

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

P. Pages : 2

Time : Three Hours



GUG/W/24/11600(S)

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) Give the applications of carbides. 2½
- d) Explain the preparation & structure of If_5 molecule. 2½
- e) Explain structure and bonding in Caro's 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) Write note on. 5
- i) Semiconductor
- ii) Free electron theory in metallic bonding.

OR

- c) What is polarization of ion? Discuss Fajan rule with example. 2½
- d) Explain giving example Lux-Flood concept of acid and bases. 2½
- e) What is radius ratio rule? Give its two applications. 2½
- f) Give valance bond theory for conductors. 2½
3. a) Write note on oxidation state and magnetic properties of first transition series element. 5
- b) Discuss second and third transition series with respect to their electronic configurations. 5

OR

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| c) | Write a note on catalytic properties of first transition series element. | 2½ |
| d) | Compare oxidation states of Cr, Mo and W. | 2½ |
| e) | Explain first transition series elements with respect to complex formation tendency. | 2½ |
| f) | Compare magnetic properties of Co, Rh and Ir. | 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) | Write electronic configuration of Lanthanides. | 2½ |
| d) | Explain the properties of atomic and ionic radii of actinides. | 2½ |
| e) | Write note on oxidation states of actinides. | 2½ |
| f) | Explain the complex formation tendency in lanthanides. | 2½ |
| 5. | Attempt any ten questions. | 10 |
- i) Draw the structure of Inorganic Benzene.
 - ii) Draw structure of ICl_4^-
 - iii) Define space lattice and lattice points.
 - iv) Define co-ordination number.
 - v) Give two examples of Lewis acids.
 - vi) Draw a structure of Marshal Acid.
 - vii) Write electronic configuration of Cr and Cu
 - viii) Write the position of lanthanides in periodic table.
 - ix) Write general Oxidation state of Actinide series.
 - x) Give two examples of catalyst of first transition series of elements.
 - xi) Why Zn and Hf are called twins elements.
 - xii) Name any two important ores of lanthanides.
