

Bachelor of Science (B.Sc.) (CBCS Pattern) First Semester
USCHT01 - Chemistry : Paper-I (Inorganic Chemistry)

P. Pages : 2

Time : Three Hours



GUG/W/18/11544

Max. Marks : 50

- Notes : 1. All questions carry equal marks.
2. Diagrams wherever necessary.

1. a) Define Quantum numbers. Discuss the significance of Spin Quantum number & magnetic quantum number? **5**

b) What is ionization potential? Explain factors affecting ionization potential. **5**

OR

c) State and explain Heisenberg's uncertainty principle. **2½**

d) Explain the concept of Ionization energy to know relative reactivity, metallic and non-metallic character? **2½**

e) Calculate effective Nuclear charge acting on Ca ($z = 20$)? **2½**

f) Derive de-broglie equation? **2½**

2. a) Draw and explain Coulson's M. O. diagram of carbon monoxide and Calculate its Bond Order? **5**

b) What is Hybridization? Explain why BeF_2 molecule is linear while H_2O is bent? **5**

OR

c) Explain on the basis of M. O. theory, N_2 molecule is diamagnetic while O_2 molecule is paramagnetic? **2½**

d) Using VSEPR theory, explain the shapes of **2½**
i) H_3O^+ and ii) SF_4

e) Write the postulates of VBT. **2½**

f) Draw potential energy diagram for Bonding M. O. and Antibonding M. O. and State the rules of LCAO approximation? **2½**

3. a) What are s-block elements? Discuss s-block elements with respect to **5**
i) Ionization Potential and ii) Electroactivity

b) Discuss the p-block elements with respect to **5**
i) Atomic and ionic radii ii) Oxidation state

OR

