HOMEWORK ASSIGNMENT 2

1. If one could ignore the interactions between electrons, what would be the Z values for chemically inert elements (also called noble gases).
2. Including the e-e interaction, the effective potential of an atom becomes smaller faster than $V(r) = -Ze^2/r$ as $r$ increases. This means that states with different $\ell$ for each principal quantum number $n$ no longer are degenerate. Do the energy values increase or decrease with $\ell$. What is the resulting qualitative effect on determining which are the noble gases? Does this agree with the actual pattern in the atomic table?
3. Suppose electrons were spinless bosons. Would atoms bind by covalent bonding, ionic bonding, both, or neither?