## Radioactivity

REVISE WISE Radioactivity is defined as the spontaneous breaking up of certain unstable nuclei, accompanied by the emission of radiation.

### Alpha Particles

REVISE WISE Alpha particles are helium nuclei, with a positive charge and little penetrating ability.

#### **Beta Particles**

REVISE WISE Beta particles are electrons, with a negative charge and greater penetrating ability than alpha particles.

### Gamma Rays

REVISE WISE Gamma rays are high-energy electromagnetic radiation, with greater penetrating ability than beta particles.

Heisenberg Jncertainty Principle

The Heisenberg Uncertainty Principle states that it is not possible to determine at the same time the exact position and velocity of an electron.

Aufbau Principle

**REVISE** WISE The Aufbau Principle states that electrons will occupy the lowest energy sublevel available.

### Atomic Radius

REVISE WISE The atomic radius of an element is defined as half the distance between the nuclei of two atoms of the element that are joined together by a single covalent bond.

# First Ionisation Energy

The first ionisation energy of an element is defined as the minimum energy in kilojoules required to remove the most loosely bound electron from each isolated atom in a mole of the element in its ground state .

## Second Ionisation Energy

The second ionisation energy is the energy required to remove the most loosely bound electron from each singly charged positive ion in a mole of these ions.

# Water of Crystallisation

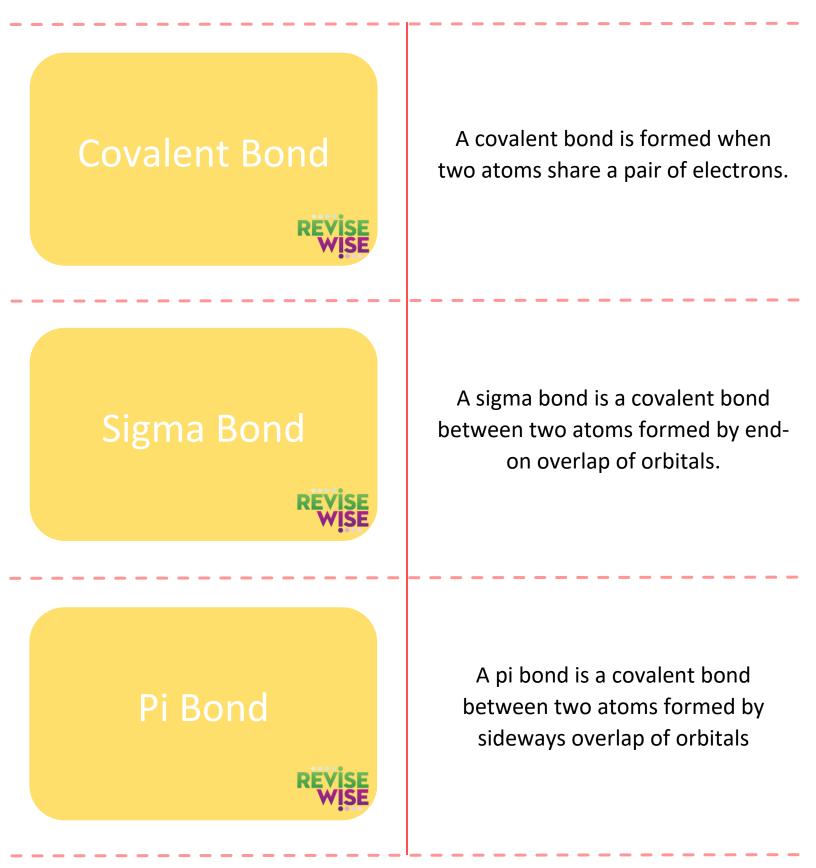
Water of crystallisation is water chemically combined in definite proportions in a crystalline compound.

The valency of an element is the number of bonds each atom of the element forms when it reacts.

Ionic Bond

An ionic bond is the electrostatic force of attraction between oppositely charged ions.

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# Polar Covalent Bond

A polar covalent bond is a covalent bond in which there is unequal sharing of electrons.

#### Electronegativity

REVISE WISE Electronegativity is the relative attraction of an atom for shared pairs of electrons in a covalent bond.

Electron Pair Repulsion Theory The electron pairs in the valance (outer) shell of the central atom repel each other and end up as far apart as is geometrically possible. Lone pairs have a greater repelling effect than bonding pairs.

## Hydrogen Bonding

Hydrogen bonding is a special type of dipole-dipole interaction, which occurs when hydrogen is bonded to small, highly electronegative atoms such as O, N or F.

#### Boyle's Law

REVISE WISE At a constant temperature, the volume of a given mass of any gas is inversely proportional to the pressure of the gas.

#### Charles's Law

REVISE WISE At a constant pressure, the volume of a given mass of any gas is directly proportional to the Kelvin temperature.

## Gay-Lussac's Law of Combining Volumes

When gasses react, the volumes consumed in the reaction bear a simple whole number ratio to each other and to the volumes of any gaseous product of the reaction, if all volumes are measured under the same conditions of temperature and pressure.

#### Avogadro's Law

Equal volumes of gasses, under the same conditions of temperature and pressure, contain equal numbers of molecules.

A mole of as the a contains or mole atom

A mole of any substance is defined as the amount of substance that contains as many particles (atoms or molecules or ions) as there are atoms of <sup>12</sup>C in 12 g of <sup>12</sup>C.