

Definitions and Concepts for WJEC (Wales) Physics GCSE

Topic 2.9: Nuclear Decay and Nuclear Energy

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

Definitions marked by '' are for separate sciences only*

Chain Reaction: The process of neutrons released by a fission reaction, being absorbed by another unstable, large nuclei, and inducing further fission.

Control Rods: Found in nuclear reactors to control the rate of fission. They absorb neutrons, preventing them from inducing further fission reactions.

Deuterium: An isotope of hydrogen with one proton and one neutron in its nucleus. It is commonly involved in fusion reactions.

Fission Products: Fission produces two smaller nuclei, two or three neutrons and gamma rays. All these products are released with kinetic energy.

Fissile Nuclei: A nuclei that will undergo fission if it absorbs a neutron travelling at a suitably slow speed.

Mass-Energy Equivalence: All matter has an associated energy. This means that mass can be converted into energy in the form of radiation.

Moderator: A substance found in nuclear reactors to slow down neutrons so they are at suitable speeds to induce fission in fissile nuclei.

Nuclear Fission: The splitting of a large and unstable nucleus into two smaller and more stable nuclei to produce energy. This is the method currently used in nuclear power stations.

Nuclear Fusion: The joining of two small, light nuclei to form a larger, heavier one and release energy. It cannot happen at low pressures and temperatures since in these conditions the electrostatic repulsion of protons in the nucleus cannot be overcome.

Shielding: A barrier used to prevent radioactive daughter products leaving a nuclear reactor.

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Tritium: An isotope of hydrogen with one proton and two neutrons in its nucleus. It is commonly involved in fusion reactions.

Uranium-235: The radioactive isotope used in nuclear reactors. It is often referred to as U-235.

