

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

- Circle the ion(s) with a $[\text{Ar}]3d^5$ electron configuration: Co^{2+} Mn^{2+} Fe^{3+} ?
- Identify the neutral element with the ground state electron configuration $[\text{Xe}]4f^{14}5d^66s^2$. osmium
- What is the highest oxidation state for chromium? +6
- What is the oxidation state of iron in $\text{K}_4[\text{Fe}(\text{CN})_6]$? +2
- List a possible geometry of a metal complex with a coordination number of four: tetrahedral or square planar

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

Name	Formula
diaquabis(ethylenediammine)chromium(II) sulfate	$[\text{Cr}(\text{en})_2(\text{H}_2\text{O})_2]\text{SO}_4$
hexacarbonylruthenium(III) perchlorate	$[\text{Ru}(\text{CO})_6](\text{ClO}_4)_3$
dicyanobis(ethylenediamine)zirconium(IV) nitrate	$[\text{Zr}(\text{CN})_2(\text{en})_2](\text{NO}_3)_2$
ammonium tetracyanocuprate(II)	$(\text{NH}_4)_2[\text{Cu}(\text{CN})_4]$
potassium tetrachloroplatinate(II)	$\text{K}_2[\text{PtCl}_4]$