

4.10 Principal Energy Levels

- An orbital is defined as a region of the most probable location of
 - an electron
 - a neutron
 - a nucleus
 - a proton
- Which statement describes the relative energy of the electrons in the shells of a calcium atom?
 - An electron in the first shell has more energy than an electron in the second shell.
 - An electron in the first shell has the same amount of energy as an electron in the second shell.
 - An electron in the third shell has more energy than an electron in the second shell.
 - An electron in the third shell has less energy than an electron in the second shell.
- How do the energy and the most probable location of an electron in the third shell of an atom compare to the energy and the most probable location of an electron in the first shell of the same atom?
 - In the third shell, an electron has more energy and is closer to the nucleus.
 - In the third shell, an electron has more energy and is farther from the nucleus.
 - In the third shell, an electron has less energy and is closer to the nucleus.
 - In the third shell, an electron has less energy and is farther from the nucleus.
- In a calcium atom in the ground state, the electrons that possess the *least* amount of energy are located in the
 - first electron shell
 - second electron shell
 - third electron shell
 - fourth electron shell
- Which electron configuration represents an atom of an element having a completed third principal energy level?
 - 2-8-2
 - 2-8-6-2
 - 2-8-10-2
 - 2-8-18-2
- An atom of bromine is in the ground state. The outermost electrons are in principal energy level
 - 1
 - 2
 - 3
 - 4
- An atom of which element in the ground state contains electrons in the fourth principal energy level?
 - Kr
 - Ar
 - Ne
 - He
- In the ground state, all of the atoms of Period 3 elements have the same
 - atomic mass
 - atomic number
 - number of occupied energy shells
 - number of oxidation states
- What is the total number of electrons in the second energy shell of a calcium atom in the ground state?
 - 6
 - 2
 - 8
 - 18
- What is the maximum number of electrons in the third shell of an atom?
 - 6
 - 9
 - 3
 - 18
- An atom contains a total of 25 electrons. When the atom is in the ground state, how many different principal energy levels will contain electrons?
 - 1
 - 2
 - 3
 - 4
- What is the total number of completely filled principal energy levels in an atom of argon in the ground state?
 - 1
 - 2
 - 3
 - 4
- In an aluminum atom in the ground state, which energy level contains the most electrons?
 - 1
 - 2
 - 3
 - 4
- What is the maximum number of electrons that may be present in the second principal energy level of an atom?
 - 8
 - 2
 - 18
 - 32
- Which element has atoms with only one completely filled principal energy level?
 - N
 - P
 - As
 - Sb
- Which principal energy level can hold a maximum of 18 electrons?
 - 5
 - 2
 - 3
 - 4

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17. What is the total number of occupied principal energy levels in an atom of neon in the ground state?
A) 1 B) 2 C) 3 D) 4
18. Which principal energy level of an atom contains an electron with the lowest energy?
A) $n = 1$ B) $n = 2$ C) $n = 3$ D) $n = 4$
19. Which atom in the ground state has an outermost electron with the most energy?
A) Cs B) K C) Li D) Na
20. Which atom in the ground state has a partially filled second electron shell?
A) hydrogen atom B) lithium atom
C) potassium atom D) sodium atom
21. The electron configuration of an atom in the ground state is 2-4. The total number of occupied principal energy levels in this atom is
A) 1 B) 2 C) 3 D) 4
22. How many electrons are in the outermost principal energy level (shell) of an atom of carbon in the ground state?
A) 6 B) 2 C) 3 D) 4
23. What is the maximum number of electrons that can occupy the fourth principal energy level (shell) of an atom?
A) 6 B) 8 C) 18 D) 32
24. What is the highest principal energy level for an electron in an atom of sulfur in the ground state?
A) 1 B) 2 C) 3 D) 4
25. What is the electron configuration of a sulfur atom in the ground state?
A) 2-4 B) 2-6
C) 2-8-4 D) 2-8-6
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