Chemistry chapter 5

**Wkst: Electron Configuration Practice II**

In the space below, write the electron configurations for the following elements:

1. Barium
2. Neptunium

Determine what elements are denoted by the following electron configurations:

1. 1s22s22p63s23p4
2. 1s22s22p63s23p64s23d104p65s1

Determine which of the following electron configurations are not valid and note what is incorrect.

1. 1s22s22p63s23p64s24d10 4p5
2. 1s22s22p63s33p5

Which of the following “rules” is being violated in each of electron configurations below? Explain your answer for each. (use Hund’s rule, Pauli exclustion principle, Aufbau Principle)



↑↓ ↑↓ ↑↓ \_\_\_ \_\_\_

1s 2s 2p

↑↓ ↑↓ ↑↓ ↑↓ ↑↓ \_\_\_\_ ↑↓ ↑↓ ↑\_\_

1s 2s 2p 3s 3p



↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↑ ↑↓ ↑↓ ↑\_\_

1s 2s 2p 3s 3p



↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓

1s 2s 2p 3s 3p 3d

1. Explain what each number and letter means in the following notation: 3p6
2. A neutral atom of argon contains (how many?) \_\_\_\_\_\_\_\_\_\_\_ electrons
3. When all of the electrons in an atom are in the lowest available energy levels, the atom is in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. As an electrons distance from the nucleus increases, its energy content \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The maximum number of valence electrons possible in any outermost shell is \_\_\_\_\_\_\_\_\_\_\_\_.
6. The number of valence electrons in Helium is \_\_\_\_\_\_\_\_\_, but the number of valence electrons in all other inert gases is \_\_\_\_\_\_\_\_\_\_ .
7. If an electron is absorbed energy and has shifted to a higher energy level, the electron is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_.
8. The average region through which an electron moves is an \_\_\_\_\_\_\_\_\_\_\_\_\_.
9. A 3d orbital has (more, less) \_\_\_\_\_\_\_\_\_\_ energy than a 3p orbital.
10. The only two kind of orbitals which may occur in the outermost shell are the \_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_.
11. An atom is chemically \_\_\_\_\_\_\_\_\_\_\_\_ when all of the orbitals in the outermost shell are completely filled.
12. Elements may react to form ions developing electron configurations like those of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
13. Spectral lines of the elements are caused by
    1. Electrons falling to lower energy levels
    2. Electrons jumping to higher energy levels
    3. Electrons turning in their orbital paths
    4. The sympathetic vibration of the nucleus
14. The number of sublevels in the fifth principal energy level is \_\_\_\_\_\_\_\_\_\_\_\_.
15. The particles that are most intimately involved in a chemical reaction are \_\_\_\_\_\_\_\_\_\_\_\_.
16. How many unpaired electrons are there in a Calcium ion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.