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1.

An atom that has the same number of neutrons as  $^{59}\text{Ni}$  is

1. $^{58}\text{Mn}$ .
2. $^{59}\text{Co}$ .
3. $^{58}\text{Fe}$ .
4. $^{60}\text{Cu}$ .
5. $^{57}\text{Co}$ .

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2.

The formulas of the nitrite, phosphide, and nitrate ions are represented, respectively, as

1. $\text{N}^{3-}$ , $\text{PO}_3^{3-}$ , $\text{NO}_3^-$ .
2. $\text{NO}_3^-$ , $\text{PO}_2^-$ , $\text{N}^{3-}$ .
3. $\text{NO}^-$ , $\text{P}^{5-}$ , $\text{NO}_3^-$ .
4. $\text{NO}_2^-$ , $\text{P}^{3-}$ , $\text{NO}_3^-$ .
5. $\text{NO}_2^-$ , $\text{PO}_4^{3-}$ , $\text{NO}_4^-$ .

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3.

The group(s) that readily form cations is (are) the

1. alkali elements.
2. halogen elements.
3. transition elements.

A. 1 only
B. 2 only
C. 3 only
D. 1 and 2 only
E. 1 and 3 only

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4.

The law of conservation of mass states that

1. the ratio of this element that combines with a fixed mass of another element is a small whole number.
2. atoms of any one element are identical.
3. matter is neither created nor destroyed in a reaction.
4. atoms of different elements differ in mass.

5. the components of the compound are always present.

5.

Nonmetals are found on the

- |  |
|--|
| 1. left side of the periodic table.  |
| 2. along the border between the left and right side of the periodic table. |
| 3. right side of the periodic table.                                       |
| 4. at the bottom of the periodic table.                                    |
| 5. at the top of the periodic table.                                       |

6.

The formula for magnesium nitride is

- |                                 |
|---------------------------------|
| 1. $\text{MgNO}_2$ .            |
| 2. $\text{MgN}$ .               |
| 3. $\text{Mg}_2\text{N}_3$ .    |
| 4. $\text{Mg}_3\text{N}_2$ .    |
| 5. $\text{Mg}(\text{NO}_2)_2$ . |

7.

The systematic name for  $\text{BaH}_2$  is

- |                        |
|------------------------|
| 1. barium dihydrate.   |
| 2. barium hydride.     |
| 3. barium(II) hydrate. |
| 4. barium dihydrogen.  |
| 5. barium dihydride.   |

8.

What is the formula of calcium nitrite?

- |                                 |
|---------------------------------|
| 1. $\text{Ca}(\text{NO}_2)_2$   |
| 2. $\text{Ca}(\text{NO}_2)_3$   |
| 3. $\text{Ca}_3\text{N}_2$      |
| 4. $\text{Ca}_2\text{N}_3$      |
| 5. $\text{Ca}_2(\text{NO}_2)_2$ |

9.

The formula for aluminum iodide is

- |                   |
|-------------------|
| 1. $\text{AlI}$ . |
|-------------------|

2. $\text{AlI}_2$ .
3. $\text{AlI}$ .
4. $\text{AlI}_4$ .
5. $\text{AlI}_3$ .

**10.**

What is the proper chemical formula for sulfur trioxide?

A. $\text{SO}$
B. $\text{SO}_2$
C. $\text{SO}_3$
D. $\text{SO}_4$
E. None of the above

**11.**

How many protons, neutrons, and electrons are in the antimony(III) ion,  $^{123}\text{Sb}^{3+}$ ?

1. 123p, 72n, 123e
2. 51p, 72n, 48e
3. 72p, 51n, 69e
4. 51p, 72n, 51e
5. 48p, 72n, 51e

**12.**

Dalton's atomic theory consisted of all the following postulates *except*

1. with gases, the volumes consumed and produced are in ratios of small whole numbers.
2. atoms of different elements have different properties.
3. in chemical changes, atoms are not destroyed, created, or changed.
4. atoms combine in fixed ratios of whole numbers.
5. elements are composed of indivisible particles called atoms.

**13.**

The formula for europium oxide is  $\text{Eu}_2\text{O}_3$ . On the basis of this information, the formula for the chlorate of europium would be expected to be

1. $\text{EuCl}_2$ .
2. $\text{EuCl}_3$ .
3. $\text{Eu}(\text{ClO}_3)_3$ .
4. $\text{Eu}_2(\text{ClO}_3)_3$ .

5.  $\text{Eu}(\text{ClO}_4)_2$ .

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14.

What is the proper chemical formula for barium chloride?

A. $\text{BaCl}$
B. $\text{BaCl}_2$
C. $\text{Ba}_2\text{Cl}_2$
D. $\text{Ba}_2\text{Cl}_4$
E. None of the above

---

15.

The formula for terbium phosphate is  $\text{Tb}_3(\text{PO}_4)_4$ . On the basis of this information, the formula for the sulfate of terbium would be expected to be

1. $\text{Tb}_2\text{S}_3$ .
2. $\text{Tb}(\text{SO}_4)_2$ .
3. $\text{Tb}_2(\text{SO}_3)_3$ .
4. $\text{Tb}(\text{SO}_3)_2$ .
5. $\text{TbS}_2$ .

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16.

What is the proper name for the compound  $\text{LiCl}$ ?

1. Monolithium chloride
2. Monolithium monochloride
3. Chlorolithium
4. Lithium chloride
5. Lithium monochloride

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17.

Which of the following is *not* a correct name-symbol combination?

1. beryllium, Be
2. magnesium, Mn
3. cobalt, Co
4. copper, Cu
5. boron, B

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18.

The element silicon consists of only three naturally occurring isotopes. What is the mass of silicon-30? (See the table below.)

Isotope	Percent Abundance	Mass (amu)
silicon-28	92.2297 %	27.976927
silicon-29	4.6832 %	28.976495
silicon-30	?	?

A. 0.954916 amu
B. 28.0855 amu
C. 0.925437 amu
D. 29.977547 amu
E. 30 amu

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**19.**

A certain element is listed as having 63.5 atomic mass units. It is probably true that it contains

1. a mixture of neutrons.
2. a mixture of allotropes.
3. a mixture of isomers.
4. a mixture of ions.
5. a mixture of isotopes.

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**20.**

The following species,  $_{15}\text{P}^{3-}$ ,  $_{17}\text{Cl}^{-}$ , and  $_{20}\text{Ca}^{2+}$ , all have the same number of

1. neutrons.
2. isotopes.
3. protons.
4. electrons.
5. nucleons.