Atomic Structure and the Periodic Table

Chemistry · Answer Key · 22 Questions

1. What is the smallest part of an element that can exist?

A) Molecule
B) Atom
C) Compound
D) Ion

2. What are the three sub-atomic particles that make up an atom?

A) Protons, Neutrons, Electrons
B) Electrons, Positrons, Neutrinos
C) Quarks, Leptons, Bosons
D) Protons, Neutrons, Photons

3. What is the relative charge of a proton?

A) -1
B) 0
C) +1
D) 2

4. What is the relative charge of a neutron?

A) -1
B) 0
C) +1
D) 1/2

5. What is the relative charge of an electron?

A) -1
B) 0
C) +1
D) 2

6. Where are protons and neutrons found in an atom?

A) Orbiting the nucleus
B) In the nucleus
C) Outside the atom
D) Between electron shells

7. Why do atoms have no overall electrical charge?

A) They have equal numbers of protons and neutrons.
B) They have equal numbers of protons and electrons.
C) They have equal numbers of neutrons and electrons.
D) They contain only neutrons.

8. What does the atomic number represent?

A) The total number of protons and neutrons.
B) The total number of neutrons.
C) The total number of protons.
D) The total number of electrons in an ion.

9. How do atoms of different elements differ from each other?

A) They have different numbers of neutrons.
B) They have different numbers of electrons.
C) They have different numbers of protons.
D) They have different relative masses.

10. Where is most of the mass of an atom concentrated?

A) In the electron shells
B) In the nucleus
C) Distributed equally throughout the atom
D) In the outermost electrons

11. What is an isotope?

A) Atoms of the same element with different numbers of electrons.
B) Atoms of different elements with the same number of protons.
C) Atoms of the same element with different numbers of neutrons.
D) Atoms with no neutrons.

12. What is the relative atomic mass of an element?

A) The mass number of the most common isotope.
B) The average mass of all naturally occurring isotopes of that element.
C) The sum of protons and neutrons in a single atom.
D) The number of protons in the nucleus.

13. How are electrons arranged around the nucleus?

A) Randomly
B) In specific energy levels or shells
C) In a single, large cloud
D) They do not move

14. What is the maximum number of electrons that can fit in the first electron shell?

A) 8
B) 2
C) 18
D) 32

15. What is the maximum number of electrons that can fit in the second electron shell?

A) 2
B) 8
C) 16
D) 18

16. What is a compound?

A) A substance made up of only one type of atom.
B) A mixture of elements that are not chemically bonded.
C) A substance formed when atoms of different elements are chemically bonded together.
D) The smallest part of an element.

17. What is a physical change?

A) A change where new substances are formed.
B) A change where chemical bonds are broken.
C) A change where no new substances are formed, and the starting materials are the same before and after.
D) A change that always involves heat.

18. What is a chemical reaction?

A) A process where substances are unchanged.
B) A process where new substances are produced.
C) A physical change that requires energy.
D) A process that can be easily reversed.

19. What did Rutherford's scattering experiment prove?

A) That atoms are solid spheres.
B) That atoms have a nucleus with a dense positive charge.
C) That electrons are spread evenly throughout the atom.
D) That atoms are mostly empty space with no nucleus.

20. According to the electron shell model, what is true about electrons orbiting the nucleus?

A) They can orbit at any distance.
B) They orbit at a fixed energy level.
C) They are stationary.
D) They are located in the nucleus.

21. What is the relative mass of a neutron?

A) 0
B) 1
C) 2
D) Variable

22. What is the relative mass of an electron?

A) 1
B) 0
C) -1
D) Very large