

### 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)  $\text{Br}^{1-}$

**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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