

Shells, Subshells, and Quantum Numbers

What is the maximum number of electrons that can be held in the following principal energy levels?

$n = 1$ 2 $n = 2$ 8 $n = 3$ 18

$n = 4$ 32 $n = 5$ 50 $n = 6$ 72

Indicate the number of subshells in each principal energy level as well as the letter designation of each subshell.

$n = 1$ 1; s $n = 2$ 2; s, p $n = 3$ 3; s, p, d $n = 4$ 4; s, p, d, f

What is the maximum number of electrons that can reside in each of the following subshells?

s 2 p 6 d 10 f 14

What is the maximum number of electrons that can be held in an orbital? 2

Indicate if energy is absorbed or released:

$n = 2 \rightarrow n = 4$ absorbed $n = 3 \rightarrow n = 2$ released

$n = 6 \rightarrow n = 7$ absorbed $n = 4 \rightarrow n = 2$ released

An s subshell has $l =$ 0

A p subshell has $l =$ 1

A d subshell has $l =$ 2

An f subshell has $l =$ 3

If $l = 0$, $m_l =$ 0

If $l = 1$, $m_l =$ -1, 0, +1

If $l = 2$, $m_l =$ -2, -1, 0, +1, +2

If $l = 3$, $m_l =$ -3, -2, -1, 0, +1, +2, +3