NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ICLS ATOMIC REVIEW

DIRECTIONS: Provide or by select the answer which best completes each question. Place every answer ON THESE PAGES.

* Use your periodic table
* Circle and re-define important terms
* Now … Get going!

1) Given the following symbol for an **atom**:

a) \_\_\_\_\_ What is the atomic number of this atom?

b) \_\_\_\_\_ How many electrons must this atom have?

2) Given the following symbol for an ion:  **-2**

a) \_\_\_\_\_ What is the atomic number of this ion?

b) \_\_\_\_\_ How many electrons must this ion have?

3) How do and atom and an ion differ from each other? (Be sure to provide a “because statement to prove your

point) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4) A species has an **atomic number of 53** and a **54 electrons**.

a) \_\_\_\_\_\_\_\_\_\_\_\_ Is the species an atom or an ion?

b) The overall charge on the species should be:

select one: i) 0 ii) +1 iii) -1 iv) +53

Put your answer here

\_\_\_\_\_5) Study a copy of the periodic table thoroughly. Based upon this study, the elements are organized:

1) by the dates of discovery 3) alphabetically

2) according to increasing atomic number 4) according to increasing mass

\_\_\_\_\_6) Which of these particles is described as having a charge of +1 ?

1) proton 2) neutron 3) electron 4) an atom

\_\_\_\_\_7) Which subatomic particle is described as the fundamental unit of negative charge?

1) proton 2) neutron 3) electron

\_\_\_\_8) Which of these elements is a member of the halogen family of elements?

1) carbon 2) tin 3) sodium 4) bromine

\_\_\_\_\_\_\_\_9) Identify the element, by symbol, found in period 4, group 15

\_\_\_\_10) Which of the following is a metal?

1) H 2) Fe 3) C 4) Ne

11) Which system of positive protons (+) and negative electrons (-) represents a +2 ion?

1) + + + + + + +

- - - - - - - - - -

2) + + + + + + + +

- - - - - - - -

3) + + + + +

- - -

4) + + + +

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Defend your answer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_\_\_\_\_ 12) Using the above diagrams, which represents an atom?

13) A student said that they were trying to figure out what the symbol P-3 meant. What would you tell them?

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14) Chemically speaking, what happens to every metal atom, in a chemical reaction with a nonmetal atom?

The metal atom becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) What does the mnemonic LEO GER mean?

ANSWERS:

1) Given the following symbol for an **atom**:

a) 30 What is the atomic number of this atom? For an atom the bottom value can represent BOTH

the # of protons and # electrons, for they are equal.

b) 30 How many electrons must this atom have?

2) Given the following symbol for an ion:  **-2** The charge tells us what subatomic particle is in excess

proton (+) or electron (-). It does not tell us what was

a) 8 What is the atomic number of this ion? lost or gained … we must infer that … but remember,

the # of p is a constant for reaction chemistry.

b) 10 How many electrons must this ion have?

3) How do and atom and an ion differ from each other? (Be sure to provide a “because statement to prove your

point) Atoms are neutral in overall charge and ions have a plus or minus charge, because atoms have an

equal number of protons and electrons while ions have an unequal number of protons and electrons.

4) A species has an **atomic number of 53** and a **54 electrons**.

a) ion Is the species an atom or an ion?

b) The overall charge on the species should be:

select one: i) 0 ii) +1  **iii) -1**  iv) +53

Put your answer here

2 5) Study a copy of the periodic table thoroughly. Based upon this study, the elements are organized:

1) by the dates of discovery 3) alphabetically

**2) according to increasing atomic number** 4) according to increasing mass

1 6) Which of these particles is described as having a charge of +1 ?

**1) proton** 2) neutron 3) electron 4) an atom

3 7) Which subatomic particle is described as the fundamental unit of negative charge?

1) proton 2) neutron **3) electron**

4 8) Which of these elements is a member of the halogen family of elements? (use your Periodic Tables)

1) carbon 2) tin 3) sodium **4) bromine**

As 9) Identify the element, by symbol, found in period 4, group 15 (use your Periodic Tables)

2 10) Which of the following is a metal? (use your Periodic Tables)

1) H **2) Fe**  3) C 4) Ne

3 11) Which system of positive protons (+) and negative electrons (-) represents a +2 ion?

1) + + + + + + +

- - - - - - - - - -

2) + + + + + + + +

- - - - - - - -

**3) + + + + +**  There are 2 more protons than electrons

**- - -**

4) + + + +

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Defend your answer: A +2 ion must have two more protons than electrons, due to a loss of electrons.

This diagram (3) is the only diagram indicating that relationship.

**2** 12) Using the above diagrams, which represents an atom?

13) A student said that they were trying to figure out what the symbol P-3 meant. What would you tell them?

* This is an ion with three more electrons than protons
* This is a phosphide anion (negative ion) that has three more electrons than protons due to a gain of electrons
* This is an ion with 15 protons and 18 electrons

14) Chemically speaking, what happens to every metal atom, in a chemical reaction with a nonmetal atom?

The metal atom becomes **oxidized, a loser of electrons, a more positive species, a cation**

15) What does the mnemonic LEO GER mean?

Loss Gain

Electrons Electrons

Oxidation Reduction