

Revision Sheets

Chapter 3 - Discovering Parts of an Atom

Part A- True/False

Indicate whether the statement is true or false.

- _____ 1. The mass of an electron is about equal to the mass of a proton.
- _____ 2. For an atom to be neutral, the number of protons must equal the number of neutrons.
- _____ 3. The neutrons make up most of the volume of an atom.
- _____ 4. Dividing an element into smaller pieces results in a molecule.
- _____ 5. Two isotopes of the same element contain different numbers of protons.
- _____ 6. Nuclear decay occurs when an unstable atomic nucleus changes into another more stable nucleus by emitting radiation.

Part B- Multiple Choice

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

- _____ 7. The atomic number of calcium is 20. What can you tell about an atom of this element?
 - a. the sum of its protons and neutrons is 20
 - b. it has 20 protons
 - c. it has 40 protons
 - d. it has 20 neutrons
- _____ 8. Where is the densest part of an atom?
 - a. electron cloud
 - b. space around the nucleus
 - c. nucleus
 - d. All parts of the atom are equally dense.
- _____ 9. How small are atoms?
 - a. about the size of dust specks
 - b. about the size of pin holes
 - c. about the size of grains of salt or sand
 - d. too small to be seen by the unaided eye
- _____ 10. The sum of an atom's protons and neutrons is its _____.
 - a. atomic mass
 - b. periodic number
 - c. atomic number
 - d. atomic weight

___ 11. What are the smallest particles of an element that have the same chemical properties as the element?



- a. atoms
- b. molecules
- c. protons
- d. electrons

___ 12. What did Democritus believe an atom was?

- a. a solid, indivisible object
- b. a tiny particle with a nucleus
- c. a nucleus surrounded by an electron cloud
- d. a tiny nucleus with electrons surrounding it

___ 13. What determines the identity of elements?

- a. its mass number
- b. the charge of the atom
- c. the number of its neutrons
- d. the number of its protons

___ 14. If an ion contains 10 electrons, 12 protons, and 13 neutrons, what is the ion's charge?

- a. 2-
- b. 1-
- c. 2+
- d. 3+

Part C- Matching

Match each term with its correct description

- | | |
|------------------------|------------------|
| a. atom | g. nucleus |
| b. electron | h. proton |
| c. neutron | i. nuclear decay |
| d. isotope | j. ion |
| e. mass number | |
| f. average atomic mass | |

___ 15. The smallest particle of an element that still has the same chemical properties of that element.

___ 16. A positively charged particle inside an atom's nucleus.

___ 17. A particle with a negative electric charge.

___ 18. The center of the atom which contains most of the atom's mass.

___ 19. A particle that is found in the nucleus of an atom and has no electrical charge.

___ 20. The average mass of the element's isotopes.

___ 21. Atoms of the same element that have different numbers of neutrons.

- ... 22. An atom that is no longer neutral because it has gained or lost electrons.
- 23. A process that occurs when an unstable atomic nucleus changes into another more stable nucleus by emitting radiation.

Part D- Short Answer

Write the correct answer for each of the following questions.

24. When the same element has different atomic masses, it is called a(n) _____.
25. Electrons in an atom move throughout the _____ surrounding the nucleus.
26. How can radioactive decay produce new elements?
27. How can radioactive decay produce new elements?