

Revised August 2012



## HONORS WORKSHEET 7b: ANSWERS

ELEMENT	INCORRECT CONFIGURATION	VIOLATION	CORRECT CONFIGURATION	POSSIBLE SET OF QUANTUM NUMBERS FOR OUTERMOST* ELECTRON			
				2	1	-1	+½
N	$1s^2 2s^2 2p_x^2 2p_y^1$	C	$1s^2 2s^2 2p_x^1 2p_y^1 2p_z^1$	2	1	-1	+½
Al	$1s^2 2s^2 2p^6 3p^3$	A	$1s^2 2s^2 2p^6 3s^2 3p^1$	3	1	-1	+½
B	$1s^2 2s^3$	B	$1s^2 2s^2 2p^1$	2	1	-1	+½
P	$1s^2 2s^2 2p^6 3p^5$	A	$1s^2 2s^2 2p^6 3s^2 3p^3$	3	1	-1	+½
Cu	$[\text{Ar}] 4s^2 3d^9$	D	$[\text{Ar}] 4s^1 3d^{10}$	4	0	0	+½
Mg	$[\text{Ne}] \uparrow\uparrow$	B	$[\text{Ne}] \uparrow\downarrow$	3	0	0	+½
C	$1s^2 2s^1 2p_x^1 2p_y^1 2p_z^1$	A	$1s^2 2s^2 2p_x^1 2p_y^1$	2	1	-1	+½
C	$1s^2 2s^2 2p_x^2$	C	$1s^2 2s^2 2p_x^1 2p_y^1$	2	1	-1	+½
Ag	$[\text{Kr}] 5s^2 4d^9$	D	$[\text{Kr}] 5s^1 4d^{10}$	5	0	0	+½
Mn	$[\text{Ar}] 4s^1 3d^6$	A	$[\text{Ar}] 4s^2 3d^5$	4	0	0	+½
Ni	$[\text{Ar}] 4s^2 3d_{xy}^2 3d_{xz}^2 3d_{yz}^2 3d_{z^2}^2 3d_{x^2-y^2}^0$	C	$[\text{Ar}] 4s^2 3d_{xy}^2 3d_{xz}^2 3d_{yz}^2 3d_{z^2}^1 3d_{x^2-y^2}^1$	4	0	0	+½
Cl	$[\text{Ne}] \downarrow\downarrow \uparrow\uparrow \downarrow\downarrow \uparrow$	B	$[\text{Ne}] \uparrow\downarrow \uparrow\downarrow \uparrow\downarrow \uparrow$	3	1	-1	+½
Sc	$[\text{Ar}] 3d^3$	A	$[\text{Ar}] 4s^2 3d^1$	4	0	0	+½
B	$1s^2 2s^1 2p_x^1 2p_y^1$	A	$1s^2 2s^2 2p_x^1$	2	1	-1	+½
Na	$1s^1 2s^2 2p^6 3s^2$	A	$1s^2 2s^2 2p^6 3s^1$	3	0	0	+½
S	$[\text{Ne}] 3s^2 3p_x^2 3p_y^2$	C	$[\text{Ne}] 3s^2 3p_x^2 3p_y^1 3p_z^1$	3	1	-1	+½
V	$[\text{Ar}] 3d^5$	A	$[\text{Ar}] 4s^2 3d^3$	4	0	0	+½
P	$[\text{Ne}] 3s^2 3p_x^2 3p_y^1$	C	$[\text{Ne}] 3s^2 3p_x^1 3p_y^1 3p_z^1$	3	1	-1	+½
Kr	$[\text{Ar}] 4s^2 3d^{16}$	B	$[\text{Ar}] 4s^2 3d^{10} 4p^6$	4	1	-1	+½
Cr	$[\text{Ar}] 4s^2 3d^4$	D	$[\text{Ar}] 4s^1 3d^5$	4	0	0	+½

- \*In d block elements, assume that the outermost electron is in the outer s orbital rather than the outer d orbital.
- p electrons have been given the  $m_l$  number -1, but could also have +1 or 0 for this value.
- All electrons have been given the  $m_s$  number +½ but could also have -½ for this value.