Chemistry 2500 Exam One	Name					
All work must be shown to get full credit. Five points will be deducted if a pen is used.						
$h = 6.626 \text{ x } 10^{-34} \text{ J} \cdot \text{s}$	$c = 2.998 \text{ x } 10^8 \text{ m/s}$	$N = 6.022 \text{ x } 10^{23} \text{ /mol}$				
$e = 1.602 \text{ x } 10^{-19} \text{ C}$	$m_e = 9.109 \text{ x } 10^{-31} \text{ kg}$	R = 8.3145 J/K·mol				
1. (10 points) Name each elemen	nt. Use the proper spelling.					
a) Pt	b) Mo					
c) As	d) Sb					
e) Nb	f) Cd					
g) Rb	h) W					
0/						
i) Te	j) Zr					

2. (10 points) Which element has a greater *third* ionization enthalpy, Ca or Sc? Briefly explain your choice.

3. (16 points) Write the chemical formula for each substance.

a) bromine trifluoride	b) sodium azide
c) hypochlorous acid	d) potassium permanganate
e) hydrogen cyanide	f) nickel(III) perchlorate
g) disulfur dichloride	h) copper(II) sulfate pentahydrate

4. (10 points) The bandgap is the energy between a valence band and a conduction band in a solid, and is normally expressed in electron-volts (eV). It can be measured by the absorption edge, which is the wavelength below which all radiation is absorbed. Using the conversion 1 eV = 1.602×10^{-19} J, calculate the wavelength in nanometers that corresponds to 3.05 eV.

5. (12 points) Using the noble gas shorthand, write the electronic configuration of each element or monatomic ion listed.

a) Cr	b) S
c) Na ⁺	d) Ag
c) Zn ²⁺	d) Sn ²⁺

6. (8 points) Copper, silver, and gold are all stable in the 1+ oxidation state. Briefly explain why.

7. (10 points) Specify the oxidation state of nitrogen in each substance.

N_2	NaNO ₃	N_2H_2	NH ₃	N_2H_4
NO ₂	N ₂ O	KNO ₂	NF ₃	N2O4

8. (12 points) Complete and balance the following redox equation. A net ionic equation is sufficient.

 $NaOH(aq) + H_2O_2(aq) + Cl_2O_7(aq) \rightarrow NaClO_2(aq) + O_2(g)$ basic solution

9. (12 points) A particular antibiotic undergoes decomposition by first-order kinetics with a halflife of 4.5 days. If its initial concentration is 0.88 mM, what is its concentration after 72 hours?