

Atomic Structure and the Periodic Table

Chemistry · Practice Test · 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