5 |
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| 7. | a. | Discuss the mechanisms of supramolecular catalysis. | CO1 | 15 |
|  | b. | Discuss the role molecular containers in supramolecular catalysis. | CO2 | 5 |
| (OR) | | | | |
| 8. |  | Write a note on the following research group’s contribution in supramolecular catalysis  i. Sanders ii. Fujita iii. Reebek iv. Raymond v. Breslow | CO1 | 20 |
|  | |  |  |  |
|  | | **Compulsory:** |  |  |
| 9. |  | Define Green chemistry. Discuss the Principles of Green Chemistry with suitable examples | CO2 | 20 |

ALL THE BEST