Chemistry Notes

Edexcel IGCSE

Chapter 1c – Atomic Structure

1c – Atomic structure

1.14 – Know what is meant by the terms atom and molecule

- Atom = Smallest piece of an element that is recognizable as the element itself (ie same chemical properties)
  - Eg one Cu atom
- Molecule = Two or more atoms chemically bonded by covalent bonds, can be dif elements
  - Eg H_2O molecule

1.15 – Know the structure of an atom in terms of the positions, relative masses and relative charges of sub-atomic particles

- Protons and neutrons packed tightly in a dense nucleus
- Electrons in shells around the nucleus. For purposes of GCSE, learn it is orbiting around

Particle	Relative mass	Relative Charge
Proton	1	+1
Neutron	1	0
Electron	1/1836	-1

1.16 – Know what is meant by the terms atomic number, mass number, isotopes and relative atomic mass (A_r)

- Atomic number = Number of protons in an atom's nucleus. Unique for each element
- Mass number = Number of protons + neutrons in a nucleus. NOT unique. Larger than atomic no.
- Isotopes = Two atoms of the **same** element with the same atomic number but **different** mass number. Ie dif no. of neutrons
- Relative atomic mass = average mass of atom after calculations of isotopic abundance

Basically, Chlorine A_r = 35.5, bc 75% have 35 protons + neutrons, 25% have 37.

1.17 – Be able to calculate the relative atomic mass of an element (A_r) from isotopic abundances

- $A_r = \frac{(\%\text{ of isotope 1} \times \text{mass number of isotope 1}) + (\%\text{ of isotope 2} \times \text{mass number of isotope 2})}{100}$

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