

Dougherty Valley HS Chemistry
Electrons – Extra Practice

Worksheet #6*

Name: _____

Period: _____

Seat#: _____

Directions: Any worksheet that is labeled with an * means it is suggested extra practice. We do not always have time to assign every possible worksheet that would be good practice for you to do. You can do this worksheet when you have extra time, when you finish something early, or to help you study for a quiz or a test. If and when you choose to do this Extra Practice worksheet, please do the work on binder paper. You will include this paper stapled into your Rainbow Packet when you turn it in, even if you didn't do any of this. We want to make sure we keep it where it belongs so you can do it later if you want to (or need to). If you did the work on binder paper you can include that in your Rainbow Packet after this worksheet. If we end up with extra class time then portions of this may turn into required work. If that happens you will be told which problems are turned into required. Remember there is tons of other extra practice on the class website...and the entire internet! See me if you need help finding practice on a topic you are struggling with.

<p>1) Write the electron configuration for each atom. a) Na b) Pb c) Sr d) U e) N f) Ag g) Ti h) Ce i) Cl j) Hg</p>	<p>19) Which atoms are represented by the following electron configurations? a. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^2$ b. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^4$ c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$ d. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$ e. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^6 7s^1$ f. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^6 7s^2 5f^{14} 6d^8$ g. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{10}$ h. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10} 6p^4$ i. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$</p>
<p>2) If each orbital can hold a maximum of two electrons, how many electrons can each of the following sets hold? a) 2s b) 5p c) 4f d) 3d e) 4d</p>	<p>20) What is wrong with the following configurations? a. $1s^2 2s^2 2p^6 3s^2 3p^0$ b. $1s^2 2s^2 2p^5 3s^2$ c. $1s^2 2s^2 3s^2 3p^6$</p>
<p>3) What is the shape of an s orbital?</p>	
<p>4) How many s orbitals can there be in an energy level?</p>	
<p>5) How many electrons can occupy an s orbital?</p>	
<p>6) What is the shape of a p orbital?</p>	
<p>7) How many p orbitals can there be in an energy level?</p>	
<p>8) Which is the lowest energy level that can have a s orbital?</p>	
<p>9) Which is the lowest energy level that can have a p orbital?</p>	
<p>10) Is it possible for two electrons in the same atom to have exactly the same set of quantum numbers? Which rule tells you yes or no?</p>	
<p>11) How many d orbitals can there be in an energy level?</p>	
<p>12) How many d electrons can there be in an energy level?</p>	<p>21) What is atomic absorption?</p>
<p>13) Which is the lowest energy level having d orbitals?</p>	<p>22) What is atomic emission?</p>
<p>14) How many f electrons can there be in an energy level?</p>	<p>23) Describe how you can identify an element based on a line spectra</p>
<p>15) Which is the lowest energy level having f orbitals?</p>	<p>24) Describe how the elements were formed in the universe</p>
<p>16) How many f orbitals can there be in an energy level?</p>	<p>25) How do we use absorption spectra to identify the chemical makeup of stars?</p>
<p>17) How many unpaired electrons are in each of the following atoms? a) K b) C c) P d) Ag e) Xe</p>	
<p>18) Why do the fourth and fifth rows of elements contain 18 elements, rather than 8 as do the second and third series?</p>	

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Full, Nobel, and Ion Configuration Practice

#	Element	Full Configuration	Nobel Gas Configuration
26	Sodium		
27	Iron		
28	Bromine		
29	Barium		
30	Tin		
31	Cobalt		
32	Silver		
33	Tellurium		
34	Radium		
35	Argon		

Configuration of Ions

#	Element	# e- lost or gained	Total # e- left after loss or gain	Element written with charge	Full Configuration after loss or gain
36	Ca				
37	F				
38	Se				
39	N				
40	I				

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- 41)** Give two examples of:
- An atom with a half-filled orbital set (subshell)
 - An atom with a completely filled outer shell (valence shell, or outer energy level)
 - An atom with its outer electrons occupying a half-filled subshell (orbital set) and a filled subshell (orbital set)
- 42)** How many unpaired electrons are there in the ground state of each of the following atoms? (Hint: Orbital Diagram)
- Ge
 - Se
 - V
 - Fe
 - Si
 - Mo
 - Ag
- 43)** How many unpaired electrons are in the ground state of each of the following particles?
- Cl^-
 - O^{2-}
 - Al^{3+}
 - Ca^{2+}
 - Na^+
 - P^{3-}
 - Xe
- 44)** Arrange the following species into groups that have matching electron configurations (that is called “iso-electronic” when their configurations match)
- | | | | |
|------------------|-----------------|------------------|------------------|
| F^- | Rb^+ | Ti^{4+} | He |
| Sc^{3+} | O^{2-} | Ar | Se^{2-} |
| Be^{2+} | Na^+ | B^{3+} | Y^{3+} |