

NLN Chemistry Review Questions #1

1. An atom contains a nucleus composed of
 - a. electrons and protons.
 - b. protons and neutrons.
 - c. electrons and neutrons.
 - d. none of the above.
2. The atomic number in the periodic chart describes the number of
 - a. protons within the nucleus.
 - b. number of electrons within the nucleus.
 - c. atomic weight of the element.
 - d. number of neutrons in the nucleus.
3. The calculated mass of the substance H_2PO_4 (atomic mass H-1, P-31, O-16) is
 - a. 48.
 - b. 59.
 - c. 97.
 - d. none of the above.
4. After 2 half-lives what % of the atom remains?
 - a. 50%
 - b. 25%
 - c. 12.5%
 - d. 80%
5. Electronegativity
 - a. increases as you move from left to right in the periodic chart.
 - b. decreases as you move from left to right in the periodic chart.
 - c. increases as you move from top to bottom in the periodic chart.
 - d. exists when a cation and anion react with one another.
6. The total number of moles of substances on the right side of this equation, $2 \text{Pb}(\text{NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$, equals
 - a. 6.
 - b. 7.
 - c. 2.
 - d. 9.
7. The subscript 2 in $2\text{Pb}(\text{NO}_3)_2$ means that we have
 - a. 2 $\text{Pb}(\text{NO}_3)_2$ molecules.
 - b. 2 oxygen atoms.
 - c. 2 NO_3 ions.
 - d. 2 Pb^{++} cations.

8. The most important inorganic compound is
- nitrogen.
 - air.
 - water.
 - alcohol.
9. The oxidation number of any monatomic ion is
- equal to zero.
 - one.
 - charge on the ion.
 - cannot be determined without more information.
10. A pH of 13 means that the solution is
- acidic.
 - neutral.
 - slightly basic.
 - strongly basic.
11. Consider the unbalanced equation $__ \text{N}_2 + __ \text{H}_2 \rightarrow __ \text{NH}_3$, what is the smallest whole number coefficient of hydrogen?
- 1
 - 2
 - 3
 - 4
12. Which diagram represents an ionic bond?
- $(\text{Na}^+)(:\text{Cl}:\text{ }^-)$
 - $:\text{N}\equiv\text{N}:$
 - $:\text{Cl}:\text{Cl}:$
 - $$\begin{array}{c} \text{H}:\text{N}:\text{H} \\ \text{..} \\ \text{H} \end{array}$$
13. Solubility of a solid in a liquid generally decreases with a/an
- increase in temperature.
 - increase in pressure.
 - decrease in temperature.
 - decrease in pressure.
14. An excess of which of these ions makes a solution acidic?
- Chlorine (Cl^-)
 - Hydroxide (OH^-)
 - Hydrogen (H^+)
 - Calcium (Ca^{++})

15. The vaporization of water to steam by heating is an example of
- sublimation.
 - evaporation.
 - precipitation.
 - condensation.
16. Blue litmus paper will turn red when placed in a solution having which of these pH values?
- 4
 - 13.5
 - 7
 - 8
17. Which of the following requires a chemical reaction to be separated into two or more pure substances?
- compound
 - element
 - mixture
 - all of the above
18. Many chemical reactions can be accelerated with a catalyst. At the completion of the reaction the catalyst is found to be
- increased in quantity.
 - converted into a gas.
 - combined with the final product.
 - unchanged in weight.
19. Air contains a mixture of nitrogen, oxygen, argon and other gases. Which of the following describes air?
- compound
 - element
 - heterogeneous mixture
 - homogeneous mixture
20. What is the term for the number that identifies an element?
- Atomic number
 - Mass number
 - Periodic number
21. Ozone is an element that contains
- hydrogen.
 - one oxygen atom.
 - three oxygen atoms.
 - three oxygen ions.
22. Which of the following elements is a non-metal?
- Potassium
 - Tin
 - Mercury
 - Sulfur
23. Which has one electron in its outer shell?
- K

- b. H
 - c. Na
 - d. All of the above
24. The octet rule applies to
- a. chemical bonds.
 - b. the number of electrons in the outer shell.
 - c. excludes H.
 - d. all of the above.
25. What kind of change is needed to separate a compound into its elements?
- a. Physical
 - b. Chemical
 - c. Temperature
 - d. Mechanical
26. Which of the following is a cation?
- a. C
 - b. C^{-4}
 - c. C^{+4}
 - d. All are cations
27. Brass is a /an
- a. element.
 - b. compound.
 - c. mixture.
 - d. gas.
28. What is the %, by weight, of chromium in K_2CrO_4 (atomic mass: K-39, Cr-52, O-16)?
- a. 26.8
 - b. 31.8
 - c. 40.3
 - d. 42.2
29. Which one of the following states of matter has an indefinite shape and an indefinite volume?
- a. Solid
 - b. Liquid
 - c. Gas
 - d. Solution
30. Table salt is a/an
- a. element.
 - b. compound.
 - c. heterogeneous mixture.
 - d. homogeneous mixture.
31. Given the electronegativity values for H (2.1) and F (4.0), calculate the electronegativity difference in a hydrogen fluoride bond, HF.
- a. -1.9
 - b. 1.9
 - c. 6.1
 - d. -6.1
32. Balancing equations is necessary because of
- a. the law of conservation of mass and energy.

- b. molecular formula.
- c. molar mass.
- d. molecular mass.

33. The area of chemistry that deals with the study of carbon and its compounds is called

- a. inorganic.
- b. organic.
- c. physical.
- d. analytical.

34. What is the term for a particle composed of two or more different atoms?

- a. Compound
- b. Ionic
- c. Emulsion
- d. element

Answers:

- | | | |
|-------|-------|-------|
| 1. b | 12. a | 23. d |
| 2. a | 13. c | 24. d |
| 3. c | 14. c | 25. b |
| 4. b | 15. b | 26. c |
| 5. a | 16. a | 27. c |
| 6. b | 17. a | 28. a |
| 7. c | 18. d | 29. c |
| 8. c | 19. d | 30. b |
| 9. c | 20. a | 31. b |
| 10. d | 21. c | 32. a |
| 11. c | 22. d | 33. b |
| | | 34. a |