

Chemistry Part 1 Practice Test

Modified True/False

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

- _____ 1. A chemical reaction is the process in which **molecules** of one or more substances are rearranged to form different substances.
- _____ 2. **Covalent** bonds form when two atoms share valence electrons.
- _____ 3. The chemical formula for an **ionic** compound represents the formula unit.
- _____ 4. Chemical bonds are **electrostatic** attractions.
- _____ 5. In a closed system, no **matter** can leave the sealed container.
- _____ 6. A skeleton equation is **an unbalanced** chemical equation.
- _____ 7. A chemical reaction can take place without any **visible** change.

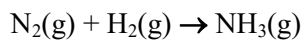
Multiple Choice

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

- _____ 8. A student performed an experiment that involved using a Bunsen burner to heat a white powder in a test tube to release a gas. Which of the following safety rules apply for this experiment?
- Point the open end of a container that is being heated away from yourself and others.
 - Handle hot objects carefully. Remember that glassware and equipment look the same hot as they do cold.
 - Never taste any substances you use in the lab.
 - All of these rules apply.
- _____ 9. You know you will be doing an experiment that has safety precautions. Which of the following describes how you should prepare before coming to class?
- Avoid wearing ties, necklaces, or long scarves.
 - Do not wear sandals or open-toed shoes.
 - Both A and B should be done.
 - Neither A nor B need to be done.
- _____ 10. According to the safety rules, which of the following pieces of information does your teacher **NOT** need to know?
- If you have any allergies or medical conditions that could affect your work in the science classroom.
 - If you use a hearing aid.
 - If you are right-handed or left-handed.
 - If you wear contact lenses.

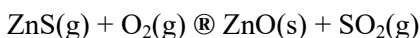
- _____ 11. Which of the following lists of compounds contains both ionic and covalent compounds?
- $\text{CCl}_4, \text{NBr}_3, \text{CO}, \text{H}_2\text{O}_2$
 - $\text{CCl}_4, \text{AlBr}_3, \text{NaO}, \text{H}_2\text{O}_2$
 - $\text{PbCl}_4, \text{AlBr}_3, \text{NaO}, \text{SnO}_2$
 - $\text{Cl}_2, \text{PBr}_3, \text{NO}, \text{H}_2\text{O}_2$
- _____ 12. Which of the following statements about ionic compounds is true?
- They contain anions and molecules.
 - They are made of positively charged particles only.
 - They are made of anions and negatively charged particles.
 - They are made of anions and cations.
- _____ 13. Lewis diagrams are useful to model electrons in atoms. Which of the following statements about Lewis diagrams is true?
- They show all the electrons of an atom.
 - In all Lewis diagrams the dots are paired.
 - They show the valence electrons of an atom.
 - Lone pairs and bonded pairs are shown in different colours.
- _____ 14. Which of the following statements about compounds is true?
- Covalent compounds consist of molecules and ionic compounds consist of ions.
 - Both covalent and ionic compounds consist of molecules.
 - Both covalent and ionic compounds consist of cations and anions.
 - Covalent compounds consist of ions and ionic compounds consist of molecules.
- _____ 15. Which of the following is true about oxygen, O_2 ?
- It exists as molecules and has a covalent bond but is not a covalent compound.
 - It is a covalent compound and the oxygen atoms share a pair of valence electrons.
 - It is made up of oxygen ions, one positive and one negative.
 - None of the above is true.
- _____ 16. What type of attractions hold compounds together?
- valence attractions
 - ferromagnetic attractions
 - kinetic energy attractions
 - electrostatic attractions
- _____ 17. In order to test the law of conservation of mass, experiments must be conducted where
- the initial and final mass is measured of a chemical reaction in an open system.
 - the initial and final volume is measured of a chemical reaction in an open system.
 - the initial and final temperature is measured of a chemical reaction in a closed system.
 - the initial and final mass is measured of a chemical reaction in a closed system.
- _____ 18. When writing the balanced chemical equation for a reaction that has sodium chloride, NaCl , x dissolved in water, what symbol would you use?
- (s)
 - (aq)
 - (l)
 - (g)

_____ 19. Consider the balanced chemical equation for this reaction



- The total number of each type of atom is the same on both sides of the equation.
- The total number of molecules is the same on both sides of the equation.
- The sum of the coefficients on both sides of the equation are equal.
- The mass of the reactants does not equal the mass of products.

_____ 20. Consider the following unbalanced chemical equation:



The correct set of coefficients for the balanced equation, from left to right, is:

- | | |
|------------|------------|
| a. 2,3,2,2 | c. 2,1,2,2 |
| b. 1,1,1,1 | d. 1,2,2,1 |

_____ 21. There are millions of known chemical reactions. Which of the following statements about chemical reactions is true?

- All chemical reactions that take place in the air involve the element oxygen.
- All chemical reactions involve the rearrangement of atoms.
- All chemical reactions produce heat.
- All chemical reactions are dangerous and involve toxic chemicals.

_____ 22. If a particle has a triple bond, which of the following is true?

- The bond involves the sharing of six electrons.
- The triple bond is a covalent bond.
- The triple bond is between two non-metal atoms.
- All of the above are true.

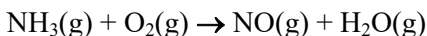
_____ 23. The number in front of a chemical formula in a chemical equation is called the

- skeleton equation.
- subscript.
- coefficient.
- formula unit.

_____ 24. Which of the following **IS NOT** changed when balancing a chemical equation?

- the coefficients in front of the chemical formulas for the reactants
- the chemical formulas of the reactants and products
- the total number of molecules
- the coefficients in front of the chemical formulas for the products

_____ 25. When ammonia is burned in air, the reaction produces nitrogen monoxide and water vapor. The unbalanced chemical equation for this reaction is:



What are the coefficients for the balanced chemical equation, in order from left to right?

- 4,5,4,6
- 2,2,2,3
- 5,4,6,4
- 1,1,1,3

Completion

Complete each statement.

26. A chemical reaction is the process in which atoms of substances are rearranged to form _____ substances.
27. Ionic compounds consist of _____ charged ions connected by ionic bonds.
28. Covalent compounds consist of molecules formed by the sharing of _____ electrons.
29. When bonds form so that atoms achieve full valence shells, the atoms are at a _____ energy state.
30. A sealed container that does not allow chemicals to enter or leave is an example of a _____ system.
31. A reaction where new and different materials are made is called a _____ reaction.

Matching

Match the description below to one of the following terms. There is one extra term that does not match.

- a. ionic compound
- b. ionic bond
- c. covalent compound
- d. covalent bond
- e. subscript
- f. molecule
- g. law of conservation of mass
- h. chemical equation
- i. reactant
- j. product
- k. coefficient

- _____ 32. the material present at the beginning of a reaction
- _____ 33. a chemical made of cations and anions
- _____ 34. new chemicals produced during a reaction
- _____ 35. a chemical that exists as molecules
- _____ 36. a statement to describe a chemical reaction
- _____ 37. a strong attraction between atoms that share valence electrons

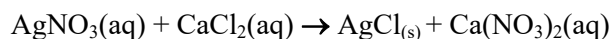
Short Answer

38. Define the term chemical reaction.
39. What should you do if you get a chemical in your eyes?

Name: _____

ID: A

40. A student and her lab partner have started an investigation. They light the lab burner and then both go up to the front of the classroom to pick up materials they need. What error have they made?
41. What is the purpose of the arrow in a chemical equation?
42. Why do you need to check that all the chemical formulas are correct before balancing an equation?
43. How are ions held together in ionic compounds?
44. How are metal ions different from metal atoms?
45. Balance the following skeleton equation:



46. Write a balanced chemical equation for this word equation:

aluminum + oxygen \rightarrow aluminum oxide

Both aluminum and aluminum oxide are solids and oxygen is a gas in this reaction.

Chemistry Part 1 Practice Test Answer Section

MODIFIED TRUE/FALSE

1. ANS: F, atoms
PTS: 1 DIF: Average TOP: 2.1 KEY: chemical reaction
2. ANS: T
TOP: 2.2 KEY: covalent bond | chemical bond
PTS: 1 DIF: Easy
3. ANS: T
TOP: 2.2 KEY: ionic compound | formula unit
PTS: 1 DIF: Easy
4. ANS: T
TOP: 2.2 KEY: chemical bond
PTS: 1 DIF: Easy
5. ANS: T
TOP: 2.2 KEY: conservation of mass
PTS: 1 DIF: Easy
6. ANS: T
TOP: 2.2 KEY: chemical equation | skeleton equation
PTS: 1 DIF: Easy
7. ANS: T
TOP: 2.1 KEY: chemical reaction
PTS: 1 DIF: Easy

MULTIPLE CHOICE

8. ANS: D PTS: 1 DIF: Average TOP: 2.1
KEY: chemical safety | safety rule
9. ANS: C PTS: 1 DIF: Average TOP: 2.1
KEY: chemical safety | safety rule
10. ANS: C PTS: 1 DIF: Average TOP: 2.1
KEY: chemical safety
11. ANS: B PTS: 1 DIF: Difficult TOP: 2.2
KEY: ionic compound | covalent compound
12. ANS: D PTS: 1 DIF: Easy TOP: 2.2
KEY: ionic compound | cation | anion
13. ANS: C PTS: 1 DIF: Average TOP: 2.2
KEY: Lewis diagram
14. ANS: A PTS: 1 DIF: Average TOP: 2.2
KEY: ionic compound | covalent compound
15. ANS: A PTS: 1 DIF: Difficult TOP: 2.2
KEY: molecule | diatomic element
16. ANS: D PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical bond | attractive force
17. ANS: D PTS: 1 DIF: Average TOP: 2.2
KEY: conservation of mass | open system | closed system
18. ANS: B PTS: 1 DIF: Average TOP: 2.2
KEY: chemical equation
19. ANS: A PTS: 1 DIF: Average TOP: 2.2
KEY: balanced chemical equation

20. ANS: A PTS: 1 DIF: Average TOP: 2.2
KEY: chemical equation | coefficient
21. ANS: B PTS: 1 DIF: Average TOP: 2.1
KEY: chemical reaction
22. ANS: D PTS: 1 DIF: Average TOP: 2.2
KEY: chemical bond | triple bond
23. ANS: C PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical equation | coefficient
24. ANS: B PTS: 1 DIF: Average TOP: 2.2
KEY: chemical equation | balanced chemical equation | coefficient
25. ANS: A PTS: 1 DIF: Average TOP: 2.2
KEY: balanced chemical equation | coefficient

COMPLETION

26. ANS:
different
new

PTS: 1 DIF: Easy TOP: 2.1 KEY: chemical reaction
27. ANS: oppositely

PTS: 1 DIF: Easy TOP: 2.2 KEY: ion | ionic bond
28. ANS: valence

PTS: 1 DIF: Average TOP: 2.2 KEY: covalent bond | valence electron
29. ANS: lower

PTS: 1 DIF: Easy TOP: 2.2 KEY: energy | chemical bond
30. ANS: closed

PTS: 1 DIF: Average TOP: 2.2
KEY: conservation of mass | closed system
31. ANS: chemical

PTS: 1 DIF: Easy TOP: 2.1 KEY: chemical reaction

MATCHING

32. ANS: I PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical equation | chemical reaction
33. ANS: A PTS: 1 DIF: Easy TOP: 2.2
KEY: compound
34. ANS: J PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical equation | chemical reaction
35. ANS: C PTS: 1 DIF: Easy TOP: 2.2
KEY: molecule | compound

36. ANS: H PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical equation
37. ANS: D PTS: 1 DIF: Easy TOP: 2.2
KEY: chemical bond

SHORT ANSWER

38. ANS:
A chemical reaction is the process in which atoms of substances are rearranged to form different substances.
- PTS: 1 DIF: Easy TOP: 2.1 KEY: chemical reaction
39. ANS:
Rinse your eyes with water at an eyewash station and have your lab partner notify your teacher immediately.
- PTS: 1 DIF: Average TOP: 2.1 KEY: chemical safety
40. ANS:
An open lab burner flame should never be unattended.
- PTS: 1 DIF: Easy TOP: 2.1 KEY: chemical safety
41. ANS:
The arrow indicates that the chemicals on the left in the equation produce or yield the chemical(s) on the right of the equation.
- PTS: 1 DIF: Average TOP: 2.2 KEY: chemical equation
42. ANS:
You should check that all the chemical formulas are correct before balancing an equation because if there is an error it may not be possible to balance the equation and you will waste time trying to balance it.
- PTS: 1 DIF: Average TOP: 2.2 KEY: balanced chemical equation
43. ANS:
The positive and negative ions of ionic compounds are held together by electrostatic attractions that form ionic bonds.
- PTS: 2 DIF: Average TOP: 2.2 KEY: ionic compound | ionic bond
44. ANS:
Metal ions are atoms that have lost electrons so that they have a full valence shell and a positive electrical charge. Metal atoms are neutral.
- PTS: 1 DIF: Average TOP: 2.2 KEY: ion
45. ANS:
 $2\text{AgNO}_3(\text{aq}) + \text{CaCl}_2(\text{aq}) \rightarrow 2\text{AgCl}(\text{s}) + \text{Ca}(\text{NO}_3)_2(\text{aq})$
- PTS: 1 DIF: Average TOP: 2.2 KEY: balanced chemical equation
46. ANS:
 $4\text{Al}(\text{s}) + 3\text{O}_2(\text{g}) \rightarrow 2\text{Al}_2\text{O}_3(\text{s})$
- PTS: 2 DIF: Average TOP: 2.2
KEY: balanced chemical equation| word equation