Dougherty Valley HS Chemistry
Orbital Diagrams

Worksheet #2

Name: **Period:** **Seat#:**

Fill in the chart below using an ↑and ↓ as electrons - find the total number of electrons and use that as well as the Periodic Table to find the identity of each element.

Element	Total # e-	Orbital Filling																	Electron Config.
		1s	2s	$2p_x$	$2p_y$	$2p_z$	3s	$3p_x$	$3p_y$	$3p_z$	4s	$3d_1$	$3d_2$	$3d_3$	$3d_4$	$3d_5$	$4p_x$	$4p_y$	$4p_z$	
Na																			
																			$1s^2 2s^2 2p^5$
H																			
S																			
																			$1s^2 2s^2 2p^6 3s^2 3p^1$
																			$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
Ca																			
Mg																			
																			$1s^2 2s^2 2p^6$

Element	# e-	1s	2s	$2p_x$	$2p_y$	$2p_z$	3s	$3p_x$	$3p_y$	$3p_z$	4s	$3d_1$	$3d_2$	$3d_3$	$3d_4$	$3d_5$	$4p_x$	$4p_y$	$4p_z$	**Electron Config.**
Ti																				
																				$1s^2 2s^2 2p^6 3s^2 3p^2$
C																				
																				$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$
Br																				

1) Circle which of the following orbital destinations are possible.

a) 7s b) 1p c) 5d d) 2d e) 4f f) 5g g) 6i

2) Circle which of the following electron configurations is ruled out by the Pauli exclusion principle.

a) $1s^2 2s^2 2p^7$ b) $1s^2 2s^2 2p^6 3s^3$ c) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{12}$ d) $1s^2 2s^2 2p^6 3s^2 3p^6$

3) Explain why the following ground-state electron configurations are not possible:

Q	Config.	Reason it is wrong
a)	$1s^2 2s^3 2p^3$	
b)	$1s^2 2s^2 2p^3 3s^6$	
c)	$1s^2 2s^2 2p^7 3s^2 3p^8$	
d)	$1s^2 2s^2 2p^6 3s^2 3p^1 4s^2 3d^{14}$	

4) Draw a section of an orbital diagram that would violate each of the following rules

Aufbau Principle	Pauli Exclusion Principle	Hund's Rule