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



**End Semester Examination – Nov/Dec – 2017**

|  |  |  |  |
| --- | --- | --- | --- |
| **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)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Highlight the salient feature of an ionic bond? Illustrate with the specific example? | CO1 | 8 |
| b. | Explain the AX2 model ionic bond with suitable example? | CO1 | 5 |
| c. | Explain the types of covalent bonds with suitable example? | CO1 | 7 |
| (OR) | | | | |
| 2. | a. | List out the physical properties of metallic bonds? | CO1 | 5 |
| b. | What is the condition for formation of co-ordinate bonds? | CO1 | 3 |
| c. | Write the Lewis structure of the following ionic compounds, NaCl, CaF2, Al2O3, MgO? | CO2 | 12 |
|  |  |  |  |  |
| 3. | a. | Explain Born – Habber cycle for analysis of reaction energy? | CO2 | 8 |
|  |  | Why bond angle of H2O and NH3 are different when compared to BF2 and CH4? Give valid reasons? | CO3 | 5 |
|  | b. | What are crystal defects? Explain the types of Defects? | CO1 | 7 |
| (OR) | | | | |
| 4. | a. | Briefly discuss on ‘Bonding molecular orbital’s’ with an example? | CO1 | 8 |
|  | b. | What is bond order? Explain with a suitable example? | CO2 | 6 |
|  | c. | Find out the structure and types of overlapping using VBT for IF7? | CO2 | 6 |
|  |  |  |  |  |
| 5. | a. | Describe the salient features of Molecular Orbital Theory with Suitable examples? | CO1 | 12 |
|  | b. | Write the valence bond theory treatment of π-bonding in ClNO- and NO3--? | CO2 | 8 |
| (OR) | | | | |
| 6. | a. | Discuss the VSEPR theory with suitable example? | CO1 | 12 |
|  | b. | Give any three difference between bonding molecular orbital and antibonding molecular orbitals? | CO2 | 8 |
|  |  |  |  |  |
| 7. | a. | Briefly discuss the Bronsted- Lowry concept of ‘Acids and Bases’? | CO1 | 10 |
|  | b. | Find out the bond order and magnetic properties of N2 and O2 homonuculeus diatomic molecules using molecular orbital theory? | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Describe the Lewis concept of ‘Acid and Bases’? | CO1 | 10 |
|  | b. | Classification of the Hard and Soft Acids and Bases (HSAB)? | CO2 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Briefly discuss the graphite and diamond structure of carbon allotropy with neat diagram? | CO3 | 12 |
|  | b. | Write short notes on Silicones. | CO3 | 8 |

ALL THE BEST