

Nov 25-Nov 29 Practice Problems

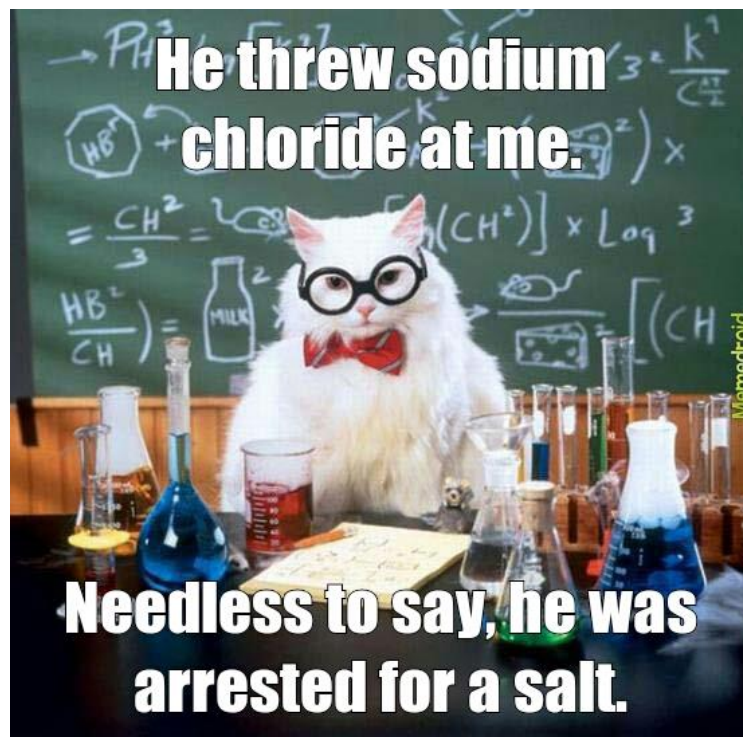
Due dates:

This week you have Quiz 9

Review end of the week

Mercury course evaluations! Please fill them out!

Office hours: Thursday, November 28 1:30 to 2:30 pm in Pulp and Paper 104



Q1. Write the condensed electron configurations of the following:

Zr²⁺

V³⁺

Cu

Cu²⁺

Fe³⁺

Mo³⁺

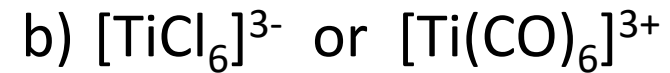
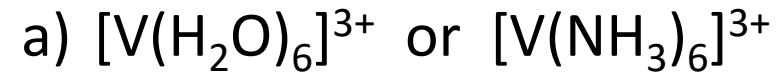
Q2. What is the oxidation state of Cr in $[\text{Cr}(\text{OH})_6]^{3-}$? Is the chromium ion diamagnetic or paramagnetic? Would you expect this complex to be coloured?

Q3. Calculate the oxidation state of the transition metal in the coordination complexes. What is the coordination number?

Oxidation state	Coordination number
$[\text{CrCl}_2(\text{NH}_3)_4]^+$	
$[\text{Cr}(\text{OH})_2(\text{NH}_3)_4]^-$	

Q4. What is the name of $[\text{Cr}(\text{H}_2\text{O})_5\text{Br}]\text{Cl}$? What is the formula for barium hexacyanocobaltate(III)?

Q5. Which complex, in the following pairs, would you expect to absorb the higher energy visible light? Remember: $\Delta E = h\nu = hc/\lambda$



Q6. Compare the electron configurations of the two iron complexes below. Draw d-orbital energy diagrams to show splitting, predict the number of unpaired electrons, and identify each complex as “high spin” or “low spin”. $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ vs. $[\text{Fe}(\text{CO})_6]^{2+}$

Q7. **Draw** an example of the isomer listed for each of the complexes indicated.

Isomer Type	Complex	Your isomer
Geometric isomer		
Enantiomer		
Coordination isomer		