Practice on Quantum Numbers

1. Answer the following:
2. How many orbitals in the *l* = 1 subshell?
3. What is the maximum number of electrons in a *d* subshell?
4. What is the subshell designation when *n* = 3 and *l* = 2?
5. How many subshells in the *n* = 4 shell?
6. Briefly explain what the term *degeneracy* means when used to describe features of the energy level diagram for a multi-electron atom.
7. Briefly describe the difference between an *orbit* and an *orbital* as it relates to an electron in a hydrogen atom.
8. Sketch the orbital diagram for the valence electrons in copper.
9. Write the short hand electron configuration for each of the following.

a) Cu **[**


b) Ca2+

c) Po

d) Se2-

e) Ir

1. Write the possible set of quantum numbers for all valence electron in an antimony (Sb) atom in its ground state.



1. Given the five orbital diagrams labeled A, B, C, D, and E.



From the orbital diagrams select an example which demonstrates


i). a violation of Hund's rule

ii). a violation of the Pauli exclusion principle

iii). a ground state orbital diagram

iv). an excited state orbital diagram

v). a violation of the Aufbau principle