

## Chemistry Unit 4 Test

1. Who is credited with discovering the periodic table? He arranged the elements by atomic mass:
  - a. Mendeleev
  - b. Moseley
  - c. Einstein
  - d. Bohr
2. Who arranged the elements on the periodic table by increasing atomic number, like we see today?
  - a. Mendeleev
  - b. Moseley
  - c. Einstein
  - d. Bohr
3. The Modern Periodic Law which states that the properties of elements repeat in a pattern when elements are arranged by increasing atomic number is attributed to which two scientists?
  - a. Einstein and Bohr
  - b. Rutherford and Bohr
  - c. Mendeleev and Moseley
  - d. Mendeleev and Bohr
4. What is true about the elements in a column (except Helium) on the periodic table?
  - a. They have the same mass
  - b. They have the same atomic number
  - c. They have the same number of protons
  - d. They have the same number of valence electrons
5. True or False, Helium is located on the right-most side of the periodic table even though its number of valence electrons does not correspond with those below it because it is a noble gas?
  - a. True
  - b. False
6. What column of elements are stable, that is, their outer-most energy levels are full of electrons, and therefore they do not form bonds with other elements?
  - a. Metals
  - b. Noble Gases
  - c. Nonmetals
  - d. Transition Metals
7. What is the term for elements with both metal and non-metal characteristics?
  - a. Transition metal

- b. Noble gas
  - c. Metalloid
  - d. Ion
8. What is the term for the distance from the nucleus to the outer electron shell, calculated by finding the distance from nucleus to nucleus of like atoms when bonded together, then divide by two (or half the distance between nuclei of two like atoms)
- a. Atomic radius
  - b. Atomic number
  - c. Atomic weight
  - d. Atomic diameter
9. What is the term for the energy required to remove an electron from a neutral atom
- a. Atomic energy
  - b. Ionization energy
  - c. Mass energy
  - d. Electron energy
10. What is the term for a charged atom
- a. Proton
  - b. Electron
  - c. Ion
  - d. Element

Fill in the chart based on trends of the periodic table. Use an up arrow for increasing and a down arrow for decreasing.

11.-12. Ionization energy \_\_\_\_\_ across \_\_\_\_\_ down

13.-14. Atomic radius \_\_\_\_\_ across \_\_\_\_\_ down

15.-16. Atomic number \_\_\_\_\_ across \_\_\_\_\_ down

17.-18. Atomic mass \_\_\_\_\_ across \_\_\_\_\_ down

19. Which element has 8 valence electrons?

- a. O
- b. F
- c. Ne
- d. H

20. Which element has 3 energy levels?

- a. O
- b. S
- c. He
- d. Se

21. Which has the largest atomic radius?

- a. Be
- b. Mg
- c. Ca
- d. Sr

22. Which element forms 2 Negative ions when bonding? (2 more electrons are added to become stable)

- a. N   b. O   c. F   d. Ne

23. Which element forms 3 positive ions when bonding? (3 electrons are taken away to become stable)

- a. Na   b. Mg   c. Al   d. Si

24. Which element is a metal?

- a. K   b. N   c. B   d. F

25. Which element is a member of the Transition Metal family?

- a. Zn   b. Bi   c. At   d. Ca

Write the stable ion for the following elements:

26. Cs \_\_\_\_\_

27. P \_\_\_\_\_

28. B \_\_\_\_\_

29. Cl \_\_\_\_\_

30. S \_\_\_\_\_

Extra credit (4 points):

Why does the atomic radius typically decrease across the row and increase down the periodic table?

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