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

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**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14CH2001** | **Duration :** | **3hrs** |
| **Sub. Name:** | **BASIC INORGANIC 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. | Explain the Bohr’s atomic model with a neat diagram. | CO1 | 8 |
| b. | Explain the J. J. Thomson atomic model. | CO1 | 7 |
| c. | What is the major drawback of Rutherford nucleus model? | CO1 | 5 |
| **(OR)** | | | |  |
| 2. | a. | Write short notes on: i) Hund’s rule ii) Aufbau principle iii) Pauli exclusion principle iv) Octant rule. | CO1 | 12 |
| b. | Explain the discovery of Nucleus using Rutherford model. | CO1 | 8 |
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| 3. | a. | Derive the Schrodinger wave equation. | CO2 | 12 |
| b. | Briefly discuss the dual nature of the electron. | CO1 | 8 |
| **(OR)** | | | |  |
| 4. | a. | Explain the discovery of Cathode and Anode rays. Give any two properties of cathode and Anode rays. | CO1 | 14 |
| b. | Write short notes on: i) atomic number ii) mass number | CO1 | 6 |
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| 5. | a. | Highlight the salient feature of an ionic bond. Illustrate with a specific example. | CO2 | 10 |
|  | b. | Write the Lewis structure of the following ionic compounds,  H2, O2, N2. | CO2 | 6 |
|  | c. | Write a short note on metallic bond. | CO2 | 4 |
| **(OR)** | | | |  |
| 6. | a. | Explain the types of covalent bonds with suitable example. | CO2 | 4 |
| b. | Write the Lewis structure of the following ionic compounds, NaCl, CaF2, Al2O3, MgO. | CO2 | 12 |
|  | c. | List out the physical properties of metallic bonds. | CO2 | 4 |
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| 7. | a. | Describe the salient features of Molecular Orbital Theory with suitable examples. | CO2 | 10 |
| b. | Discuss the VSEPR theory with suitable example. | CO2 | 6 |
| c. | Write the molecular orbital diagram of O2 molecule. | CO2 | 4 |
| **(OR)** | | | |  |
| 8. | a. | Explain Born – Haber cycle for analysis of reaction energy. | CO2 | 8 |
| b. | Why bond angle of H2O and NH3 are different when compared to BF2 and CH4? Give valid reasons. | CO2 | 6 |
| c. | Find out the structure of the following compounds using valence bond theory: i) CH4, ii) PF5. | CO2 | 6 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Briefly discuss the Bronsted - Lowry concept of ‘Acids and Bases’. | CO3 | 7 |
| b. | Explain the dual behavior of water. Give any two examples. | CO3 | 5 |
| c. | Write in detail on classification of the Hard and Soft Acids and Bases (HSAB). | CO3 | 8 |