

# Electron Configuration Practice Worksheet

In the space below, write the unabbreviated electron configurations of the following elements:

- 1) sodium \_\_\_\_\_
- 2) iron \_\_\_\_\_
- 3) bromine \_\_\_\_\_
- 4) barium \_\_\_\_\_
- 5) neptunium \_\_\_\_\_

In the space below, write the abbreviated electron configurations of the following elements:

- 6) cobalt \_\_\_\_\_
- 7) silver \_\_\_\_\_
- 8) tellurium \_\_\_\_\_
- 9) radium \_\_\_\_\_
- 10) lawrencium \_\_\_\_\_

Determine what elements are denoted by the following electron configurations:

- 11)  $1s^2 2s^2 2p^6 3s^2 3p^4$  \_\_\_\_\_
- 12)  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$  \_\_\_\_\_
- 13)  $[\text{Kr}] 5s^2 4d^{10} 5p^3$  \_\_\_\_\_
- 14)  $[\text{Xe}] 6s^2 4f^{14} 5d^6$  \_\_\_\_\_
- 15)  $[\text{Rn}] 7s^2 5f^{11}$  \_\_\_\_\_

Determine which of the following electron configurations are not valid:

- 16)  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$  \_\_\_\_\_
- 17)  $1s^2 2s^2 2p^6 3s^3 3d^5$  \_\_\_\_\_
- 18)  $[\text{Ra}] 7s^2 5f^8$  \_\_\_\_\_
- 19)  $[\text{Kr}] 5s^2 4d^{10} 5p^5$  \_\_\_\_\_
- 20)  $[\text{Xe}]$  \_\_\_\_\_

## Electron Configurations - Solutions

Note: The electron configurations in this worksheet assume that lanthanum (La) is the first element in the 4f block and that actinium (Ac) is the first element in the 5f block. If your periodic table doesn't agree with this, your answers for elements near the f-orbitals may be slightly different.

- 1) sodium  $1s^2 2s^2 2p^6 3s^1$
- 2) iron  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$
- 3) bromine  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$
- 4) barium  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2$
- 5) neptunium  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^6 7s^2 5f^5$
- 6) cobalt  $[\text{Ar}] 4s^2 3d^7$
- 7) silver  $[\text{Kr}] 5s^2 4d^9$
- 8) tellurium  $[\text{Kr}] 5s^2 4d^{10} 5p^4$
- 9) radium  $[\text{Rn}] 7s^2$
- 10) lawrencium  $[\text{Rn}] 7s^2 5f^{14} 6d^1$
- 11)  $1s^2 2s^2 2p^6 3s^2 3p^4$  sulfur
- 12)  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^1$  rubidium
- 13)  $[\text{Kr}] 5s^2 4d^{10} 5p^3$  antimony
- 14)  $[\text{Xe}] 6s^2 4f^{14} 5d^6$  osmium
- 15)  $[\text{Rn}] 7s^2 5f^{11}$  einsteinium
- 16)  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^5$  not valid (take a look at "4d")
- 17)  $1s^2 2s^2 2p^6 3s^3 3d^5$  not valid (3p comes after 3s)
- 18)  $[\text{Ra}] 7s^2 5f^8$  not valid (radium isn't a noble gas)
- 19)  $[\text{Kr}] 5s^2 4d^{10} 5p^5$  valid
- 20)  $[\text{Xe}]$  not valid (an element can't be its own electron configuration)