**Quiz 8**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Use the condensed electron configuration to write an equation for the formation of each transition metal ion, and predict whether it is paramagnetic (8 points):
   1. Mn2+

Mn ([Ar] 4s2 3d5) → Mn2+ ([Ar] 4s0 3d5) + 2 e-

paramagnetic

* 1. Cr3+

Cr ([Ar] 4s1 3d5) → Cr3+ ([Ar] 4s0 3d3) + 3 e-

paramagnetic

* 1. Hg2+

Hg ([Xe] 6s2 4f14 5d10) → Hg2+ ([Xe] 6s0 4f14 5d10) + 2 e-

diamagnetic

1. For many years, it was believed that the noble gases could not form covalently bonded compounds. However, xenon reacts with fluorine and oxygen (10 points).
   1. Draw the Lewis structure for xenon tetrafluoride.



* 1. What is the orbital geometry around xenon tetrafluoride? \_\_octahedral
  2. What is the molecular geometry around xenon tetrafluoride? \_\_square planar
  3. What is the predicted hybridization of the xenon? \_sp3d2
  4. What is the predicted F-Xe-F bond angle? \_\_90°
  5. Would xenon tetrafluoride be considered polar or nonpolar? \_\_nonpolar

Reaction between xenon tetrafluoride and fluoride ions produce the pentafluoroxenate anion:

XeF4 (g) + F- (g) → XeF5- (g)

* 1. The crystal structure of XeF5‑ compounds indicates a pentagonal bipyramidal orientation of valence pairs around Xe. Sketch the structure for XeF5-.



1. Is today’s lab a qualitative or quantitative (2 points)? \_\_\_\_answer depends on experiment