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 **[**

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b) Ca2+

c) Po



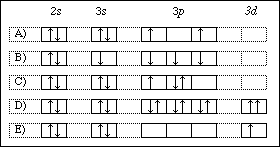
d) Se2-

e) Ir

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

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



From the orbital diagrams select an example which demonstrates

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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