

B.Sc. II Year (CBCS Pattern) Semester - III  
**USCCHT05 - Chemistry Paper-I : Inorganic Chemistry**

P. Pages : 2

Time : Three Hours



**GUG/S/23/11600**

Max. Marks : 50

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1. a) Describe the preparation and structure of 5  
i)  $\text{IF}_5$  ii)  $\text{IF}_7$
- b) Describe preparation and structure of Caro's and Marshal acid. 5
- OR**
- c) Discuss structure and Bonding in Borazine. 2½
- d) Describe classification of carbides. 2½
- e) Describe structure of  $\text{I}_7$ . 2½
- f) Describe structure of  $\text{S}_4\text{N}_4$ . 2½
2. a) What is metallic Bond? Explain Band theory of conductors, Insulators. 5
- b) Explain Bronsted-Lowery concept and Lewis concept of Acid and Bases. 5
- OR**
- c) Explain the term polarizing power and polarizability of ions. 2½
- d) Discuss limitation of Radius-ratio rule. 2½
- e) What are Intrinsic and Extrinsic semiconductor. 2½
- f) Explain Lux-Flood concept of Acid – Bases. 2½
3. a) Discuss First transition series with respect to their electronic configuration and oxidation states. 5
- b) Compare the following 5  
i) Co-Rh-Ir with respect to stereochemistry.  
ii) Ni-Pd-Pt with respect to oxidation states.
- OR**
- c) Discuss elements of first transition series with respect to their complex forming tendency. 2½
- d) Compare magnetic properties of Fe-Rn-Os. 2½
- e) Write a note on catalytic properties of first transition series elements. 2½
- f) Discuss Cr-Mo-W with respect to their magnetic properties. 2½

4. a) What do you mean by Lanthanide contraction give reasons for lanthanide contraction? How it affects properties of post Lanthanide elements? **5**
- b) Discuss actinides with respect to **5**
- i) Atomic and Ionic Radii.
  - ii) Oxidation states.

**OR**

- c) Discuss Lanthanides with respect to their complex formation tendency. **2½**
- d) What are actinides? What do you mean by actinide contraction. **2½**
- e) Discuss Lanthanides with respect to their atomic and Ionic Radii. **2½**
- f) Discuss solvent extraction method for separation of Lanthanides. **2½**
5. Attempt **any ten** (each carry one mark) **1x10**
- a) Draw structure of CIF.
  - b) Why Borazine is called as Inorganic Benzene.
  - c) What are Polyhalides?
  - d) Define solvation energy.
  - e) Define co-ordination number.
  - f) Draw Band structure of semiconductors?
  - g) Why cut is colourless and diamagnetic?
  - h) Write electronic configuration of Mn and Ni?
  - i) Define complex.
  - j) Name any two important minerals of lanthanides
  - k) What is position of Actinides in periodic table?
  - l) Why Zn and Hf are called twins elements.

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