

Name: _____

Date: _____

Introduction to Chemistry – Review

1. Which of the following is NOT an example of matter?
a. dust b. oxygen **c. heat** d. sugar
2. A measure of how difficult an object will scratch is called:
a. brittleness b. elasticity **c. hardness** d. density
3. A fluid could which of the following:
a. gas b. liquid **c. liquid and gas** d. gas and solid
4. If Object A is more dense than Object B, Object A will _____ Object B
a. sink in b. float on c. react with d. cannot be determined
5. The density of an object with a mass of 100.0 g and a volume of 4.00 mL is:
a. 2.00 g/mL b. 2.50 g/mL c. 12.50 g/mL **d. 25.00 g/mL**

Match the group number on the left with the name on the right.

- | | | |
|---------------|-----------|------------------------|
| 6. Group 1 | D | A. Transition Metals |
| 7. Group 2 | B | B. Alkali Earth Metals |
| 8. Group 3-12 | A | C. Noble Gases |
| 9. Group 16 | AB | D. Alkali Metals |
| 10. Group 17 | E | E. Halogens |
| 11. Group 18 | C | AB. Chalcogens |

12. The elements on the right side of the periodic table are predominantly:
a. metals b. metalloids **c. nonmetals** d. radioactive

Balance each of the equations given below. The numbers listed in the answer are the coefficients, given left to right as the compounds in the equation appear.



- a. 1 – 3 – 2 b. 2 – 3 – 1 c. 6 – 1 – 2 **d. 4 – 3 – 2**



- a. 2 – 4 – 2 b. 1 – 2 – 1 **c. 4 – 5 – 1** d. 2 – 5 – 1



- a. 1 – 2 – 1 – 2 **b. 1 – 3 – 2 – 2** c. 1 – 1 – 1 – 2 d. 2 – 1 – 1 – 2



- a. 1 – 2 – 2 – 1 b. 2 – 6 – 1 – 2 **c. 2 – 1 – 2 – 1** d. 1 – 2 – 1 – 2



- a. 1 – 2 – 2 – 1 b. 2 – 3 – 1 – 2 c. 2 – 1 – 1 – 2 **d. 1 – 1 – 1 – 2**

18. Determine the mass of the compound C_3H_8 .

- a. 26.0 g **b. 44.0 g** c. 60.0 g d. 7.0 g

19. Determine the mass of the compound $\text{Ca}(\text{OH})_2$.

- a. 34.0 g **b. 74.1 g** c. 78.1 g d. 86.0 g

20. Determine the mass of the compound $(\text{NH}_4)_2\text{SO}_4$.

- a. 35.0 g b. 70.0 g c. 114.1 g **d. 132.1 g**

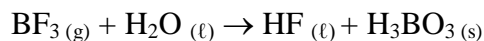
21. Determine the number of atoms in a molecule of H_2SO_4 .

- a. 3 **b. 7** c. 8 d. 10

22. Determine the number of atoms in a molecule in $(\text{NH}_4)_2\text{SO}_3$.

- a. 4 b. 9 **c. 14** d. 20

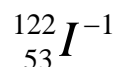
Locate the meaning of each of the following symbols in the equation below:



- | | | |
|---|-----------|---------------------|
| 23. $\text{BF}_3(\text{g}) + \text{H}_2\text{O}(\text{l})$ | E | A. completion arrow |
| 24. $\text{HF}(\text{l}) + \text{H}_3\text{BO}_3(\text{s})$ | D | B. gas |
| 25. \rightarrow | A | C. liquid |
| 26. (s) | AB | D. products |
| 27. (g) | B | E. reactants |
| 28. (l) | C | AB. solid |

IV. Matching

Look at the symbol to the right and answer the questions:



- | | | |
|-------------------------|-----------|---------|
| 29. Atomic number | C | A. -1 |
| 30. Mass number | AB | B. 52 |
| 31. Number of protons | C | C. 53 |
| 32. Number of electrons | D | D. 54 |
| 33. Number of neutrons | E | E. 69 |
| 34. Charge | A | AB. 122 |

Use the periodic table to match the criteria the left with the number on the right.

- | | | |
|---|----------|-------|
| 35. The number of protons in neon is | D | A. 4 |
| 36. The atomic number of calcium is | E | B. 5 |
| 37. The number of neutrons in ${}^9_4\text{Be}$ is | B | C. 6 |
| 38. The mass number of ${}^4_2\text{He}$ is | A | D. 10 |
| 39. The number of electrons in ${}^7_3\text{Li}^{-1}$ | A | E. 20 |

40. The pH of an acidic compound could be

- a. **4** b. 7 c. 10 d. 13

41. The pH of water is

- a. 0 b. 1 c. **7** d. 14

42. A base is a compound that contains _____ at the end of its formula.

- a. H b. **OH** c. CH d. N

43. The products of a reaction between an acid and a base are

- a. **salt and water** b. salt and carbon dioxide
c. water and carbon dioxide d. carbon dioxide and nitrogen dioxide

44. Which of the following most likely contains a base?

- a. **detergent** b. lemon
c. blood d. steel

45. When in the presence of a base, litmus paper turns

- a. clear b. red c. **blue** d. purple

46. Acid rain does NOT cause:

- a. trees to be less resistant to disease
b. cause damage to organisms in rivers and streams
c. destroy the protective paint on buildings
d. **an increase in global warming**

47. All of the following foods/drinks are acids except:

- a. lemon b. **milk** c. apple d. soda

48. Monosaccharides or disaccharides linked together make:

- a. **carbohydrates** b. amino acids c. sugars d. proteins

49. Three fatty acids and glycerol combine to make:

- a. cholesterol b. amino acids c. polysaccharides d. **triglycerides**

50. Which vitamin helps calcium get absorbed by the intestines to promote bone growth?

- a. A b. **D** c. E d. K

51. One Calorie is equal to

- a. 10 calories b. 100 calories c. **1000 calories** d. 10 000 calories

52. Unused energy from food becomes:
a. body fat b. skin tissue c. hormones d. stomach acid
53. The element responsible for maintaining and regulating the level of body fluids is:
a. sodium b. potassium c. magnesium d. phosphorous
54. High levels of cholesterol are dangerous because:
 a. it is insoluble in water **b. it is insoluble in blood**
 c. it can react with stomach acid d. it produces fat
55. Vitamin K deficiency can cause
a. an inability for the body to stop bleeding
 b. scurvy
 c. rickets
 d. an increase in the level of antioxidants in the body

Match the description on the left with the color on the right.

56. A color of light that is invisible to humans **C** A. black
57. The color that has the shortest wavelength of all visible light B. green
E
58. The color that has the longest wavelength of all visible light C. infrared
D
59. Is the absence of all colors of light D. red
A
60. Is the combination of all colors of light E. violet
AB
61. Is a primary color of light AB. white
B
62. Overexposure to this color can cause skin cancer:
 a. red b. blue c. infrared **d. ultraviolet**
63. Lasers can be used in all of the following applications EXCEPT:
 a. consumer electronics b. surgery
 c. supermarket scanners **d. weapons**
64. Which of the following chemicals is NOT a human sex hormone?
a. carotene b. estrogen c. progesterone d. testosterone

Match the statement on the left with the name on the right.

65. A compound that is used to selectively kill bacteria **AB** A. penicilin
66. The first antibiotic discovered **A** B. steroid
67. A fatty acid derivative that lowers fever and prevents inflammation **E** C. serotonin
68. The anabolic type of this family of chemicals are regulated by laws **B** D. valium
69. Any use of chemical means in an effort to treat cancer **AB** E. aspirin
70. A drug no longer used to treat anxiety **D** AB. chemotherapy
71. the name of the neurotransmitter deficient in people battling depression **C** AC. antibiotic
72. A molecule that is able to attract other molecules by small magnetic attractions is:
a. polar b. nonpolar c. a surfactant d. a colloid
73. Sunscreen protects the skin by:
a. adding moisture to the skin b. reflecting ultraviolet light away
c. absorbing ultraviolet light d. adding a layer of oil on the skin
74. Linear Alkylsulfonate detergents (LAS) are important because
a. they decompose readily in the environment
b. dissolve well in water systems
c. kill harmful bacteria in lakes and streams
d. keep the colors bright in your clothing
75. Shampoo acts on the hair by
a. removing sebum buildup from hair follicles
b. stripping away the outermost layer of hair cells
c. adding a protective layer to the hair
d. making your hair smell good
76. Metallic ions in well water that bond with soap and grease make:
a. an emulsifier **b. hard water**
c. a suspension d. a surfactant

Match the statement on the left with the name on the right.

77. Energy cannot be created or destroyed, only transferred between a system and its surroundings **D** A. entropy
78. The study of heat and its surroundings **C** B. joule
79. For any spontaneous process the universe must become more disorderly **E** C. thermodynamics
80. A measure of the disorder in a system **A** D. 1st Law of Thermodynamics
81. A unit of measuring energy **B** E. 2nd Law of Thermodynamics
82. The molecule that is major exhaust fume from cars and make it difficult for people to breathe is called:
a. **carbon monoxide** b. nitrogen dioxide
c. sulfur dioxide d. ozone
83. The brown haze on a city skyline is the buildup of this in the atmosphere.
a. carbon monoxide **b. nitrogen dioxide**
c. sulfur dioxide d. ozone
84. A major component of photochemical smog:
a. carbon monoxide b. nitrogen dioxide
c. sulfur dioxide d. ozone
85. Compounds that allow visible light into the atmosphere but prevent heat from escaping are called:
a. PAN b. ozone
c. infrared gases **d. greenhouse gases**
86. All of the following are fossil fuels except:
a. coal **b. uranium** c. oil d. natural gas
87. Up until 1850, the dominant sources of energy in the United States were:
a. wood/oil b. coal/oil c. coal/oil **d. wood/coal**
88. It is estimated that the world's oil reserves will last roughly:
a. 60 years b. 120 years c. 180 years d. 240 years
89. A type of energy that could be used indefinitely is
a. hydroelectric b. nuclear c. natural gas d. wind

90. The fuel that could be obtained by the large scale burning of plants is called:
 a. ethanol b. geothermal **c. biomass** d. combustion
91. The greatest potential of any future energy source is contained:
 a. by wind b. within the heat of the earth
c. sun d. moving water
92. Energy is produced, regardless of the method, when:
 a. radiation is given off **b. moving air is used to turn a turbine**
 c. an object is heated up until it burns
93. Which is not a major drawback of hydroelectric power?
 a. the ecosystem of the body of water is threatened
 b. dams are not nice to look at
 c. there is a risk of dam failure
d. there is a possibility the water may not fall fast enough through the turbines
94. An instrument used to measure atmospheric pressure is:
a. barometer b. thermometer c. hydrometer d. anemometer
95. As the pressure on a gas increase, its volume will:
 a. increase **b. decrease** c. not change d. cannot be determined
96. As the temperature on a gas increases, its volume will:
a. increase b. decrease c. not change d. cannot be determined

Match the gas described on the left to its formula on the right.

97. The largest component of the earth's atmosphere at 78% A. CO₂
B
98. The second largest component of the atmosphere at 21% B. N₂
C
99. The gas humans exhale and plants use to make food C. O₂
A
100. Ozone D. O₃
D