Definitions and Concepts for WJEC (Eduqas) Physics GCSE

Topic 1: Energy

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

Definitions marked by '' are for separate sciences only*

Closed System: A system that experiences no net change in its total energy when energy transfers occur within it.

Conservation of Energy: The law that energy can be transferred, stored or dissipated but never created or destroyed.

Efficiency: The ratio of useful output energy transfer to total energy input. It can never exceed 1 (or 100%), due to the conservation of energy.

Elastic Potential Energy: The energy stored in a spring when it is stretched or compressed. It is directly proportional to the spring constant and the square of the length change.

Free Electrons: Electrons that are not bound to specific atoms and can move through the material to aid the transfer of energy. They are most commonly found in metals and this explains why metals are good conductors.

Gravitational Potential Energy: The store of energy that all raised matter has. It is directly proportional to the mass of the object, the distance that it is raised, and the gravitational field strength at that point.

Joulemeter: A device used to measure the energy used by an appliance.

Kilowatt-Hour: A unit of energy used for recording domestic energy consumption.

Kinetic Energy: The store of energy that all moving matter has. It is directly proportional to the object's mass and to the square of its velocity.

Lubrication: The application of a lubricant (such as oil) to reduce the friction that acts between surfaces. This may improve the efficiency of a system.

Non-Renewable Energy Resource: An energy resource that cannot be replenished whilst it is being used. It is a finite resource.

Power Cables: Metal wires that are part of the National Grid. Electricity is transported along them at very high voltages to reduce the energy loss and make the transportation more efficient.

Power-Rating: The maximum rate of energy transfer of an appliance.

Power: The rate at which energy is transferred, or the rate at which work is done. It is calculated by dividing the work done by the time taken.

Renewable Energy Resource: An energy resource that can be replenished whilst it is being used.

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.

Thermal Conductivity: A measure of how good a material is at conducting heat. The higher this value is for a given material, the higher the material's rate of energy transfer via conduction will be.

Thermal Insulation: The addition of a material that reduces the amount of heat that is transferred from a system to its surroundings.

Useful Energy Transfer: The transfer of energy by a system, to directly serve the purpose of the system.

Waste Energy Transfer: The transfer of energy by a system to a form that doesn't directly serve the purpose of the system.

Work Done: Work is done on an object when a force causes it to move through a distance. It is equal to the product of the distance travelled and the magnitude of the force in the direction of motion.