1- G11 Ch.1- Q1-W1- Revision Sheet

Multiple Choice

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

____ 1. A physical property of zinc metal is _____.
a. its color
b. whether it burns
c. how it reacts with nitrogen gas
d. whether it changes when placed into acid

____ 2. The best way to understand the submicroscopic world is with _____.
a. powerful microscopes
b. very accurate measuring devices
c. physical properties
d. models

____ 3. Which of the following materials cannot be broken down into a simpler form?
a. compound
b. solution
c. mixture
d. element

____ 4. An example of a pure substance in everyday life is _____.
a. pond water
b. sugar
c. a cola drink
d. concrete

____ 5. An example of a chemical change is _____.
a. melting
b. electrical conductivity
c. burning
d. density

____ 6. An example of a chemical formula is _____.
a. Na
b. 4.5 g/mL
c. H_2SO_4
d. $d = 13.6$ g/L

____ 7. The density of a material depends on _____.
a. its mass only
b. its volume only
c. its mass and volume
d. its weight

____ 8. In a list of the densities of common materials, the one density that might not seem reasonable is _____.
a. 35 885 g/mL
b. 0.45 g/mL
c. 2.54 g/mL
d. 1.000 g/mL

____ 9. The structure of matter refers to its _____.
a. behavior
b. composition
c. measurements
d. reactions

____ 10. Matter that is large enough to be seen is _____.
a. macroscopic
b. massive
c. a scientific model
d. submicroscopic

____ 11. Matter on the atomic level is _____.
a. macroscopic
b. massive
c. microscopic
d. submicroscopic

____ 12. Water and hydrogen peroxide are both composed of atoms of hydrogen and oxygen. The differences lie in the _____ arrangement of the atoms.
a. behavioral
b. composed
c. macroscopic
d. submicroscopic

____ 13. Which of the following is not an example of a model?
a. a floor lamp
b. a globe
c. a road map
d. a wind tunnel

____ 14. Classification based on measurements is said to be _____.
a. composed
b. observed
c. qualitative
d. quantitative

____ 15. The alloy brass is made from copper and zinc. Brass is a(n) _____.
a. compound
b. element
c. mixture
d. substance

____ 16. When ice melts and becomes liquid water, it has undergone a _____.
a. chemical change
b. chemical property
c. physical change
d. physical property

____ 17. Gold melts at 1064°C. Melting point is a _____.
a. chemical change
b. chemical property
c. physical change
d. physical property

____ 18. A soft drink is an example of a(n) _____.
a. compound
b. element
c. heterogeneous mixture
d. homogeneous mixture

____ 19. In ocean water, salt is a(n) _____.
a. alloy
b. solute
c. solution
d. solvent

____ 20. Sugar, which is a substance, can be broken down into carbon, oxygen, and hydrogen. Sugar is a(n) _____.
a. compound
b. element
c. mixture
d. solution

____ 21. A 1-g sample of the compound hydrogen chloride was analyzed and found to be 2.74 percent hydrogen and 97.3 percent chlorine. What percentage of hydrogen is present in a 2-g sample of hydrogen chloride?
a. 1.37%
b. 2.74%
c. 5.48%
d. 97.3%

____ 22. How many atoms are present in one unit of sodium sulfate, Na_2SO_4?
a. 1
b. 2
c. 4
d. 7

____ 23. Which of the following liquids is most volatile?
a. alcohol
b. motor oil
c. cooking oil
d. water

____ 24. Which of the following has the greatest density?
a. a rock
b. oxygen
c. oil
d. ice

____ 25. A 26.0-g sample of a liquid was found to have a volume of 13.0 mL. What is the density of the liquid?
a. 0.500 g/mL
b. 2.00 g/mL
c. 39.0 g/mL
d. 338 g/mL

____ 26. Liquid chlorine bleach breaks down into other substances when exposed to light. The instability of bleach is a _____.
a. chemical change
b. chemical property
c. physical change
d. physical property

____ 27. Coal burns in a furnace, producing light and heat. This reaction is _____.
a. a physical change
b. endothermic
c. energetic
d. exothermic

____ 28. If 14 atoms of carbon react with 28 atoms of oxygen to form carbon dioxide, how many atoms are contained in the carbon dioxide that is produced?
a. 14
b. 21
c. 28
d. 42

Matching

Match each item with the correct statement below.

a. alloy
b. aqueous solutions
c. chemical property
d. compound
e. energy
f. exothermic
g. formula
h. law of conservation of mass
i. mass
j. matter
k. physical change
l. properties
m. quantitative
n. solute

____ 29. The type of change in which the identity of substances does not change.
____ 30. A chemical combination of two or more elements joined together in a fixed proportion.
____ 31. The fact that matter can be neither created nor destroyed in a chemical change.
____ 32. Solutions in which water is the solvent.
____ 33. The behavior of matter and its characteristics.
____ 34. A solid solution usually consisting of two or more metals.
____ 35. Any chemical reaction that gives off energy.
____ 36. The combination of chemical symbols that describes the composition of a chemical compound.
____ 37. The measure of the amount of matter that an object contains.
____ 38. An observation that makes use of measurement.
____ 39. Can be observed only when there is a change in composition of a substance.
____ 40. Anything that takes up space and has mass.
____ 41. The material that is dissolved in a solution.
____ 42. The capacity to do work.

Short Answer

Explain how the two terms in the following pairs relate to one another.

43. matter and mass
44. chemical property and physical property
45. heterogeneous and homogeneous
46. pure substance and element
47. qualitative observation and quantitative observation
48. mixture and solution
49. solution and alloy
50. solution and aqueous solution
51. sodium and Na
52. Na and NaCl
53. density and mass
54. freezing point and melting point

55. endothermic and exothermic

56. Suppose you were given a mixture of sand and salt to separate from each other. What physical property could you use to accomplish this task?

57. A test tube without any label contains a clear liquid known to be either pure water or ethanol (ethyl alcohol). What physical properties could you use to tell what the liquid is?

58. A white solid is heated in a test tube. The solid slowly changes color to a grayish powder, and a gas escapes from the test tube. Is the white solid an element or a compound? Is the grayish powder an element or a compound? Explain your answers.

59. What two types of matter are substances?

Problem

Below are listed changes that can be observed in everyday life. Tell whether it is a physical change or a chemical change. Then explain the basis on which you made your decision.

60. an icicle melting

61. charcoal burning

62. magnetizing a piece of steel

63. iron rusting

64. rubbing alcohol evaporating from the skin

The lists give the density of selected substances. Answer the following questions.

Substance	Density (g/mL)
water (at 4.0°C)	1.000
hydrogen	0.00090
carbon dioxide	XXX
gasoline	0.68
copper	8.89
silver	10.5
mercury	13.595
tungsten	19.3

65. Which of the substances listed has the greatest density? the lowest density?

66. If you were given a milliliter of copper and a milliliter of silver, which would weigh more?

67. Corks are used on fishing lines because they float. What can you say about the density of cork?

68. To complete the list, calculate the density for carbon dioxide if 250.0 mL of the gas has a mass of 0.4997 g.

69. Suppose that 10 mL of each of the three liquids in the table—water, gasoline, and mercury—were all placed in a test tube. The liquids do not mix with one another. In the three layers that would be produced, which liquid would be on top, which in the middle, and which on the bottom?

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Answer Section

MULTIPLE CHOICE

1.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-4
2.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-1
3.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-2
4.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-1
5.	ANS:	C	PTS: 1	DIF:	B	OBJ:	1-5
6.	ANS:	C	PTS: 1	DIF:	B	OBJ:	1-2
7.	ANS:	C	PTS: 1	DIF:	B	OBJ:	1-3
8.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-3
9.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-3
10.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-3
11.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-3
12.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-3
13.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-1
14.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-1
15.	ANS:	C	PTS: 1	DIF:	B	OBJ:	1-2
16.	ANS:	C	PTS: 1	DIF:	B	OBJ:	1-5
17.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-4
18.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-2
19.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-2
20.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-2
21.	ANS:	B	PTS: 1	DIF:	A	OBJ:	1-1
22.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-3
23.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-4
24.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-4
25.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-4
26.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-4
27.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-5
28.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-6

MATCHING

29.	ANS:	K	PTS: 1	DIF:	B	OBJ:	1-4
30.	ANS:	D	PTS: 1	DIF:	B	OBJ:	1-2
31.	ANS:	H	PTS: 1	DIF:	B	OBJ:	1-6
32.	ANS:	B	PTS: 1	DIF:	B	OBJ:	1-2
33.	ANS:	L	PTS: 1	DIF:	B	OBJ:	1-3
34.	ANS:	A	PTS: 1	DIF:	B	OBJ:	1-2
35.	ANS:	F	PTS: 1	DIF:	B	OBJ:	1-4
36.	ANS:	G	PTS: 1	DIF:	B	OBJ:	1-2
37.	ANS:	I	PTS: 1	DIF:	B	OBJ:	1-3
38.	ANS:	M	PTS: 1	DIF:	B	OBJ:	1-1

39. ANS: C PTS: 1 DIF: B OBJ: 1-4
40. ANS: J PTS: 1 DIF: B OBJ: 1-3
41. ANS: N PTS: 1 DIF: B OBJ: 1-2
42. ANS: E PTS: 1 DIF: B OBJ: 1-6

SHORT ANSWER

43. ANS:
Mass is a measure of the amount of matter in something.

PTS: 1 DIF: B OBJ: 1-3

44. ANS:
The composition of something must be changed to determine a chemical property but does not need to be changed to determine a physical property.

PTS: 1 DIF: B OBJ: 1-4

45. ANS:
Samples of a heterogeneous material are not all the same. Homogeneous materials are the same throughout.

PTS: 1 DIF: B OBJ: 1-2

46. ANS:
An element is one class of pure substance.

PTS: 1 DIF: B OBJ: 1-2

47. ANS:
A quantitative observation uses measurement, whereas a qualitative observation can be made without measurement.

PTS: 1 DIF: B OBJ: 1-3

48. ANS:
A mixture may be heterogeneous or homogeneous in composition, whereas a solution is always homogeneous.

PTS: 1 DIF: B OBJ: 1-2

49. ANS:
An alloy is a solid solution that contains different metals and sometimes nonmetals.

PTS: 1 DIF: B OBJ: 1-2

50. ANS:
An aqueous solution always has water as the solvent, but solutions do not have to contain water.

PTS: 1 DIF: B OBJ: 1-2

51. ANS:
Sodium is the name of an element, and Na is its chemical symbol.

PTS: 1 DIF: B OBJ: 1-2

52. ANS:
Na is a chemical symbol, and NaCl is a chemical formula.

PTS: 1 DIF: B OBJ: 1-2

53. ANS:
Density is the mass of a specific volume of a material.

PTS: 1 DIF: B OBJ: 1-3

54. ANS:
The freezing point and melting point of a substance are the same temperature.

PTS: 1 DIF: B OBJ: 1-4

55. ANS:
Endothermic refers to chemical reactions in which energy is absorbed, and exothermic to ones in which energy is given off.

PTS: 1 DIF: B OBJ: 1-4

56. ANS:
Solubility; salt will dissolve in water, but sand will not.

PTS: 1 DIF: A OBJ: 1-2

57. ANS:
Among the properties that could be used would be smell and density.

PTS: 1 DIF: A OBJ: 1-4

58. ANS:
The white solid must be a compound since it broke down into two new substances. No decision on the grayish powder can be made since it would have to be examined first.

PTS: 1 DIF: A OBJ: 1-2

59. ANS:
elements and compounds

PTS: 1 DIF: B OBJ: 1-2

PROBLEM

60. ANS:
physical change; Solid water changes to liquid water.

PTS: 1 DIF: B OBJ: 1-5

61. ANS:
chemical change; Charcoal (carbon) reacts to form gases (carbon dioxide and water vapor).

PTS: 1 DIF: B OBJ: 1-5

62. ANS:
physical change; The steel does not change its composition during magnetization.

PTS: 1 DIF: B OBJ: 1-5

63. ANS:
chemical change; The iron is converted into a new substance (iron oxide, or rust).

PTS: 1 DIF: B OBJ: 1-5

64. ANS:
physical change; Liquid alcohol changes to a vapor.

PTS: 1 DIF: B OBJ: 1-5

65. ANS:
Tungsten has the greatest density, 19.3 g/mL. Hydrogen has the lowest density, 0.00090 g/mL.

PTS: 1 DIF: B OBJ: 1-4

66. ANS:
Silver would weigh more.

PTS: 1 DIF: B OBJ: 1-4

67. ANS:
The density of cork must be less than 1.000 g/mL.

PTS: 1 DIF: B OBJ: 1-4

68. ANS:
The density is 0.001999 g/mL.

PTS: 1 DIF: B OBJ: 1-4

69. ANS:
Gasoline floats on water, and water floats on mercury.

PTS: 1 DIF: A OBJ: 1-4