Modern atomic Theory Practice Key

1. How does an orbit differ from an orbital?

An orbit refers to the circular path that was originally proposed for an electrons location. An orbital is the refinement of that theory that instead proposes that an electron exists in a particular region in space called an orbital.

1. How many electrons can occupy a 6p orbital?

Only 2 electrons can occupy any orbital.

1. What is the complete electron configuration of an atom of silicon?

1s2 2s2 2p6 3s2 3p2

1. What is the shorthand electron configuration of an atom of cadmium (Cd)?

[Kr] 5s2 4d10

1. How does atomic size change as you move across the periodic table to the right? What is the explanation for this change?

The sizes of the atoms decrease as you move across the periodic table to the right. This is because the effective nuclear charge increases due to the increase in the number of protons in the nucleus. These protons are not effectively shielded so the outermost electrons tend to feel most of their charge.

1. Circle the atom with the higher ionization energy from the following pairs.

Sr or

or Cs

1. Show the orbital diagram for an atom of nitrogen.

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1s 2s 2p

1. An atom of neon is isoelectronic with a Mg+2 ion. What is meant by this statement?

It means that both particles have the same electronic configuration.