**Chemistry**

*“I can accept failure, everyone fails at something. But I can’t accept not trying.” – Michael Jordan*

**Packet#5**

***Unit#6: Ions***

***Edmodo Group Code:*** *ozm60q* (http://www.edmodo.com)

***Class Website:*** http://mrgchem.weebly.com

***Mr. Gutierrez’s email:*** gutierrezbr@elizabeth.k12.nj.us

Text Messaging Reminders: Text @aofchem to 23559



*Note: You are expected to work on this packet during the allotted class practice time.*

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| **Packet Points** |
| /35 | Completed Class Notes |
| /35 | Completed Classwork |
| /5 | **Writing Name on Every Page** |
| /25 | Handed Packet in on Time  |
| / | Homework |
| / | Followed Classroom Policies |
| / | Classwork Participation |
| / | TOTAL POINTS |

Name of Chemist:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_\_\_\_\_\_\_\_

***DUE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

\*All Class Notes + Questions MUST be finished for HOMEWORK if not done in class.

**Unit#6: Ions**

***Table of Contents***

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**ANNOUNCEMENTS**

* When **emailing work** to me, it is YOUR RESPONSIBILITY to make sure that it was sent. You MUST write In the SUBJECT FIELD:
* TITLE OF THE ASSIGNMENT

p3 if you’re in period 3

p4 if you’re in period 4

p6 if you’re in period 6

**Additional Resources:**

**\*Tutoring with Mr. Gutierrez:** Meet Mr. Gutierrez in student cafeteria after school or during 9th or 10th period.

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: SWBAT write the Lewis dot structures of neutral atoms.** |

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| **Class Notes** |
| ***REVIEW:*****VALENCE ELECTRONS****Valence electrons** (also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)* Found in the **outermost part** **(or the highest occupied level**) of the atom.
* Participate in chemical reactions and chemical bonding.

*Example#1:*An atom with the following electron configuration: 1s22s22p6 has \_\_\_\_\_\_\_ valence electrons.**Inner shell electrons** are found in the innermost parts of an atom. All electrons that are NOT **valence** are considered to be **inner shell electrons.***Example#1:*An atom with the following electron configuration: 1s22s22p6 has \_\_\_\_\_\_\_ inner shell electrons. |

***Write the number of valence electrons each element has next to the symbol. The numbers on top are the group numbers.***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3 - 12** | **13** | **14** | **15** | **16** | **17** | **18** |
| H | Mg | Sc | B | C | N | O | F | Ne |
| Li | Ca | Ti | Al | Si | P | S | Cl | Ar |
| Na | Sr | V | Ga | Ge | As | Se | Br | Kr |

Show work at the space below.

**What pattern did you notice?**

**LEWIS DOT STRUCTURES**

**Lewis Dot Structures:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diagram representing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in an atom

|  |  |
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| **Steps** | **Example** |
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |

**Lewis Dot Structures Sample Questions**

1. Draw the Lewis Dot Structure of Chlorine.
2. Draw the Lewis Dot Structure of Sulfur.

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| Real world connection – Why should I care? |

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| Summary*In your own words, summarize today’s main points.* |
| **Lewis Dot Structures – GUIDED PRACTICE***Draw the Lewis dot structures for the following elements.*1. Titanium
2. Aluminum
3. Bromine

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**Once you are finished, have Mr. Gutierrez check your work before continuing to the next page.**

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: SWBAT write the Lewis dot structures of neutral atoms.** |

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| **Class WORK*****Class Work (Independent Practice*) Directions*:*** Finish as many questions as you can during class. Refer to your notes and ask at least three classmates before asking me for help. If you do not finish these questions in class, you must finish them for homework.  |
| **Draw the Lewis dot structures for the following elements.**1. **Nickel**
2. **Sulfur**
3. **Krypton**
4. **Neon**
5. **Niobium**
6. **Strontium**
7. **Iron**
8. **Paladium**
9. **Iodine**
10. **Barium**
11. **Cesium**
12. **Silicon**
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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: 1) SWBAT describe the Octet Rule and explain why ions form. 2) SWBAT write the electron configuration of cations.** |

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| **Class Notes** |
| **The Octet Rule*** The Octet Rule States that atoms tend to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons so that they have a total of \_\_\_\_\_\_\_\_ valence electrons.
* Many atoms become \_\_\_\_\_\_\_\_\_\_\_\_\_ in order to have 8 valence electrons. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the process by which ions form.
* An \_\_\_\_\_\_\_\_\_ is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, that has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge.
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| **Cation**A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion. Cations form when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons.Examples:1.2. |
| **Electron Configuration of Cations**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Element*** | ***Neutral*** | ***Cation*** | ***Cation Symbol*** |
| **K** |  |  |  |
| **Ca** |  |  |  |
| **Sc** |  |  |  |

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| **Real world connection – Why should I care?** |

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| **Summary***In your own words, summarize today’s main points.* |

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: 1) SWBAT describe the Octet Rule and explain why ions form. 2) SWBAT write the electron configuration of cations.** |

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| **Class WORK*****Class Work (Independent Practice*) Directions*:*** Finish as many questions as you can during class. Refer to your notes and ask at least three classmates before asking me for help. If you do not finish these questions in class, you must finish them for homework.  |
| For the elements listed in the table below, write down the electron configuration of the *neutral form of the atom*, the electron configuration of the *cation form* of each atom, and the *cation symbol.*

|  |  |  |  |
| --- | --- | --- | --- |
| ***Element*** | ***Neutral*** | ***Cation*** | ***Cation Symbol*** |
| 1. Aluminum |  |  |  |
| 2. Ytrrium |  |  |  |
| 3. Francium |  |  |  |
| 4. Gallium |  |  |  |
| 5. Gallium |  |  |  |

Part II.1. What are positively charged ions called?
2. Why do certain atoms lose electrons?
3. A neutral atom loses 2 electrons.
4. Is this a positive or negative ion?
5. If this atom now has 10 inner shell electrons, which element is this?
6. Write the symbol of the cation form of this element.
7. A neutral atom loses 3 electrons.
8. Is this a positive or negative ion?
9. If this atom now has 2 inner shell electrons, which element is this?
10. Write the symbol of the cation form of this element.
11. Consider the element Argon. Would a neutral atom of Argon gain or lose electrons? Why or why not? Be sure to mention the Octet Rule in your response.
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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: 1) SWBAT describe the Octet Rule and explain why ions form. 2) SWBAT write the electron configuration of anions.** |

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| **Class Notes** |
| ***Quick Review:* The Octet Rule*** The Octet Rule States that atoms tend to **gain,** **lose**, or **share** electrons so that they have a total of **8** valence electrons.
* Many atoms become **IONS** in order to have 8 valence electrons.
* An **ION** is an **atom** or **group of atoms** that has a **positive** or **negative** charge.
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| **Anions**A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion. Cations form when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons.Examples:1.2. |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Electron Configuration of Anions**

|  |  |  |
| --- | --- | --- |
| ***Element*** | ***Neutral*** | ***Anion*** |
| **N** |  |  |
| **F** |  |  |
| **S** |  |  |

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| --- |
| **Summary***In your own words, summarize today’s main points.* |

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| **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Objectives: 1) SWBAT describe the Octet Rule and explain why ions form. 2) SWBAT write the electron configuration of anions.** |

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| **Class WORK*****Class Work (Independent Practice*) Directions*:*** Finish as many questions as you can during class. Refer to your notes and ask at least three classmates before asking me for help. If you do not finish these questions in class, you must finish them for homework.  |
| For the elements listed in the table below, write down the electron configuration of the *neutral form of the atom*, the electron configuration of the *anion form* of each atom, and the *anion symbol.*

|  |  |  |  |
| --- | --- | --- | --- |
| ***Element*** | ***Neutral*** | ***Anion*** | ***Anion Symbol*** |
| 1. Nitrogen |  |  |  |
| 2. Oxygen |  |  |  |
| 3. Iodine |  |  |  |
| 4. Selenium |  |  |  |
| 5. Astatine |  |  |  |

Part II.1. What are negatively charged ions called?
2. Why do certain atoms gain electrons?
3. A neutral atom gains 2 electrons.
4. Is this a positive or negative ion?
5. If this atom were Sulfur, how many electrons does it now have in TOTAL?
6. Write the symbol of the anion form of this element.
7. A neutral atom gains 3 electrons.
8. Is this a positive or negative ion?
9. If this atom now has 10 inner shell electrons, which element is this?
10. Write the symbol of the anion form of this element.
11. Explain why Noble Gases do not usually undergo ionization.
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| Group | 1 | 2 | 3 – 12 (some exceptions apply) | 13 | 14 | 15 | 16 | 17 | 18 |
| Valence |  |  |  |  |  |  |  |  |  |
| Type of Ion (Charge) |  |  |  |  |  |  |  |  |  |



Complete the following table using your notes.

|  |  |
| --- | --- |
| **Octet Rule** |  |
| **Ion** |  |
| **Cation** |  |
| **Anion** |  |

Make sure Mr. Gutierrez stamps/signs this by the end of the period. You CANNOT get the stamp/signature for a day later on. It is your responsibility to remind Mr. Gutierrez. You will NOT receive a stamp if you did not follow all classroom policies or actively work on the practice problems during the allotted class time.A stamp means you received all 10 points. No stamps means you’ve received zero points. If you completed some work, I may give you partial credit based on my discretion. ***If you are absent, write the date on the day you were absent and write the word “Absent.” DO NOT LOSE THIS SHEET!!!*** (If you lose this sheet, you will lose all of your participation points. NO EXCEPTIONS.)

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| **Day of Week** | **Followed All Classroom Policies** (Respectful, on time, prepared, engaged…) | **Class work Participation** | **Homework** |
| *Monday* | /10 | /10 | /10 |
| *Tuesday* | /10 | /10 | /10 |
| *Wednesday* | /10 | /10 | /10 |
| *Thursday* | /10 | /10 | /10 |
| *Friday* | /10 | /10 | /10 |

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| **Classroom Policy Violation Codes**P = PhoneC = CursingT = TalkingL = Late to classO.T. = Off TaskN.iP = Did not bring iPadUnp = Unprepared |

**Teacher Comments:**