Definitions and Concepts for OCR (A) Physics GCSE

Topic 1: Matter

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*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

***Atmosphere:** The thin layer of air surrounding the Earth, which gets less dense with increasing altitude. The pressure also decreases with increasing altitude.

Bohr Model: A model of the atom that suggested that negative electrons orbit a positive nucleus at set distances. It is the currently accepted model.

Change in Thermal Energy: The product of the mass, specific heat capacity and temperature change of a substance.

Chemical Changes: Changes to the chemical structure of a substance. The substance does not usually restore its original properties when the changes are reversed.

Condensation: The changing from vapour state to a liquid state, when a substance is cooled.

Density: The mass per unit volume of an object.

Electrons: A negatively charged constituent of the atom, that are found in different energy levels, around the nucleus.

Evaporation: The changing from liquid state to a vapour state, when a substance is heated.

***Floating: An object will float if the volume of liquid it displaces has a greater weight than that of the object itself. The upthrust acting on the object is greater than its weight.**

Fluid: A liquid or gas.

Freezing: The changing from a liquid state to a solid state, when a substance is cooled.

Gas: A state of matter in which the particles are spread apart and have high kinetic energies. Any intermolecular forces acting between the particles are very weak.

Latent Heat: The energy required for a substance to change state.

Liquid: A state of matter in which the particles are in contact, but can flow over each other. Intermolecular forces act between the particles.

Melting: The changing from solid state to liquid state, when a substance is heated.

Neutrons: A neutrally charged constituent of the nucleus.

Nucleus: The positively charged centre of an atom, containing protons and neutrons.

Pascals: The unit of pressure, equal to a force of one Newton acting perpendicular to an area of one metre squared.

Physical Changes: Changes to the physical properties of a substance which can be reversed. Changes of state are physical changes since substances can restore their original properties when the changes are reversed.

***Pressure in a Liquid Column:** **Equal to the product of the height of the column, the density of the liquid and the gravitational field strength.**

***Pressure of a Gas:** The perpendicular force per unit area acting on the surfaces of a container as a result of the gas particles colliding with it.

Pressure: The force acting perpendicular to a surface, per unit area.

Protons: A positively charged constituent of the nucleus.

Rutherford Model: A model of the atom that represented the atom as being mostly empty space, with a dense positive centre and negative charges scattered around it.

***Sinking:** **An object will sink if the volume of liquid it displaces has a lower weight than that of the object itself. The upthrust acting on the object is lower than its weight and so there is a resultant downwards force.**

Solid: A state of matter in which the particles are tightly packed together and can only vibrate about their fixed positions. Strong intermolecular forces act between the particles

Specific Heat Capacity: The amount of energy needed to increase the temperature of one kilogram of a given substance by one degree Celsius.

Specific Latent Heat of Fusion: The amount of energy needed to change the state of one kilogram of a substance from solid state to liquid state, whilst held at constant temperature.

Specific Latent Heat of Vaporisation: The amount of energy needed to change the state of one kilogram of a substance from liquid state to vapour state, whilst held at constant temperature.

Specific Latent Heat: The amount of energy needed to change the state of one kilogram of a substance, whilst held at constant temperature.

Sublimation: The direct changing of a substance from a solid state to a vapour state, without passing through the liquid phase.

Temperature: A measure of the average kinetic energy of the particles in a substance. An increase in temperature will result in an increase in the particles' kinetic energies and velocities.

Thomson Model: A rejected model of the atom that represented the atom as a ball of positive charge, with negative charges distributed throughout it. It is sometimes referred to as the plum-pudding model.

***Upthrust:** **The upward force acting on an object in a fluid, due to it experiencing a greater pressure below it than above it. It is equal to the weight of the fluid displaced by the object.**

Weight: The force acting on an object due to gravity. It is equal to the product of the object's mass and the gravitational field strength at its location.