

1.4.5.1: Practice Electronic Structure

Exercise 1.4.5.1.1

Which orbital is the next to fill after the 4s orbital?

Answer

3d orbital

Exercise 1.4.5.1.1

Which orbital sublevel does NOT exist?

- a) 3d
- b) 4f
- c) 2d
- d) all exist

Answer

c (The main level 2 only has 2s and 2p sublevels.)

Exercise 1.4.5.1.1

How many electrons can fit in the 4d sublevel?

Answer

10 electrons

Exercise 1.4.5.1.1

Give the electron configuration for each of the following atoms.

- a) Zn
- b) K
- c) Br

Answer a

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$ (total of 30 electrons)

Answer b

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$ (total of 19 electrons)

Answer c

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$ (total of 35 electrons)

Exercise 1.4.5.1.1

Give the electron configuration for each of the following ions.

- d) O^{2-}
- e) K^{1+}

f) Br^{1-}

Answer d

$1s^2 2s^2 2p^6$ (total of 10 electrons)

Answer e

$1s^2 2s^2 2p^6 3s^2 3p^6$ (total of 18 electrons)

Answer f

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$ (total of 36 electrons)

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