

University of Baghdad
College of Science
Department of Chemistry
Examiner:
Date: / 09 / 2015



Graduate Studies
MSc.
Semester:
Subject: Inorganic Chemistry

Handwritten signature in blue ink.

Q1: Arrange the following according to specified orders.

- 1-SiO₂, PbO₂, SnO₂, GeO₂, CO₂ (increased basic properties).
- 2-AsCl₃, NCl₃, PCl₃, BiCl₃ (increased ionic character).
- 3-N, Cs, F, Sr, P (increased electronegativity).
- 4-NO₃⁻, NO₂⁺, NO₂⁻ (increased bond angle).
- 5-[Co(NH₃)₆]³⁺, [Ir(NH₃)₆]³⁺, [Ni(NH₃)₆]²⁺ (increased absorption energy).

Q2: Answer by "True" or "False".

- 1-The four quantum numbers of the valance electron of Zn element are
n=4 l=1 ml=0 ms=+1/2
- 2-The hybridization of N₃⁻ ion is SP³.
- 3-There are three π-bonds in the structure of HNO₃ molecule.
- 4-[PtCl₄]²⁻ is a tetrahedral species.
- 5- The value of Z_{eff} of the valance electron for (23V) element is equal to 3.5.

Q3: Choose the right answer for the following.

- 1-The most stable oxidation state of Cs element is (+1, +3, +4).
- 2-The structure of PCl₃ molecule is (tetrahedral, octahedral, square planar, trigonal pyramid and the hybridization of nitrogen atom is (SP², SP³d², SP³).
- 3-The inversion center is found in (H₂S, SF₅, CO₂).
- 4-¹S₀ is the term symbol for Ni²⁺, Co²⁺, Cu¹⁺, Mn²⁺ in the ground state.
- 5-The hybridization of the Cobalt ion in K₃[Co(Cl)₆] is (SP³d², dSP², d²SP³).
- 6-NH₃, NO₃⁻, ClO₄⁻ are (soft acids, hard bases, soft bases, hard acids).
- 7-The metal with inert nS² electron is (Sn, Ge, P, Sb).
- 8-D_{3h} is a point group of (C₂H₆ staggered, CH₄, PH₅).
- 9-The point group of H₂O molecule is (C_{3v}, C_{2h}, C_{2v}).
- 10-The electronic configuration of ₇₈Pt is ([Xe]4f¹⁴5d⁸6s², [Xe]4f¹⁴5d⁹6s¹, [Xe]4f¹⁴5d¹⁰6s⁰

Good Luck