

Revised August 2012



## HONORS WORKSHEET 7a: ANSWERS



1.

	<b>n</b>	<b>l</b>	<b>m</b>	<b>s</b>
<b>#11</b>	3	0	0	$+\frac{1}{2}$ (or reversed with #12)
<b>#12</b>	3	0	0	$-\frac{1}{2}$ (or reversed with #11)
<b>#13</b>	3	1	Any integer between -1 and +1 including 0	$+\frac{1}{2}$ or $-\frac{1}{2}$

2. Pauli exclusion principle; no two electrons in the same atom can have the same set of quantum numbers.

3.  $m = -3, -2, -1, 0, +1, +2, +3$ ; seven orbitals.

4.

- (a) 0
- (b) -1, 0, +1
- (c) -2, -1, 0, +1, +2

5.

- (a) 3s
- (b) 3d
- (c) 5s

6.

- (a) 1, 0
- (b) 3, 0
- (c) 2, 1
- (d) 5, 3

7.

- (a)  $n = 4$
- (b)  $n = 4, l = 0$
- (c)  $n = 4, l = 3, m =$  (any integer between -3 and +3 including 0),  $s = +\frac{1}{2}$  or  $-\frac{1}{2}$

8.

- (a) 72
- (b) 6
- (c) 2
- (d) 1