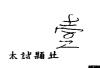
淡江大學九十一學年度碩士班招生考試試題

系別:化學系

羽目:無機化學





按照題目順序作答 每題十分

- 1. The electron configuration of copper in the ground state is [Ar]3d¹⁰4s¹. Suggest an explanation. How many unpaired electrons of Mn²+ ion in its ground state.
 What is its term symbol?
- 2. Draw the Born-Haber cycle for Matterystal. Indicate all the name of enthalpy change (ΔH) you used.
- 3. The electrical conductivity of germanium is increased by a factor of 10⁵ when a few parts per million of arsenic are added. Explain.
- 4. Suggest a reason why the order of acid strength in the oxo-acids of chlorine is $HCIO_4 > HCIO_3 > HCIO_2$.
- 5. Suggest a reason for the following observation from orbital and bonding point of view: CO₂ is gaseous whereas SiO₂ is crystalline under normal conditions.
- 6. Write the molecular orbital energy level diagram and election configuration for the NO molecule. What is the bond order?
- 7. Predict the ligand field splitting of d-orbitals, including the name of orbitals, in an octahedral ML₆ complex. Calculate the LFSE (ligand field stabilization energy) in a high spin d⁷ ion.
- 8. Assign the following molecules to point group: a)Ferrocene, b) trans-Ni(NH₃)₄Cl₂,c) H₂O₂.
- 9. Give example and describe a) the inner-sphere electron transfer and b) outer-sphere electron transfer mechanism in coordination chemistry.
- **10.** Give example and describe the a) σ-π rearrangement, b) insertion reaction and c) oxidative addition reaction in organometallic chemistry.