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Electron Arrangement: Aufbau Principle

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QUESTION 1

Select the option that correctly describes the aufbau principle.

- Two electrons spinning in opposite directions cannot occupy the same orbital.
- Two electrons spinning in opposite directions can occupy the same orbital.
- Electrons occupy the highest energy orbital first.
- Electrons occupy the lowest energy orbital first. ✓

QUESTION 2

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QUESTION 2

Study the aufbau diagram. Identify the correct order in which electrons would occupy the 3d and 4s orbitals.

Select the correct order and reason from the options given below.

- Electrons will occupy 4s orbital first and then the 3d orbitals. This is because the energy of the 4s orbital is lower than that of the 3d orbitals. ✓
- Electrons will occupy 4s orbital but not the 3d orbitals. This is because the energy of the 3d orbitals is too less for the electrons to fill.
- Electrons will occupy 4s orbital and the 3d orbitals in the same sequence. This is because the energies of the 4s and 3d orbitals are the same.
- Electrons will occupy 3d orbitals first and then the 4s orbital. This is because the energy of the 3d orbitals is lower than that of the 4s orbital.

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QUESTION 3

The lowest-energy arrangement of the electrons is called the element's electron configuration.

QUESTION 4

An aufbau diagram shows _____.

- how electrons spin in opposite directions in an orbital
- how the principal energy levels and energy sublevels relate to each other
- the arrangement of protons and neutrons in the nucleus of an atom
- the three-dimensional area around a nucleus where electrons move

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QUESTION 5

In the aufbau diagram, each box represents .

QUESTION 6

The sequence of filling the energy sublevels within the third principal energy level is: _____

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QUESTION 6

The sequence of filling the energy sublevels within the third principal energy level is: _____

- 1s, 2s, 2p, 3s, 3p, 3d
- 3d, 3p, 3s, 2p, 2s, 1s
- 3s, 3p, 3d
- 3d, 3p, 3s

QUESTION 7

Apply the aufbau principle and select the correct sequence in which electrons fill the orbitals.

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QUESTION 7

Apply the aufbau principle and select the correct sequence in which electrons fill the orbitals.

- 1s, 2s, 2p, 3s, 3p, 4s, 4p, 4d, 3d, 4f, 5s, 6s, 6p, 6d, 5p, 5d, 5f and 7s.
- 1s, 2s, 2p, 3s, 3p, 3d, 4s, 4p, 4d, 4f, 5s, 5p, 5d, 5f, 6s, 6p, 6d, and 7s.
- 1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, 4f, 5d, 6p, 7s, 5f, and 6d.
- 7s, 6d, 6p, 6s, 5f, 5d, 5p, 5s, 4f, 4d, 4p, 4s, 3d, 3p, 3s, 2p, 2s, and 1s.

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QUESTION 8

Study the aufbau diagram below. Select the correct statement from the options given.

The 4s orbital has more energy than 3d orbital.
 The 2s and 2p orbitals have the same energy.
 All the orbitals in the principal energy level 5 have the same energy.
 The 1s orbital has the lowest energy.

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All the orbitals in the principal energy level 5 have the same energy.
 The 1s orbital has the lowest energy.

QUESTION 9

The word aufbau comes from a German word.

QUESTION 10

One of the three rules that defines how electrons can be arranged in an atom's orbitals is the aufbau principle.

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