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



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

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **17CH3017** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MAIN GROUP CHEMISTRY** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | What is cryptand and crown ether? Describe their application in extraction of alkali and alkaline earth metal ions and catalysis. | CO1 | 10 |
| b. | What is Grignard Reagent? Explain the preparation and application of Grignard Reagent. | CO2 | 10 |
| **(OR)** | | | | |
| 2. | a. | State allotrope. Explain the synthesis, structure and properties of sulphur and phosphorus allotropes. | CO1 | 10 |
| b. | How Fajans' rules are used to predict whether a chemical bond is covalent or ionic in nature? Explain with example. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Complete the following reactions:  2BeCl2 + LiAlH4  →  2nBuLi + BeCl2 →  R2SiCl2 + Na/K →  XeF2 + MF5→  3PCl5 + 3NH4Cl → | CO4 | 10 |
| b. | Explain the synthesis and structure of BeCl2, dimethylberyllium and beryllium azide. | CO4 | 10 |
| **(OR)** | | | | |
| 4. | a. | Explain the following with suitable example.  i) Enantiotropic allotrope  ii) Polymorphism  iii) Isomorphism  iv) Pseudo-polymorphism  v) Phase-transfer catalyst. | CO1 | 10 |
| b. | Describe the synthesis and structures of [Be(OH)3]33-, BeH2, Be4O(O2CR)6 and endohedral fullerenes. | CO4 | 10 |
|  |  |  |  |  |
| 5. | a. | Explain the preparation, structure and reactions of diborane. | CO6 | 10 |
| b. | Describe the preparation and structures of any four boron-oxygen compounds. | CO4 | 10 |
| **(OR)** | | | | |
| 6. | a. | Explain the synthesis, structure and reactivities of borazines? | CO6 | 10 |
| b. | Explain the classification and structure of silicates. | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | Explain the synthesis and application of following organometallic compounds.  i) Me3SiCl ii) R3SnCl  iii) Et3Al iv) Bu3SnH | CO1 | 10 |
| b. | Explain the synthesis and structure of the following:  SeO2, TeO2, XeF4, XeOF4and N2O3 | CO4 | 10 |
| **(OR)** | | | | |
| 8. | a. | State Wades rule and styx number? Explain their application. | CO5 | 10 |
| b. | Explain the synthesis and structure of diverse oxyacids of sulphur. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the synthesis and structure of P–S and P–O cages. | CO3 | 10 |
| b. | Describe the synthesis and structure of P-N and S-N polymers. | CO3 | 10 |