1. (10) Provide the name of the element associated with each of the symbols below.

Ru ruthenium  Ag silver  Ni nickel  Cd cadmium  Hf hafnium
W tungsten  Zr zirconium  Zn zinc  Os osmium  Mo molybdenum

2. (10) Draw neat, clear diagrams of all of the possible square planar and tetrahedral isomers of Cu(NH$_3$)$_2$(CN)BrCl. Your diagrams should clearly indicate three-dimensional stereochemistry when appropriate. If any of the isomers are enantiomers, so indicate. Points will be subtracted if any structures are inadvertently repeated, so be careful in your analysis.

3. (10) Draw neat, clear diagrams of all of the possible octahedral isomers of Co(en)$_2$F$_7$$. If there are any cases where enantiomers exist, label your drawing as 'chiral'; it is not necessary to draw both enantiomers. The most efficient way to draw the structures is to first draw a set of xyz coordinate axes, then place the ligand atoms at the six positions at the ends of the axes. You may represent en as two nitrogen atoms joined by a curved line. Points will be subtracted if any structures are inadvertently repeated, so be careful in your analysis.

4. (15) Write a balanced equation for the reaction of the cis isomer of PtCl$_2$(NH$_3$)(CO) with cyanide ion. Clearly show the stereochemistry of both the reactant and the product.

5. (10) Create a neat and clear series of structural drawings that show how the positions of the fluorine atoms of PF$_3$ are interchanged through Berry pseudorotation.