

Matter Final Test Review

True/False

Indicate whether the sentence or statement is true or false.

- ___ 1. All periods on the periodic table contain the same number of elements.
- ___ 2. Elements in a group on the periodic table are in the same state at room temperature.
- ___ 3. Elements were arranged in order of increasing atomic mass on Mendeleev's first periodic table.
- ___ 4. Atoms of different elements have different numbers of protons.
- ___ 5. Most of an atom is empty space.
- ___ 6. The solubility of a substance describes how fast a solute will dissolve.
- ___ 7. A solution is a homogeneous mixture.
- ___ 8. Solutes can be separated from their solvents by physical means.
- ___ 9. All aqueous solutions contain water.
- ___ 10. For the same concentration, strong acids have lower pH values than weak acids.
- ___ 11. A solution is neutral if it has more hydronium ions than hydroxide ions.
- ___ 12. An antacid has a pH greater than seven.
- ___ 13. Water is often called the universal solvent.
- ___ 14. Vinegar and oranges both contain acids.
- ___ 15. Acids give soaps their useful properties.

Modified True/False

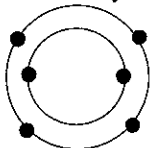
Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.

- ____ 16. Temperature is the measure of the average kinetic energy of a substance. _____
- ____ 17. When a gas condenses to a liquid it absorbs heat from its surroundings. _____
- ____ 18. The rate of evaporation of a liquid decreases as the temperature decreases. _____
- ____ 19. The ability to burn is an example of a physical property. _____
- ____ 20. The state of matter is an example of a physical property. _____
- ____ 21. Ice, liquid water, and water vapor are the three states of water. _____
- ____ 22. Burning wood is an example of physical change. _____
- ____ 23. Physical changes are difficult or impossible to reverse. _____

Multiple Choice

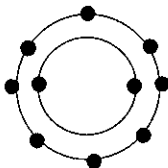
Identify the letter of the choice that best completes the statement or answers the question.

- ____ 24. How many valence electrons does this element have?



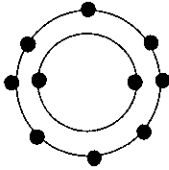
- a. 6
b. 2
c. 4
d. 8

- ____ 25. This is the Bohr model for which element?



- a. Xenon
b. Argon
c. Neon
d. Krypton

___ 26. How many valence electrons does this element have?



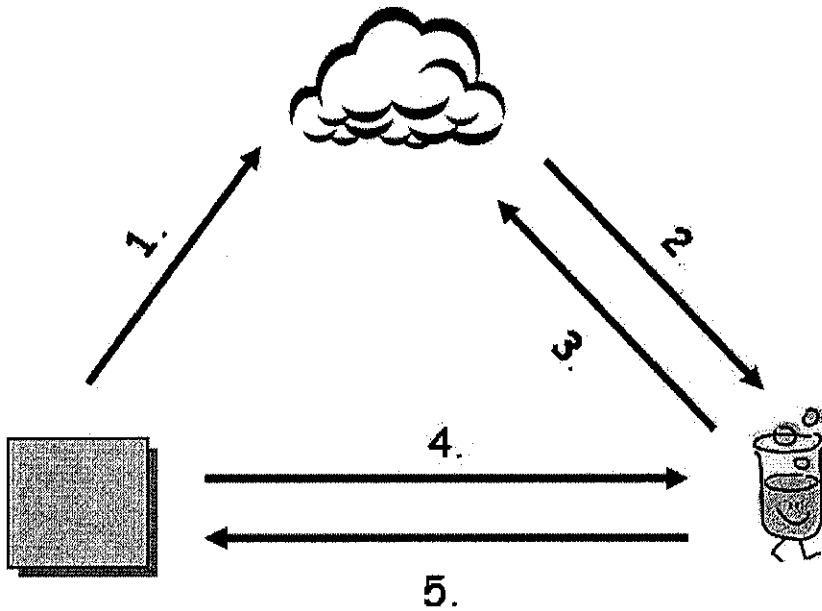
- a. 2
- b. 8
- c. 10
- d. 15

___ 27. Which is the correct Lewis Dot model for Na?

- a. Na ·
- b. :Na:
- c. :Na:
- d. :Na:

___ 28. Which of the following elements has full outer energy shell?

- a. H
- b. C
- c. Na
- d. Ne



___ 29. What phase change is taking place at arrow #1 and is it absorbing or releasing energy?

- a. condensation, absorbing
- b. sublimation, absorbing
- c. sublimation, releasing
- d. vaporization, releasing

___ 30. What phase change is taking place at arrow #2 and is it absorbing or releasing energy?

- a. condensation, absorbing
- b. vaporization, absorbing
- c. condensation, releasing
- d. vaporization, releasing

Name: _____

ID: A

- _____ 31. What phase change is taking place at arrow #3 and is it absorbing or releasing energy?
a. condensation, absorbing c. condensation, releasing
b. vaporization, absorbing d. vaporization, releasing
- _____ 32. What phase change is taking place at arrow #4 and is it absorbing or releasing energy?
a. freezing, absorbing c. freezing, releasing
b. melting, absorbing d. melting, releasing
- _____ 33. What phase change is taking place at arrow #5 and is it absorbing or releasing energy?
a. freezing, absorbing c. freezing, releasing
b. melting, absorbing d. melting, releasing
- _____ 34. The measure of the average kinetic energy of the particles of a substance is the _____.
a. temperature c. thermal energy
b. heat d. kinetic energy
- _____ 35. The freezing point of a substance is _____ the melting point of the same substance.
a. greater than c. equal to
b. less than d. unrelated to
- _____ 36. Kinetic energy is the _____ of motion.
a. temperature c. heat
b. energy d. state
- _____ 37. Viscosity is a measure of a fluid's _____.
a. resistance to flow c. average kinetic energy
b. adhesive forces d. buoyancy
- _____ 38. A cork is able to float on water because it is _____.
a. a crystalline solid c. small in size
b. equal in density to water d. less dense than the water
- _____ 39. The measurement of an object's mass is a _____.
a. physical change c. chemical change
b. physical property d. chemical property
- _____ 40. The ability of an apple to change color when exposed to air is a _____.
a. physical property c. physical change
b. chemical property d. chemical change
- _____ 41. The ability of a pond to freeze over in winter is a _____.
a. physical property c. physical change
b. chemical property d. chemical change

- _____ 42. Three examples of physical change are _____.
a. boiling water, a nail rusting, a melting candle
b. a pond freezing, breaking glass, a burning candle
c. melting ice, mowing the lawn, carving a statue
d. applying lipstick, making lemonade, baking bread
- _____ 43. When Mendeleev published his periodic table, there were some spaces for undiscovered elements. Figure 4K-1 is a section of a similar table. A reasonable value for the atomic mass of the missing element is _____.

Al 27.0	Si 28.1	P 31.0
Ga 69.7	?	As 74.9
In 115	Sn 119	Sb 122

Figure 4K-1

- a. 101
b. 72.3
- c. 68.2
d. 34.8
- _____ 44. Every element has its own atomic number. The atomic number is the number of _____ in the nucleus of an atom of the element.
a. electrons
b. neutrons
c. positrons
d. protons
- _____ 45. In the modern periodic table, elements are arranged according to increasing _____.
a. atomic number
b. atomic mass
c. date of discovery
d. electrical conductivity
- _____ 46. The particles that make up an atom are _____.
a. electrons, protons, and nuclei
b. elements, protons, and electrons
c. protons, neutrons, and nuclei
d. protons, neutrons, and electrons
- _____ 47. In an atom, electrons _____.
a. are located in the nucleus
b. are paired with neutrons
c. travel outside the nucleus
d. are always in the same place in an atom
- _____ 48. Dot diagrams are used to represent _____.
a. protons
b. outer electrons
c. atomic mass
d. the structure of the nucleus

- _____ 58. Which is a likely use for a base?
- as a vitamin in your food
 - etching metals for printing
 - making foods taste sour
 - making soaps and detergents
- _____ 59. In a water solution, how do acids differ from bases?
- Acids form hydrogen ions (H^+), while bases form hydroxide ions (OH^-).
 - Acids turn litmus blue, while bases turn litmus red.
 - Acids form salts, but bases do not.
 - Hydrogen ions (H^+) remain dissolved, but hydroxide ions (OH^-) do not.
- _____ 60. The pH scale measures
- the strength of an acid.
 - the strength of hydrogen ions.
 - the concentration of hydrogen ions.
 - the concentration of an acid.
- _____ 61. Neutralization is a reaction between a(n)
- acid and a base.
 - acid and a metal.
 - base and a salt.
 - salt and water.
- _____ 62. What does a neutralization reaction produce?
- acids
 - bases
 - water and a salt
 - carbonated water
- _____ 63. Normal rainfall is slightly acidic, which means its pH must be
- less than 2.
 - between 5 and 7.
 - between 2 and 4.
 - between 7 and 9.
- _____ 64. When magnesium (Mg) metal is burned in the presence of oxygen (O_2), magnesium oxide (MgO) is produced. The properties of magnesium oxide are different than the individual properties of magnesium and oxygen because magnesium oxide is
- a solution.
 - a mixture
 - a compound
 - an element

65.

The table below shows the pH and reaction to litmus of four body fluids.

Body Fluid	pH	red litmus	blue litmus
Blood	7.4	turns blue	no change
Bile	8.2	turns blue	no change
Saliva	6.8	no change	turns red
Gastric Juice	1.7	no change	turns red

These data indicate that gastric juice is

- a. very acidic
- b. very basic
- c. positively charged
- d. negatively charged

66. Quinn has a container for making frozen juice bars. He pours juice into the container and then puts the container into the freezer for 12 hours. What happens to the juice molecules in the container during these 12 hours?

- a. They lose kinetic energy.
- b. They lose chemical energy.
- c. They gain electrical energy.
- d. They gain gravitational energy.

67. Some common substances and their chemical formulas are listed in the chart below.

Substance	Formula
Carbonic acid	H_2CO_3
Oxygen	O_2
Hydrochloric acid	HCl
Carbon dioxide	CO_2
Water	H_2O
Helium	He

Which of these substances are elements?

- a. hydrochloric acid and carbonic acid
- b. carbon dioxide and water
- c. oxygen and helium
- d. water and oxygen

68. A substance has a freezing point of $-38^{\circ}C$ and a boiling point of $356^{\circ}C$. At what temperature would this substance be in its liquid state?

- a. $-100^{\circ}C$
- b. $-50^{\circ}C$
- c. $80^{\circ}C$
- d. $375^{\circ}C$

Match the signs of chemical change with the examples of chemical change.

- | | |
|-----------------------------------|------------------------------|
| a. the formation of a precipitate | c. release of light and heat |
| b. a change in color | d. the formation of a gas |

- _____ 75. burning wood in a fireplace
- _____ 76. antacid tablet in water
- _____ 77. solution of sodium nitrate is mixed with a solution of lead nitrate
- _____ 78. leaving peeled fruit on a kitchen counter

Match each item with the best description below.

- | | |
|-----------------|---------------------------|
| a. acid | i. H_3O^+ |
| b. base | j. neutralization |
| c. solution | k. indicator |
| d. solubility | l. heterogeneous mixture |
| e. solute | m. insoluble |
| f. solvent | n. precipitate |
| g. dilute | o. OH^- |
| h. concentrated | |

- _____ 79. reaction between an acid and a base
- _____ 80. amount of substance that can dissolve in 100 g of water
- _____ 81. solid that falls out of a solution
- _____ 82. produces hydronium ions in water
- _____ 83. formula for the hydronium ion
- _____ 84. another name for a homogenous mixture
- _____ 85. formula for the hydroxide ion
- _____ 86. not uniform in composition
- _____ 87. oil in water
- _____ 88. larger or largest part of a solution
- _____ 89. large amount of solute per given amount of solvent
- _____ 90. turns different colors in acids and bases

Name: _____

ID: A

- ___ 91. produces hydroxide ions in water
- ___ 92. substance that dissolves to form a solution
- ___ 93. small amount of solute in a given amount of solvent

Match each type of substance with the correct description below.

- a. acid
- b. base
- c. both
- d. neither

- ___ 94. solution with a pH above 7
- ___ 95. neutral solution
- ___ 96. conducts electricity in water
- ___ 97. tastes bitter
- ___ 98. solution with a pH of 3
- ___ 99. corrosive
- ___ 100. solution feels slippery
- ___ 101. changes the color of indicators
- ___ 102. reacts with metals, producing hydrogen gas
- ___ 103. tastes sour
- ___ 104. produce hydronium ions when dissolved in water
- ___ 105. produce hydroxide ions when dissolved in water