TUGAS KIMIA UMUM B (kelompok jadual kuliah Senin Petang jam 13.50)

1. Thomson was able to determine the mass/charge ratio of the electron but not its mass. How did Millikan's experiment allow determination of the electron's mass?
2. How can ionic compounds be neutral if they consist of positive and negative ions?
3. Rank the following photons in terms of increasing energy: (a). blue (λ=453 nm), (b) red (λ=660 nm), and (c). yellow (λ=595 nm).
4. Are the following quantum number combinations allowed? If not, show two ways to correct them: (a). n=1, l=0, ml=0; (b). n=2, l=2, ml=+1; (c). n=7, l=1, ml=+2; (d). n=3, l=1, ml=-2
5. Write a full set of quantum numbers for the following: (a). outermost electron in an Li atom; (b). The electron gained when a Br atom becomes a Br^- ion; (c). The electron lost when a Cs atom ionizes; (d). the highest energy electron in the ground-state B atom
6. Write the condensed ground-state electron configuration of these transition metal ions, and state which are paramagnetic: (a). Mo^{3+}; (b). Au^+; (c). Mn^{2+}; (d). Hf^{2+}
7. There are some exceptions to the trends of first and successive ionization energies. For each of the following pairs, explain which ionization energy would be higher: (a). IE1 of Ga or IE1 of Ge; (b). IE2 of Ga or IE2 of Ge; (c). IE3 of Ga or IE3 or Ge; (d). IE4 of Ga or IE4 of Ge
8. For single bonds between similar types of atoms, how does the strength of the bond relate to the sizes of the atoms? Explain scientifically.