Definitions and Concepts for Edexcel Physics IGCSE

Topic 4: Energy Resources and Energy Transfers

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

Definitions marked by '' are for separate sciences only*

Chemical Energy: A store of energy found in things such as batteries, fuels and food.

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

Conduction: The transfer of heat energy through the vibrations of particles in a medium.

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

Constant Temperature: Bodies at a fixed temperature radiate the same average power that they absorb.

Convection: The transfer of heat energy through convection currents in a fluid.

Elastic Potential Energy: The store of energy that stretched or compressed objects contain.

Electrostatic Potential Energy: The store of energy due to the relative position of a charge in an electric field.

Fossil Fuels: Coal, oil and gas.

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.

Heat Transfer: The transfer of thermal energy from a hotter region to a cooler region, through conduction, convection or radiation.

Joule: The unit used for energy. Equal to the work done when a force of one Newton acts over a distance of one metre.

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.

Magnetic Energy: The potential energy of a magnet.

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

Nuclear Energy: The store of energy found in the nuclei of atoms.

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.

Radiation: The transfer of energy, without the transfer of matter. No medium is needed for radiation to occur.

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

Sankey Diagram: A diagram used to show the energy transfers of a system.

Surface Temperature: The temperature of a body is determined by the rate at which they absorb and emit radiation.

Thermal Energy: The store of energy that all objects with a temperature contain. The higher the temperature, the greater its thermal energy store.

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.