

You are not allowed to bring any notes or cheat sheets. If the test is taken in the computer room, cell phones use is not allowed. If you have to use the cell phone to take the test, any other electronic devices are NOT allowed.

For each question, select the letter for the correct answer and mark it on your Illuminate online answer sheet.

1. The study of matter and changes in matter best describes the science of

- A. biology. B. physics. C. microbiology. D. chemistry.

2. A sample contains several pure substances that are not chemically combined. The sample is a (n)

- A. element. B. mixture
C. compound D. Both (a) and (b)

3. Pure substances can be

- A. elements. B. compounds. C. mixtures. D. Both (a) and (b)

4. A sample contains several pure substances that are not chemically combined. The sample is a (n)

- a. element. b. mixture
c. compound d. Both (a) and (b)

5. All the following are heterogeneous mixtures except

- a. tomato soup. b. sea water. c. gasoline. d. muddy water.

6. All the following are homogeneous mixtures except

- a. a sugar-water solution. b. cup of tea. c. a salt-water solution. d. fruit salad

7-10 Select the letter of the matching word that complete the sentence and mark in the answer sheet

- (a) Solution (b) Colloids (c) Homogeneous (d) Heterogeneous**

7. All parts of a _____ mixture have the same composition.

8. _____ mixtures are not uniform in composition.

9. _____ is a mixture in which particles of the mixture are evenly dispersed throughout
10. _____ are intermediate between suspensions and solutions
11. What is the order of the abbreviations for units of length in order from smallest to largest?
- a. m, cm, mm, km. b. cm, mm, km, m.
c. mm, cm, m, km. d. km, m, cm, mm
12. The temperature 290 K equals
- a. 18°C. b. 22°C. c. 17°C. d. 568°C.
16. The number of significant figures in the measurement 0.00325 kg is
- a. 3. b. 4. c. 5. d. 6.
13. The state of matter in which a material has no definite shape and taking up the space of the container; is the state,
- a. gaseous b. liquid c. elemental d. solid
14. The state of matter in which a material has a definite volume, but no definite shape is the state.
- a. gaseous b. liquid c. elemental d. solid
16. The unit g/cm^3 is used to express
- a. length. b. mass. c. volume. d. density.
17. Arrange the following elements in order of increasing atomic radius: Rb, K, Na, Li
- a. Li, Rb, Na, K b. Rb, K, Na, Li
c. Li, Na, K, Rb d. Li, Na, Rb, K
18. Ice cream melting is an example of
- a. a physical change. b. a chemical change.
c. energy. c. an exothermic process.
19. Which of the following descriptions is not a characteristic of the nucleus of an atom?

- a. positively charged b. contains uncharged particles
c. accounts for most of the atom's volume d. accounts for most of the atom's mass

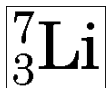
20. All of the elements in main- group 8 are called _____.

- a. metals b. metalloids c. nonmetals d. semimetals



21. A neutral atom of Cu

- a. has an atomic number of 29.
b. contains a total of 43 electrons, protons, and neutrons.
c. contains 15 protons and 14 neutrons.
d. Both (a) and (c)



22. A neutral atom of

- a. has an atomic number of 3.
b. contains a total of 3 electrons, 3 protons, and 4 neutrons.
c. contains 7 protons and 7 electrons.
d. Both (a) and (b)

23. Carbon atomic number is 6. How many electrons does carbon have?

- a. 7 b. 12 c. 6 d. 8

24. An electron that is found in the outermost shell of an atom and determines the atom's chemical properties is called a(n)

- a. p electron. b. paired electron. c. valence electron. d. octave electron.

25. The periodic law states that the physical and chemical properties of elements are periodic functions of their atomic

- a. numbers. b. masses. c. radii. d. structures.

26. Refer to a periodic table. In which period is magnesium?

- a. Period 3 b. Period 4 c. Period 6 d. Period 8

27. Refer to a periodic table. In which group is magnesium?

- a. Group 1 b. Group 2 c. Group 17 d. Group 18

28. An element that has the electron configuration $[\text{Ne}]2s^22p^4$ is in which group?

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

29. Elements in the s- or p-blocks of the periodic table are called

- a. alloys. b. main-group elements.
c. metals. d. transition metals.

30. Elements in Group 18 have

- a. metallic character. b. good conductivity.
c. very high reactivity. d. very low reactivity.

31. The alkali metals are found on Earth only in compounds because they

- a. have small atoms. b. are very reactive elements.
c. are rare elements. d. are metallic elements.

32. An element found in Group 1 of the periodic table is classified as a(n)

- a. alkali metal. b. alloy.
c. transition metal. d. actinide.

33. Using a periodic table, find and identify the element that has an atomic mass of 12.011 amu.

- a. C b. Ca c. Cr d. Cu

34. A solid becomes a liquid during

- a. evaporation. b. condensation. c. sublimation. d. melting.

35. A liquid becomes a gas during

a. evaporation. b. condensation. c. sublimation. d. deposition.

36. According to the Bohr model of the atom, which particles can exist in any one of several energy levels?

a. electrons b. protons c. neutrons d. Both (b) and (c)

37. Which of the following situations will cause the elements in the halogen group to have an octet configuration?

a. loss of one electron b. gain of one electron
c. loss of two electrons d. gain of three electrons

38. Which of the following situations will cause element Na to have an octet configuration?

a. loss of one electron b. gain of one electron
c. loss of two electrons d. gain of three electrons

39. The elements of Group are able to satisfy the octet rule without forming compounds.

a. 1 b. 2 c. 17 d. 18

40. Cations (+ ions) are formed,

a. when neutral atoms lose electrons. b. when neutral atoms gain electrons.
c. when neutral atoms share electrons. d. none of the above.

41. Anions (- ions) are formed

a. when neutral atoms lose electrons. b. when neutral atoms gain electrons.
c. when neutral atoms share electrons. d. none of the above

42. A single covalent bond involves the sharing of

a. only one electron. b. two electrons.
c. three electrons. d. a variable number of electrons, which depends on the bonding atoms.

43. Which of the following contain ionic bonds

a. KCl b. SO₂ c. O₂ d. CH₄

44. What is the correct name for MgCl_2 ?
- magnesium chlorine.
 - magnesium dichlorine.
 - magnesium chloride.
 - manganese dichloride.
45. What is the correct name for AlPO_4 ?
- Aluminum phosphorous oxygen.
 - Aluminum phosphide oxygen
 - Aluminum phosphate.
 - Aluminum phosphorous tetra oxide.
46. What is the correct formula for aluminum sulfate?
- AlS
 - $\text{Al}_3(\text{SO}_4)_2$
 - AlSO_4
 - $\text{Al}_2(\text{SO}_4)_3$
47. What is the correct formula for Sodium oxide?
- NaO
 - Na_2O
 - SaO
 - Sa_2O
48. What is the correct formula for carbon tetrachloride
- C_4Cl_4
 - C_4Cl
 - CCl_4
 - CaCl_4
49. What is the name of SO_3
- sulfide trioxide
 - Sulphur trioxide
 - Sulfur dioxide
 - trioxide sulfide
50. What is the name of N_2O_5
- Dinitride pentoxide
 - Dinitrogen pentoxide
 - Pentanitrogen dioxide
 - Pentanitride dioxide
51. As the atomic masses of the elements in the periodic table increase, the number of atoms in 1 mol of each element
- decreases.
 - increases.
 - remains the same.
 - becomes a negative number.
52. Avogadro's number is
- 6.022×10^{23} .
 - 1.602×10^{24}
 - 3.14159.
 - 3.0×10^8 .
53. How many atoms are in two moles of mercury?
- 1.204×10^{22}
 - 1.204×10^{23}
 - 6.022×10^{23}
 - 1.204×10^{24}
54. 6. How many hydrogen atoms are present in one formula unit of ammonium hydrogen phosphate, $(\text{NH}_4)_2\text{HPO}_4$?
- 4
 - 8
 - 9
 - 16
55. The molar mass of manganese, Mn, is
- 25 amu.
 - 25 g/mol.
 - 54.94 amu.
 - 54.94 g/mol.
56. The molar mass of sodium fluoride, NaF, is
- 20.00 g/mol.
 - 41.99 g/mol.
 - 60.99 g/mol.
 - 64.98 g/mol.
57. As the atomic masses of the elements in the periodic table increase, the number of atoms in 1 mol of each element

- a. decreases.
- b. increases.
- c. remains the same.
- d. becomes a negative number.

58. In the word equation,

Iron + copper (II) sulfate → iron (II) sulfate + copper,

a product is

- a. iron (II) sulfate.
- b. copper.
- c. iron.
- d. Both (a) and (b)

59. From a complete and correctly written chemical equation, you can obtain the

- a. chemical formulas of the reactants and products.
- b. relative amounts of the reactants and products.
- c. physical states of the reactants and products.
- d. All of the above

60. In a chemical equation, the formula of a substance in water solution is followed by the symbol

- a. (l).
- b. (s).
- c. (g).
- d. (aq).