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 :** | **16CH2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CHEMICAL BONDING AND CONCEPTS OF ACIDS AND BASES** | **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 between ionic and covalent bonds. | CO 2 | 10 |
| b. | Define the co-ordinate bond? Illustrate with an example. | CO 1 | 4 |
|  | c. | Write the Lewis structure of the following ionic compounds, H2, O2, N2. | CO 2 | 6 |
| (OR) | | | | |
| 2. | a. | Explain the AX2 model ionic bond with suitable example. | CO 1 | 10 |
| b. | Write a short note on metallic bond. | CO 1 | 5 |
|  | c. | What is the condition for formation of co-ordinate bonds? | CO 2 | 5 |
| 3. | a. | Briefly discuss the order of energy level in the molecular orbital diagram. | CO 1 | 10 |
|  | b. | Why bond angle of H2O and NH3 are different when compared to BF2 and CH4? Give valid reasons. | CO 2 | 10 |
| (OR) | | | | |
| 4. | a. | Briefly discuss the effect of electro negativity in VSEPR theory with suitable example. | CO 1 | 12 |
|  | b. | Find out the structure of the following compounds using valence bond theory : i) CH4, ii) PF5. | CO 2 | 8 |
| 5. | a. | Explain the valence bond theory with suitable examples. | CO 1 | 10 |
|  | b. | Find out the bond order and magnetic properties of B2 and C2 homonucleus diatomic molecules using molecular orbital theory. | CO 2 | 10 |
| (OR) | | | | |
| 6. | a. | Write short notes on i) Hund’s rule ii) Aufbau priniciple iii) Pauli exclusion principles. | CO 1 | 8 |
|  | b. | Find out the bond order and magnetic properties of CO and NO heteronucleus diatomic molecules using molecular orbital theory? | CO 2 | 12 |
| 7. | a. | State that the dual behavior of water with examples. | CO 2 | 10 |
|  | b. | Describe the Lewis acid –base concept with suitable examples. | CO 1 | 10 |
| (OR) | | | | |
| 8. | a. | Describe the Arrhenius concept of acids and bases with suitable examples. | CO 1 | 10 |
|  | b. | Explain the HSAB concept with suitable examples. | CO 1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Explain the various types of silicates with neat diagram. | CO 1 | 10 |
|  | b. | Write short notes on bulky ball carbon allotrope and carbon nano tubes. | CO 2 | 10 |

ALL THE BEST