

CHEMISTRY PLACEMENT EXAMPLE QUESTIONS

1. If an atom with a mass number of 37 has 20 neutrons, it is an isotope of which element?
 - A. Helium
 - B. Xenon
 - C. Rubidium
 - D. Calcium
 - E. Chlorine
2. Predict the charge for the barium cation.
 - A. +
 - B. 2+
 - C. 3+
 - D. 2-
3. Which type of chemical bond forms when an electron is donated by one atom and accepted by another?
 - A. ionic
 - B. polar covalent
 - C. nonpolar covalent
 - D. hydrogen
4. One example of a molecule with a bent molecular shape is _____.
 - A. Oxygen
 - B. Carbon monoxide
 - C. Carbon dioxide
 - D. Water
 - E. Hydrobromic acid
5. Acids _____.
 - A. release hydroxyl (OH^-) when dissolved in water.
 - B. are proton acceptors.
 - C. cause the pH of a solution to rise.
 - D. release protons (H^+) when dissolved in water.
6. Which of the following solutions is the most dilute?
 - A. 1.00×10^{-3} M
 - B. 0.12 M
 - C. 12.44 M
 - D. 5.0×10^{-4} M

For questions in the next section please label each substance as:

A – Soluble in Water

B – Insoluble in Water

7. KNO_3
8. $\text{Mn}(\text{OH})_2$

9. Which reaction results in the formation of a solid precipitate as one of the products?
 - A. $\text{Na}_2\text{SO}_4 + \text{Mg}(\text{NO}_3)_2 \rightarrow$
 - B. $\text{AgNO}_3 + \text{NaCl} \rightarrow$
 - C. $\text{H}_2\text{CO}_3 \rightarrow$
 - D. $\text{LiOH} + \text{H}_3\text{PO}_4 \rightarrow$
 - E. $\text{CH}_4 + \text{O}_2 \rightarrow$

10. What happens to the volume of a gas when you double the number of moles of gas while keeping the temperature and pressure constant?
 - A. The volume is halved
 - B. The volume doubles
 - C. The volume decreases but you need more information
 - D. The volume increases but you need more information

11. How many significant figures does the measurement 10.00 mL have?
 - A. 1
 - B. 2
 - C. 3
 - D. 4

12. Which of the following units corresponds with a volume measurement?
 - A. Meter (m)
 - B. Liter (L)
 - C. Kilogram (kg)
 - D. Joules (J)
 - E. Degrees Celsius ($^{\circ}\text{C}$)

13. Which of the following elements is considered a metalloid?
 - A. Lithium (Li)
 - B. Sulfur (S)
 - C. Argon (Ar)
 - D. Germanium (Ge)
 - E. Manganese (Mn)

14. Using the density concept, determine the volume of a sample of gold with a mass of 0.5581 g. The density of gold is 19.3 g/mL.
- A. 0.0289 mL
 - B. 34.6 mL
 - C. 10.6 mL
 - D. 19.3 mL
15. Which of following is not a pure substance?
- A. Milk
 - B. Hydrogen
 - C. Water
 - D. Oxygen
 - E. Aluminum
16. Which of the following is not an example of a chemical change in matter?
- A. Cooking food
 - B. Burning a log
 - C. Igniting a match
 - D. The Statue of Liberty turning green
 - E. Crushing a can

ANSWER KEY:

- 1. E
- 2. B
- 3. A
- 4. D
- 5. D
- 6. D
- 7. A
- 8. B
- 9. B
- 10. B
- 11. D
- 12. B
- 13. D
- 14. A
- 15. A
- 16. E

Suggested Study Topics:

Electrolytes

Significant Figures

Scientific Notation

Balancing Equations

Solubility Rules

Density

pH

Atomic Theory

Gas Laws

Thermodynamics

VSEPR Theory

Polarity

Classifications of Matter

Intermolecular Forces

Ions

Nomenclature