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

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

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| **Code :** | **17CH2001** | **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. | Discuss the formation of covalent bond and it’s types with suitable examples. | CO1 | 10 |
| b. | Give reasons for the following:  i. Phosphorous and Sulphur have variable valencies.  ii. Zeeman and Stark effect. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Comment on the following:  i) Heisenberg uncertainity principle ii) Hunds rule  iii) Pauli’s exclusion principle iv) Wave function  v) Co-ordinate bonding | CO1 | 10 |
| b. | Point out the defects of Bohr’s atomic model. | CO1 | 10 |
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| 3. | a. | Derive Born – Lande equation for lattice energy determination.  When a mole of NaCl is formed from one gram of sodium and 0.5 mole of chlorine gas, 410 kJ of heat is produced. Heat of sublimation of metal is 108.8 kJ. Heat of dissociation of chlorine gas into atom is 242.7 kJ. Ionisation energy of sodium is 493.7 kJ. Electron affinity of chlorine is 368.2 kJ. Calculate the lattice energy of NaCl. | CO3 | 10 |
| b. | Prepare short notes on Schottky and Frenkel defect in solids. | CO3 | 10 |
| (OR) | | | | |
| 4. | a. | Discuss the structure of caesium chloride and titaniumdioxide. | CO3 | 10 |
| b. | Explain the steps involved in the formation of an ionic compound. | CO3 | 10 |
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| 5. | a. | Metals are not bonded together by ionic and covalent bonding. Give reasons and explain the type of bonding in metals. | CO3 | 10 |
| b. | Explain the conduction in metals with Lithium as an example. | CO3 | 10 |
| (OR) | | | | |
| 6. | a. | Narrate the reasons for materials to behave as conductors, insulators and semiconductors. | CO3 | 10 |
| b. | Paraphrase the characteristics of metallic bonding. | CO3 | 10 |
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| 7. |  | Summarize the postulates of Molecular orbital theory. Present the molecular orbital diagram of NO. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Explain the hybridization in ethylene and Sulphur hexa fluoride. | CO2 | 10 |
| b. | Explain the structure of boron trifluoride and water molecule in the light of VSEPR theory. | CO2 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss Bronsted – Lowry theory of acids and bases. | CO4 | 10 |
| b. | Write a short note on fullerenes. | CO6 | 10 |