

## Answer on Question #47967 - Chemistry – Other

### Question

1. What are the subatomic particles that make up an atom?
2. Who was the first person to suggest the idea of atoms, in the fourth century B.C?
3. Which of the following is NOT a part of Dalton's atomic theory?
  - a. All elements are composed of atoms.
  - b. All atoms of the same element are the same.
  - c. Atoms that combine do so in simple whole-number ratios.
  - d. Atoms are always in motion.
4. What particles form the nucleus of an atom?
5. Which of the following is correct concerning subatomic particles?
  - a. The proton was discovered by Thomson in 1880.
  - b. Cathode rays were found to be made of protons.
  - c. The neutron was discovered by Chadwick in 1932.
  - d. The electron was discovered by Goldstein in 1886.
  - e. Canal rays were found to be made of protons, electrons, and neutrons.
6. Dalton theorized that atoms are indivisible and that all atoms of an element are identical. We know that\_\_\_\_\_
  - a. Atoms of an element can have different numbers of protons
  - b. Dalton's theories are correct
  - c. All atoms of an element are not identical but they all must have the same mass
  - d. Atoms are divisible
7. As a consequence of the discovery of the nucleus by Rutherford, which model of the atom is believed to be true?
  - a. A model in which the nucleus is made of protons, electrons, and neutrons
  - b. A model in which the nucleus is made of neutrons only
  - c. A model in which the region outside the nucleus is largely empty space in which the electrons are situated
  - d. A model in which the nucleus is made of electrons and protons

e. A model in which the protons, electrons, and neutrons are evenly distributed throughout the volume of the atom

8. The nucleus of an atom is \_\_\_\_\_.

- a. Positively charged and has a high density
- b. Negatively charged and has a high density
- c. Positively charged and has a low density
- d. Negatively charged and has a low density

9. The atomic number of an element is the total number of which particles in the nucleus?

10. The mass number of an element is equal to \_\_\_\_\_.

11. The sum of protons and neutrons in an atom equals the \_\_\_\_\_.

12. Using the periodic table, determine the number of neutrons in oxygen-16.

13. What does the number 84 in the name krypton-84 represent?

14. What unit is used to measure average relative atomic mass?

15. All atoms of the same element have the same \_\_\_\_\_.

- a. Number of protons
- b. Mass numbers
- c. Number of electrons
- d. Mass

16. Which of the following equals one atomic mass unit?

- a. The mass of one electron
- b. The mass of one helium atom
- c. One gram
- d. One-twelfth the mass of one carbon atom
- e. The mass of one carbon atom

17. Isotopes of the same element have different \_\_\_\_\_.

18. In which of the following is the number of neutrons correctly represented?

24

- a.  $^{12}\text{Mg}$  has 24 neutrons.

238

b.  $^{92}\text{U}$  has 146 neutrons.

75

c.  $^{33}\text{As}$  has 108 neutrons.

19

d.  $^9\text{F}$  has 0 neutrons.

197

e.  $^{79}\text{Au}$  has 79 neutrons.

19. The average atomic mass of an element is equal to\_\_\_\_\_.

20. Consider an element Z that has two naturally occurring isotopes with the following percent abundances: the isotope with a mass number of 20 is 25% abundant; the isotope with a mass number of 22 is 75% abundant. What is the average atomic mass for element Z?

21. What are the Group A elements known as?

22. Of the elements Fe, Hg, U, Te, and Y, which is a representative element?

23. Of the elements Pt, Sc, V, Li, and Kr, which is a nonmetal?

24. What is each vertical column of elements on the periodic table called?

25. What criterion is used to arrange the elements in rows and columns on the periodic table?

26. Which of the following categories includes the majority of the elements?

a. Metals

b. Nonmetals

c. Metalloids

d. Gases

e. Liquids

27. A mystery element Q is a nonlustrous solid and a poor conductor of electricity. To what category of elements does it belong?

a. Metalloids

b. Metals

c. Transition metals

d. Semimetals

e. Nonmetals

28. The modern periodic table is arranged in order of increasing atomic \_\_\_\_\_.
- a. Mass
  - b. Charge
  - c. Radius
  - d. Number
29. What is the electrical charge of a cation?
30. In which of the following is the symbol for the ion and the number of the electrons it contains given correctly?
- a.  $S^{2-}$  has 2 electrons
  - b.  $H^+$  has 1 electron
  - c.  $Ca^{2+}$  has 18 electrons
  - d.  $Al^{3+}$  has 16 electrons
  - e.  $Br^-$  has 34 electrons
31. Ions form when atoms gain or lose \_\_\_\_\_.
32. Which of the following statements is correct concerning ions?
- a. Anions form when an atom loses protons.
  - b. Cations form when an atom gains electrons.
  - c. Cations form when an atom loses electrons.
  - d. Anions form when an atom gains protons.
  - e. Cations are negatively charged particles and anions are positively charged particles.

**Answer:**

1. The subatomic particles that make up an atom are protons, neutrons and electrons.
2. Democritus was the first person to suggest the idea of atoms, in the fourth century B.C.
3. d. Atoms are always in motion.
4. The particles that form the nucleus of an atom are protons and electrons.
5. b. Cathode rays were found to be made of protons.
  - c. The neutron was discovered by Chadwick in 1932.
6. b. Dalton's theories are correct

7. c. A model in which the region outside the nucleus is largely empty space in which the electrons are situated

8. a. Positively charged and has a high density

9. The atomic number of an element is the total number of protons in the nucleus.

10. The mass number of an element is equal to the total number of protons and neutrons.

11. The sum of protons and neutrons in an atom equals the mass number of an element.

12. The number of neutrons in oxygen-16 is 8.

13. The number 84 in the name krypton-84 means that the sum of protons and neutrons in an atom of krypton is 84.

14. amu (Atomic Mass Unit)

15. a. Number of protons

16. d. One-twelfth the mass of one carbon atom

17. Isotopes of the same element have different number of neutrons.

18. 238

b.  $^{92}\text{U}$  has 146 neutrons.

19. The average atomic mass of an element is equal to the mass of an atom of this element.

20. The average atomic mass for element Z is 21.5.

21. The Group A elements are known as main group elements.

22. Te is a representative element.

23. Kr is a nonmetal.

24. Each vertical column of elements on the periodic table is called a group.

25. The similarity in properties is used to arrange the elements in rows and columns on the periodic table.

26. a. Metals

27. e. Nonmetals

28. d. Number

29. The electrical charge of a cation is positive, or "+".

30. c.  $\text{Ca}^{2+}$  has 18 electrons

31. Ions form when atoms gain or lose the electrons.

32. c. Cations form when an atom loses electrons.

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