

Study Guide – Chapter 4 (Matter and Energy) Part II.

gchemchp4SGPt2Corwin.docx

Name: _____ Date: _____ Period: _____

1. For the following descriptors, place a box around the terms that chiefly relate to the properties of metals and an oval around those related to nonmetals.

dull high density brittle low melting point silver/gray ductile
insulator conducts heat gas phase react w/only nonmetals malleable

2. An element that is silvery/gray in color, brittle and does not conduct electricity very well would be best classified as a _____.

3. The element that is commonly used in the semiconductor industry is _____.

4. The identity of an element is determined by the number of _____ in the nucleus.

5. For the following elements, place a box around the elements that are metals, an oval around those that are nonmetals and underline those that are metalloids.

Al	C	Kr	Sn	I	Ca	As
Ge	Pb	N	Rb	Si	Te	O
K	Cl	Cu	Fe	Rn	U	Au

6. The only two elements that are liquids under normal conditions are _____ and _____.

7. The top three elements in the Earth's crust (in descending order) are classified as _____, _____ and _____ (choices are metal, nonmetal, semi-metal)

8. The top three elements in the human body (in descending order) are classified as _____, _____ and _____ (choices are metal, nonmetal, semi-metal)

9. In 1799, Joseph Louis Proust stated that “ _____ always contain the same _____ in a constant proportion by _____”. This statement is known as the _____.

10. Determine how many of each type of element are contained within the following compounds:

a. CaCO_3 Calcium _____ Carbon _____ Oxygen _____

b. $\text{Mg}_3(\text{PO}_4)_2$ Magnesium _____ Phosphorus _____ Oxygen _____

c. $\text{C}_8\text{H}_9\text{NO}_2$ Carbon _____ Hydrogen _____ Nitrogen _____ Oxygen _____

11. Place a box around the following descriptors that are physical properties and an oval around those that are chemical properties:

conductivity solubility rusts malleable water reactive
combusts density corrodes mass color

12. The group IA elements combine with oxygen in a ___: ___ ratio, group IIA elements combine with oxygen in a ___: ___ ratio and group IVA element combine with oxygen in a ___: ___ ratio.

13. Classify each of the following changes as *physical* or *chemical*:

- a. Condensation forms on a window: _____ b. A log burns: _____
c. An egg is fried: _____ d. An antacid relieves indigestion: _____
e. A pop fizzes when opened: _____ f. A saw cuts a piece of wood: _____

14. In 1789 Antoine Lavoisier announced after careful experimental measurement that mass is neither lost nor gained in any chemical reaction. This statement is commonly known as the _____.

15. Sodium chloride (NaCl) is the chemical name for table salt. If 12.71 grams of sodium chloride is made in a chemical reaction that takes place between sodium metal and chlorine gas and it is known that 5.00 grams of sodium metal were used, then the number of grams of chlorine gas that were used is _____g. If instead, 15.00 grams of sodium are reacted, then the number of grams of sodium chloride that can be produced is _____g. The mass ratio of chlorine to sodium in sodium chloride is _____ to 1. The number of grams of sodium that would be required to react exactly with 10.00g of chlorine is _____g.

16. _____ is a measure of an object's ability to do work, whereas _____ is a measure of the average kinetic energy of its constituent particles.

17. Energy that an object possesses due to its position or composition is known as _____.

Energy due to an object's state of motion is known as _____.

18. The Law of Conservation of Energy states that energy can be _____ from one type to another, but

cannot be _____ or _____. The six different forms of energy are: _____,
_____, _____, _____, _____, _____.

Einstein showed that mass and energy can be interconverted through his equation _____.

19. Give the percentage of energy required for producing each of the following from recycled materials versus from their "raw" form. Aluminum: _____%, Iron: _____, Paper: _____%

20. Why did the price of aluminum plummet in the year 1886?

_____.