Che 111: Chapter 11 Practice Problems

1. Each electron seems to have a dual nature in which both _____ and_____ characteristics are apparent.

2. All of the orbitals that have the same potential energy for a hydrogen atom are said to be in the same _____ energy level.

3. Each s sublevel has one orbital, each p sublevel has three orbitals, each d sublevel has _____ orbitals, and each f sublevel has _____ orbitals.

4. What is the maximum number of electrons that can be placed in a

   5*s* sublevel?

   5*f* sublevel?

5. Write the complete **electron configuration** and **orbital diagram** for each of the Following:

   a. oxygen, O

   b. sulfur, S

   c. manganese, Mn

d. tellurium, Te

e. radon, Rn

6. Write the abbreviated electron configurations for each of the following.

a. chlorine, Cl

b. boron, B

c. scandium, Sc

d. yttrium, Y

e. astatine, At

7. Would the following electron configurations represent ground states or excited states?

a. $1s^2\ 2s^2\ 2p^6\ 3s^2$

b. $1s^2\ 2s^2\ 2p^6\ 3s^1\ 3p^1$

c. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^8\ 4p^1$

d. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^9$

8. What is the first element on the periodic table to have

a. an electron in the 5*s* sublevel?

b. a filled 4*d* sublevel?

c. a half-filled 6*p* sublevel?