


# KEY

## PChapter 9 continued

1. Define and provide an example for the following terms:

Term	Definition	Example
Principle Quantum Number	Position w/ respect to nucleus	$n$
Angular Momentum Quantum Number	describes shape of subshell	$l$ $n-1$
Magnetic Quantum Number	Indicates the orientation about the 3 axis in space	$m_l$
Spin Quantum Number	indicates direction of spin	$-\frac{1}{2}$ or $+\frac{1}{2}$
Hund's Rule	each of unpaired electrons will	

have parallel spin

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Electron Configuration	Shows the occupation of orbitals by electrons for a particular atom	1s <sup>1</sup>
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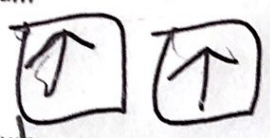
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2. Draw the spin for the following:

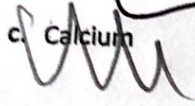
a. Nitrogen



b. Helium



c. Calcium



3. Describe the different subshell which electrons can exist in.

S - orbital, 2 elect

P - 3 orbitals, 6 elect

f d



4. F is the maximum subshell

The Quantum Numbers			The number of Quantum States	
n	l	ml	In sub shell	In valence shell
1	0 (s)	0	2	2
2	0 (s) 1 (p) 2 (d)	0 -1, 0, +1	2 6	8
3	0 (s) 1 (p) 2 (d)	0 -1, 0, +1 -2, -1, 0, 1, 2	2, 6, 10	18
4	0 (s) 1 (p) 2 (d) 3 (f)	0 -1, 0, 1 -2, -1, 0, 1, 2 -3, -2, -1, 0, 1, 2, 3	2, 6, 10, 14	27