

B.Sc. Second Year CBCS Pattern Semester-III
USCCHT05 - Chemistry Paper-I : Inorganic Chemistry

P. Pages : 2

Time : Three Hours



GUG/W/23/11600

Max. Marks : 50

- Notes : 1. All **five** questions are compulsory and carry equal marks.
2. Write chemical equation and draw diagram whenever necessary.

1. a) What is diborane? Describe the structure and Bonding in diborane (B_2H_6). 5
b) What is interhalogen compound? Explain the structure and bonding of following. 5
i) ClF_3 ii) IF_7

OR

- c) Why Borazine is called as inorganic benzene? 2½
d) Give classification of Polyhalides. 2½
e) Describe the preparation and structure of marshal acid. 2½
f) Explain the structure of Sulphur tetranitride (S_4N_4). 2½
2. a) What is the Lattice energy? Describe the Born-Haber cycle in brief. 5
b) Explain Bronsted-Lowery concept and Lewis concept of acid and bases. 5

OR

- c) Discuss band theory for conductors. 2½
d) What is polarization of ion? Discuss Fajan's rule with example. 2½
e) Define acids and bases in terms of Lux-Flood concept. Give one example of each. 2½
f) What is radius ratio rule? Give its two applications. 2½
3. a) Write brief note on. 5
i) Electronic configuration of first transition series element.
ii) Variable oxidation state of first transition series.
b) Discuss the comparative study. 5
i) Cr, Mo and W with respect to stereochemistry.
ii) Ni, Pd and Pt with respect to Oxidation state.

OR

- c) Write a note on catalytic properties of first transition series elements. 2½
d) Discuss the electronic configuration of second transition element. 2½

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| e) | Explain first transition series elements with respect to complex formation tendency. | 2½ |
| f) | Compare magnetic properties of Co-Rh-Ir group. | 2½ |
| 4. a) | What is lanthanide contraction? Give reasons of lanthanide contraction and its consequences. | 5 |
| b) | Explain actinide series elements with respect to its position in periodic table and Electronic configuration. | 5 |

OR

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| c) | Describe ion exchange method for separation of lanthanide. | 2½ |
| d) | Write note on oxidation states of actinides. | 2½ |
| e) | Discuss lanthanides with respect to their complex formation tendency. | 2½ |
| f) | Write electronic configuration of lanthanides. | 2½ |
| 5. | Attempt any ten questions. | 1x10 |
- i) Write any four industrial applications of carbides.
 - ii) Draw structure of IF₅.
 - iii) Write structure of Borazine.
 - iv) Define co-ordination number.
 - v) Define solvation energy.
 - vi) Give the properties of metals.
 - vii) Write electronic configuration of Cr and Cu.
 - viii) Calculate the Magnetic moment of Mn²⁺ ion.
 - ix) Why Zn and Hf are called twins elements?
 - x) Name any two important ores of lanthanides.
 - xi) Give an example of complex form by lanthanide element.
 - xii) What do mean by trans uranic elements?
