

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

**Question #1:** (10 points total, 2 points each)

- Circle the ion(s) with a  $[\text{Ar}]3d^5$  electron configuration:  $\text{Co}^{2+}$   $\text{Mn}^{2+}$   $\text{Fe}^{3+}$ ?
- Identify the neutral element with the ground state electron configuration  $[\text{Xe}]4f^{14}5d^66s^2$ . \_\_\_\_\_
- What is the highest oxidation state for chromium? \_\_\_\_\_
- What is the oxidation state of iron in  $\text{K}_4[\text{Fe}(\text{CN})_6]$ ? \_\_\_\_\_
- List a possible geometry of a metal complex with a coordination number of four: \_\_\_\_\_

**Question #2:** (10 points) Provide the right name or formula for the coordination compounds below.

Name	Formula
_____	$[\text{Cr}(\text{en})_2(\text{H}_2\text{O})_2]\text{SO}_4$
hexacarbonylruthenium(III) perchlorate	_____
dicyanobis(ethylenediamine)zirconium(IV) nitrate	_____
_____	$(\text{NH}_4)_2[\text{Cu}(\text{CN})_4]$
potassium tetrachloroplatinate(II)	_____