

Year 10 Science 2024

**Chemistry 1 Test: Elements and the Periodic Table**

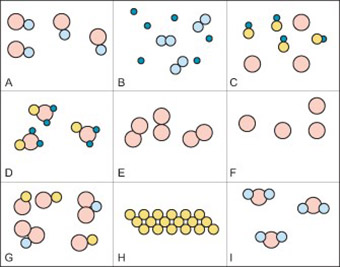
**\*\*\*\*You may use a Periodic Table and List of Ions\*\*\*\***

**SECTION 1: MULTIPLE CHOICE** (1 mark each)

Circle your answer on the multiple choice answer sheet.

1. Which of the following statements is false?
2. Protons are found in the nucleus and are positively charged.
3. Electrons move around the nucleus and contribute little mass to the atom.
4. Neutrons are found in the nucleus and have no charge.
5. The numbers of neutrons, protons and electrons are always equal in an atom.
6. An atom has 21 protons, 22 neutrons and 18 electrons. It is
7. an ion of titanium
8. a neutral atom of titanium
9. an isotope of calcium
10. an ion of scandium
11. The Mass Number of an atom is equal to
    1. the number of protons.
    2. the number of protons plus neutrons.
    3. the number of protons plus neutrons plus electrons.
    4. the average mass of atoms of one element.
12. Which statement is false about an atom of hydrogen?
    1. It has one proton, one neutron and one electron.
    2. It has an atomic number of 1.
    3. It has a mass number of 1.
    4. It has an atomic mass of approximately 1.
13. Which of the following has the most electrons in its outer shell?
    1. Helium, He
    2. Lithium, Li
    3. Carbon, C
    4. Zinc, Zn
14. On the Periodic Table, the group that an element is found in tells you
    1. the number of protons in its nucleus.
    2. the number of shells that contain electrons.
    3. the number of electrons in the outer shell.
    4. the number of neutrons in the nucleus.
15. Which scientist contributed towards the arrangement of the modern Periodic Table
    1. Dmitri Mendeleev
    2. Albert Einstein
    3. Nicola Tesla
    4. Marie Curie
16. The Noble gases are all found in the last group of the periodic table because
    1. they are all non-metals.
    2. they are all gases.
    3. they are all charged.
    4. they all have full electron shells.
17. Which of the following is true about a neutral atom of magnesium?
    1. It has 24.31 protons.
    2. It has an electron configuration of 2, 8, 12.
    3. It has 2 valence (outer shell) electrons.
    4. It always has 12 neutrons.
18. Elements are arranged on the Periodic Table in order of
    1. Atomic mass
    2. Melting point
    3. Atomic number
    4. Density
19. The most abundant element in the universe, making up 90% of all atoms is
    1. Hydrogen
    2. Helium
    3. Oxygen
    4. Iron
20. Isotopes are atoms with
    1. the same number of protons but different numbers of electrons.
    2. the same number of protons but different numbers of neutrons.
    3. the same number of neutrons but different numbers of protons.
    4. the same number of electrons but different numbers of neutrons.
21. The electron configuration of sodium (Na) is
    1. 2, 8, 18
    2. 2, 8, 1
    3. 11, 22.99
    4. 2, 8, 6
22. The element with the electron configuration 2, 5 is
    1. Barium (Ba)
    2. Nitrogen (N)
    3. Fluorine (F)
    4. Manganese (Mn)

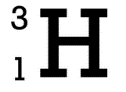
*The next three questions refer to the following diagram*



1. Which of the diagrams below represent pure elements?
2. A, D, G and I
3. C and G
4. E, F and H
5. E and F
6. Diagram B shows
   1. a mixture of elements
   2. a mixture of compounds
   3. a mixture of an element and a compound
   4. a solution
7. On the Periodic Table, horizontal rows are called
   1. Shells
   2. Periods
   3. Groups
   4. Families
8. Uranium (U) is found on the Periodic Table in a special block known as the
   1. Transition metals
   2. Metalloids
   3. Lanthanides
   4. Actinides
9. The alkali metals are found in
   1. Group 1
   2. Group 2
   3. Group 14
   4. Group 18
10. Group 17 elements are referred to as
    1. Alkalines
    2. Halogens
    3. Noble gases
    4. Superheavy metals

**SECTION 2: WRITTEN**

**Write your answers in the spaces.**

1. **Draw** a labelled diagram of an atom of , showing all the protons, neutrons and electrons. (3)
2. Fill in the missing data for the atom in the table below (5)

|  |  |
| --- | --- |
| Atom | http://2.bp.blogspot.com/-IHm4ECRXj3s/Tf9Ry-sGYmI/AAAAAAAAABA/SlXhXQttt6A/s1600/4.JPG |
| Atomic number |  |
| Mass number |  |
| Number of protons |  |
| Number of neutrons |  |
| Number of electrons |  |

1. Use a periodic table to determine the electron configuration of the following elements (2)
2. Silicon (Si)
3. Helium (He)
4. Explain why metals are good conductors (3 marks)
5. Write the formulae for the following compounds (4 marks)
6. sodium hydroxide
7. lithium oxide
8. copper (II) sulfate
9. aluminium chloride

**END OF TEST (Out of 37)**