Chemistry chapter 5

Key

**Wkst: Electron Configuration Practice II**

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

1. Barium $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2$

2. Neptunium

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^6 7s^2$

$5f^5$

Determine what elements are denoted by the following electron configurations:

3. $1s^2 2s^2 2p^6 3s^2 3p^4$ Sulfur

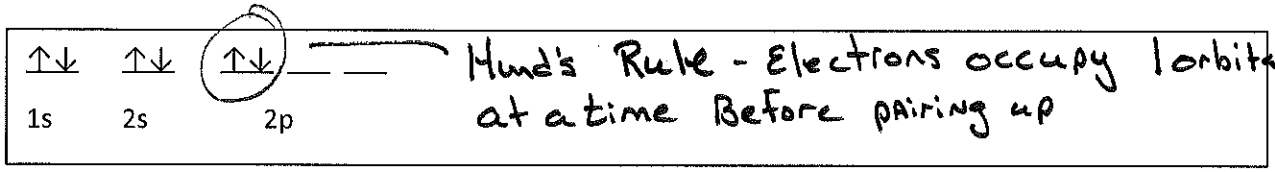
4. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$ Rb

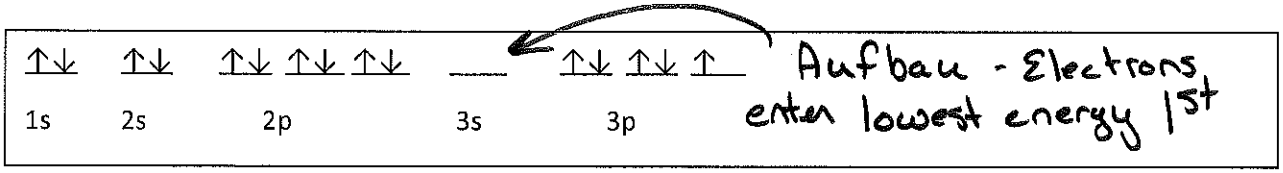
Determine which of the following electron configurations are not valid and note what is incorrect.

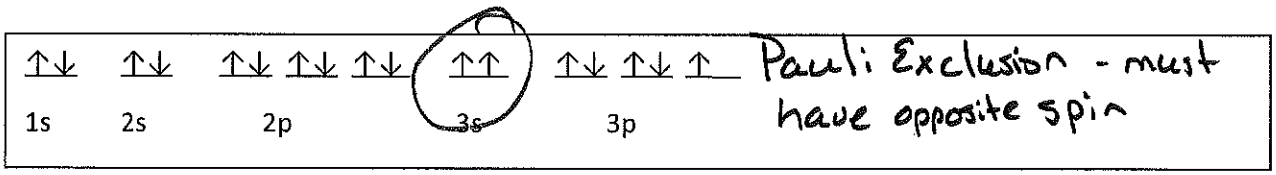
5. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$ 3d Before 4d

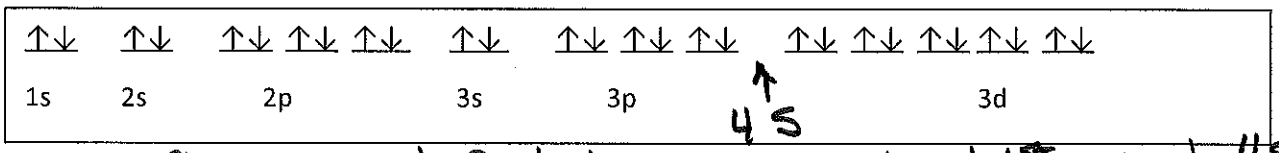
6. $1s^2 2s^2 2p^6 3s^3 3p^5$ only $2e^-$

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)

7. 


8. 


9. 


10. 


Aufbau - must fill Low energy Level 1st, Need 4s Before 3d

11. Explain what each number and letter means in the following notation: $3p^6$ 3 - energy Level, P - sublevel/orbital, 6 - # of electrons

12. A neutral atom of argon contains (how many?) 18 electrons

13. When all of the electrons in an atom are in the lowest available energy levels, the atom is in the Grounded State.

14. As an electrons distance from the nucleus increases, its energy content Increases.

15. The maximum number of valence electrons possible in any outermost shell is 8.

16. The number of valence electrons in Helium is 2, but the number of valence electrons in all other inert gases is 8.

17. If an electron is absorbed energy and has shifted to a higher energy level, the electron is said to be Excited.

18. The average region through which an electron moves is an orbital.

19. A 3d orbital has (more, less) more energy than a 3p orbital. $3s^2 3p^6 4s^2 3d^{10}$ ← further out!

20. The only two kind of orbitals which may occur in the outermost shell are the S & P.

21. An atom is chemically Stable when all of the orbitals in the outermost shell are completely filled.

22. Elements may react to form ions developing electron configurations like those of the Noble gas.

23. Spectral lines of the elements are caused by
    a. Electrons falling to lower energy levels
    b. Electrons jumping to higher energy levels
    c. Electrons turning in their orbital paths
    d. The sympathetic vibration of the nucleus

24. The number of sublevels in the fifth principal energy level is 4. — max sublevels you can ever have!! $5s^2 5p^6 5d^{10} 5f^{14}$

25. The particles that are most intimately involved in a chemical reaction are electrons.

26. How many unpaired electrons are there in a Calcium ion? Ø