

Electron Configuration Learning Check Questions 11-18 pg 183 and 187

Pg. 183

11. No. Two arrows pointing in the same direction would indicate that two electrons in the same orbital have the same spin quantum number. This violates the Pauli exclusion principle that no two electrons can have the same four quantum numbers.

12. a.

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 b.

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 c.

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Pg. 187

13. Orbitals fill in order of increasing energy. At energy levels above $n = 3$, the different sublevels overlap. As a result, the 5s orbital has a lower energy than the 4d orbitals.

14. boron: $1s^2 2s^2 2p^1$ [He] $2s^2 2p^1$ neon: $1s^2 2s^2 2p^6$ [He] $2s^2 2p^6$

15. $1s^2 2s^2 2p^6 3s^2 3p^4$

16.

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17. a. sodium: $1s^2 2s^2 2p^6 3s^1$ b. vanadium: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^3$

18. titanium: [Ar] $4s^2 3d^2$