

B.Sc. (C.B.C.S. Pattern) Sem-III
USCChT05 - Chemistry Paper-I (Inorganic Chemistry)

P. Pages : 2

GUG/S/19/11600

Time : Three Hours



Max. Marks : 50

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1. a) Explain structure and bonding in diborane. 5
b) Describe preparation and structure of 5
i) IF_7 ii) Marshal acid

OR

- c) What are interhalogen compounds? Write structure of I_7 and ICl^- . 2½
d) What are carbides? Explain its classification. 2½
e) Write short note on pyrosilicates. 2½
f) Give any five industrial applications of carbides. 2½
2. a) What is metallic bond? Explain free electron theory for metals. 5
b) Define :- Lattice energy. Explain Born Haber cycle in brief. 5

OR

- c) Explain Bronsted – Lowry concept of acid and base. 2½
d) What is radius ratio rule? Give its two applications. 2½
e) Explain Fajan rule with example. 2½
f) What is 'p' type extrinsic semiconductor? 2½
3. a) Write brief note on. 5
i) Electronic configuration.
ii) Variable oxidation state of first transition series.
- b) Discuss comparative study of cr, Mo, w with respect to 5
i) Oxidation state. ii) Magnetic properties.

OR

- c) Discuss magnetic properties of first transition series elements. 2½
d) Explain magnetic properties Fe-Ru-Qs group. 2½
e) Discuss electronic configuration of second transition series elements. 2½
f) Why 3d elements have ability to behave as a catalyst? 2½

4. a) What are lanthanides? Explain lanthanide contraction & their consequences. 5
- b) Explain actinide series elements with respect to 5
- i) Electronic configuration.
 - ii) Atomic and ionic radii.

OR

- c) Describe ion exchange method for separation of lanthanide. 2½
 - d) Discuss electronic configuration of lanthanides. 2½
 - e) Discuss oxidation state of lanthanide series elements. 2½
 - f) Write note on position of actinide in periodic table. 2½
5. Attempt **any ten** questions. **1x10**
=10
- i) Draw the structure of borazine.
 - ii) Draw band structure of conductor.
 - iii) What are poly halide?
 - iv) Define solvation energy.
 - v) Identify Lewis acids & bases from the following.

a) H^+	ii) BF_3
iii) CH_3NH_2	iv) CH_3OCH_3
 - vi) Give classification of silicates.
 - vii) Write electronic configuration of Yttrium (Z=39) and Ta (Z=73)
 - viii) Define atomic and ionic radii.
 - ix) Why cu^{2+} is coloured and paramagnetic?
 - x) What do you mean by transuranic elements?
 - xi) Name any two important minerals of lanthanides.
 - xii) $La(OH)_3$ is more basic than that of $Lu(OH)_3$ - why?
