

**GOVERNMENT COLLEGE (A), RAJAMAHENDRAVARAM**  
**I B.Sc. CHEMISTRY (H)**  
**SEMESTER – II**  
**QUESTION PAPER BLUE PRINT**  
**Course -3: GENERAL AND INORGANIC CHEMISTRY**

**TIME: 2<sup>1</sup>/<sub>2</sub> hrs.**

**MARKS: 50 M**

**PART -A**

**Answer ALL the Questions**

**5 x 7 = 35 M**

1. 2 Questions from UNIT- I
2. 2 Questions from UNIT- II
3. 2 Questions from UNIT-III
4. 2 Questions from UNIT IV
5. 2 Questions from UNIT-V

**PART – B**

**Answer any FIVE Questions**

**5 x 3 = 15 M**

6. 2 Question from UNIT- I
7. 1 Questions from UNIT- II
8. 2 Question from UNIT- III
9. 1 Questions from UNIT- IV
10. 2 Questions from UNIT- V

**GOVERNMENT COLLEGE (A), RAJAHMUNDRY**  
**I B.Sc. CHEMISTRY (H)**  
**SEMESTER-II**  
**MODEL PAPER (From 2023-234)**  
**Course - 3: GENERAL AND INORGANIC CHEMISTRY**

**Time: 2<sup>1</sup>/<sub>2</sub> hrs.**

**Maximum Marks: 50**

**PART- A**

**Answer ALL the questions. Each carries SEVEN marks**

**5 x 7 = 35 M**

1. Explain in detail about Bohr's atomic model  
(OR)
2. Describe the trends in atomic and ionic radii across periods and groups. How do ionization potential and electron affinity change as you move across and down the periodic table?
3. Discuss the factors that favor the formation of ionic compounds. How do ionization potential, electron affinity, and electronegativity play a role in driving the creation of these compounds?  
(OR)
4. What is the Born-Haber cycle, and how does it help us calculate the enthalpy of formation of an ionic compound?
5. Explain the geometries of BeCl<sub>2</sub>, CH<sub>4</sub> and PCl<sub>5</sub> based on Valence bond theory  
(OR)
6. Construct Molecular Orbital diagrams for N<sub>2</sub> and NO molecules
7. Explain in detail about the Band theory of metals  
(OR)
8. Write about Vander Waals forces, ion dipole- dipole interactions and hydrogen bonding
9. Discuss Lewis acid – base theory with examples  
(OR)
10. Explain HSAB principle with examples

## **PART- B**

**Answer any FIVE of the following questions. Each carry THREE marks 5 x 3 = 15 M**

11. What is the inert-pair effect, and how does it manifest in heavier elements?
12. Discuss different scales of electronegativity briefly
13. Name two properties that are influenced by the polarization of ionic compounds.
14. Illustrate molecular structures of  $\text{NH}_3$  and  $\text{SF}_4$  by using the VSEPR model
15. Explain isoelectronic principle
16. Explain free electron theory of metals
17. Explain BRONSTED-LOWRY theory of acids and bases
18. Define pH, pKa & pKb