

Name: \_\_\_\_\_

Date: \_\_\_\_\_

[2 pt] 1. What do each of the following represent in Lewis Structure Terminology:

(a) :

(c) [ ]

(b) ·

(d) -

[2 pt] 2. Complete the Lewis Structures for the second row of the periodic table below.

Li

Be

B

C

N

O

F

Ne

[2 pt] 3. Write the Lewis structure for each the atoms or ions below:

(a)  $\text{Na}^{+1}$ (b)  $\text{Br}^{-1}$ (c)  $\text{O}^{-2}$ (d)  $\text{Al}^{+3}$ 

[2 pt] 4. Define the term 'Octet Rule'. Which two atoms are exceptions to the rule (and why)?

[3 pt] 5. Show how a potassium cation is formed from a neutral potassium atom using:

(a) Chemical Reaction

(b) Electron shell configurations

(c) Lewis Structures

[3 pt] 6. Show how a nitrogen anion is formed from a neutral nitrogen atom using:

(a) Chemical Reaction

(b) Electron shell configurations

(c) Lewis Structures

**CHE 101 - Homework - Ch 7d**

[2 pt] 7. What is the primary reason ionic chemical bonds form?

[6 pt] 8. Explain in terms of (a) Electron Configurations, (b) Lewis Structures and (c) Words, how the ionic bond is formed in the following reaction:  $\text{Mg(s)} + \text{Cl}_2\text{(g)} \longrightarrow \text{MgCl}_2\text{(s)}$ .

(a) Electron Configurations

(b) Lewis Structures

(c) Words (Sentence)

[6 pt] 9. Explain in terms of (a) Electron Configurations, (b) Lewis Structures and (c) Words, how the ionic bond is formed in the following reaction:  $2\text{Na(s)} + \text{O(g)} \longrightarrow \text{Na}_2\text{O(s)}$ .

(a) Electron Configurations

(b) Lewis Structures

(c) Words (Sentence)

## CHE 101 - Homework - Ch 7d

- [2 pt] 10. What is the difference between Ionic and Molecular compounds with respect to their electrons?
- [4 pt] 11. Explain why Cl<sub>2</sub> can't form an ionic bond. Use words AND electron configurations or lewis structures.
- [2 pt] 12. Define the following terms (1) Lone pair of electrons, (2) Bonding pair of electrons. Draw a Lewis structure illustrating these terms and identify them appropriately.
- [2 pt] 13. Draw the Lewis Structure of the following Covalent compounds, and identify the bond type formed:  
(a) I<sub>2</sub>    (b) S<sub>2</sub>    (c) P<sub>2</sub>
- [3 pt] 14. What is a Non-polar Covalent bond? Draw and label an example of a molecule that has a Non-polar Covalent bond, DO NOT use the example given in class, be original!
- [3 pt] 15. Define the term 'Polar Covalent' bond. Draw an example of a molecule illustrating a Polar Covalent bond, DO NOT use the example given in class, be original! Properly label one atom  $\delta^-$  and one atom  $\delta^+$ .

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[3 pt] 16. Define the term 'Electronegativity', and complete the following table (Use an example NOT given in lecture).

<b>Type of Bond</b>	$\Delta EN$	<b>Example</b>
Ionic (I)		
Polar Covalent (PC)		
Non-Polar Covalent (NPC)		

[3 pt] 17. Classify the bond between the following pairs of elements as primarily (I)onic, (P)olar covalent, or (N)onpolar covalent in nature. Show work to support your answers.

(a) NaCl 17(a) \_\_\_\_\_

(b) NH<sub>3</sub> 17(b) \_\_\_\_\_

(c) CCl<sub>4</sub> 17(c) \_\_\_\_\_

(d) CaO 17(d) \_\_\_\_\_

(e) N<sub>2</sub> 17(e) \_\_\_\_\_