AP Chemistry Level 1.6-1.10 Practice Problems

Level 1.6: What is the difference between a shell, energy level, subshell, and orbital?

Level 1.7.1: Write the shorthand notation electron configuration, including orbital diagrams, for the ion, Ni^{2+}.

Level 1.7.2: Write the shorthand notation electron configuration, including orbital diagrams, for the ion, S^{2-}. Explain why the sulfide anion is isoelectronic with argon.

Level 1.7.3: Write the shorthand notation electron configuration, including orbital diagrams, for the ion, Sc^{2+}.

Level 1.8.1: Considering the atomic radius for elemental sulfur and the sulfur anion (S^{2-}), which has a larger radius and why? Calculate the effective nuclear charge for both the elemental and anionic forms. (Z_{eff} = Z-s)

Level 1.8.2: Considering the atomic radius for elemental potassium and the potassium cation (K^{+}), which has a larger radius and why? Calculate the effective nuclear charge for both the elemental and cationic forms.

Level 1.8.3: Which anion is smaller, sulfide (S^{2-}) or chloride (Cl^{-}). Justify your reasoning.

Level 1.9: Rank the electronegativity of elements K, Rb, F, Ga, and C from highest to lowest.

Level 1.10.1: Compare the ionization energy of sodium to that of potassium. Explain the difference in ionization energy between lithium and beryllium.

Level 1.10.2: Examine the table below, which displays the ionizations energies (IE) for an element. What element could possibly exhibit these IEs? Justify your response, acknowledging there could be numerous correct answers.

Ionization Energies for element *X* (kJ mol^{-1})				
First	Second	Third	Fourth	Fifth
580	1,815	2,740	11,600	14,800