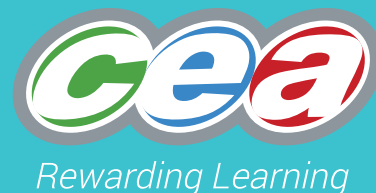


GCSE



CCEA GCSE

Double Award Science Physics

Glossary of Terms

For first teaching from September 2017



GLOSSARY OF TERMS

DOUBLE AWARD SCIENCE: PHYSICS

This glossary is not exhaustive. Where a definition which is given here differs from that given in the specification, either definition will be accepted.

Unit P1

Vectors and scalars

- Scalar – a quantity that has size only.
- Vector – a quantity that has size and direction.

Mass and weight

- Mass – this is the amount of matter in an object.
- Weight – this is the force acting on the object due to the pull of gravity.

Hooke's Law

- Hooke's law – the extension of a spring is directly proportional to the force applied provided the limit of proportionality is not exceeded.

Principle of Moments

- Principle of moments – when a body is in equilibrium the sum of the clockwise moments will equal the sum of the anticlockwise moments about the pivot.

Centre of gravity

- Centre of gravity – the point on an object where all of the weight may be considered to act.

Principle of conservation of energy

- Principle of conservation of energy – energy can be changed from one form to another but the total amount of energy does not change.

Renewable and non-renewable energy resources

- Renewable energy resource – energy that will be replaced in less than a human lifetime and so will never run out.
- Non-renewable energy resource – energy that cannot be replaced in a human lifetime so will run out.

Efficiency

- Efficiency – the fraction of the total input energy (into a device) that is transferred usefully.
Efficiency = useful output energy/total input energy

Power

- Power – the amount of energy transferred in one second.

Kinetic and Gravitational potential energy

- Kinetic energy – the energy a body has due to its motion.
- Gravitational potential energy – the energy a body has due to its height above the earth's surface.

Structure of the nucleus

- Mass number – the number of protons and neutrons in an atom.
- Atomic number – the number of protons in an atom.
- Relative mass of an electron – $1/1840$.
- Isotope- atoms of the same element with the same atomic number but different mass numbers.

Radioactive decay

- Radioactive – when an unstable nucleus decays to become more stable giving out some form of radiation e.g. alpha, beta, gamma.
- Alpha particle – a particle consisting of 2 neutrons and 2 protons emitted from an unstable nucleus in radioactive decay.
- Beta particle – a fast moving electron emitted from an unstable nucleus in radioactive decay.
- Gamma ray – high energy electromagnetic wave emitted from an unstable nucleus in radioactive decay.
- Background activity – this is the activity that can be measured when all other known sources of radiation are removed from the area.

Half-life

- Half-life – the time taken for the count rate of a radioactive source to halve.

Nuclear fission

- Fission – when a heavy nucleus e.g. uranium, absorbs a neutron and splits into two lighter nuclei emitting $2\frac{2}{3}$ neutrons and energy.

Nuclear fusion

- Fusion – when two light nuclei e.g. hydrogen are joined together producing a heavier more stable nucleus (e.g. helium) giving out energy.

Unit P2

- Transverse wave – a wave in which the particles vibrate perpendicular to the direction of wave travel.
- Longitudinal wave – a wave in which the particles vibrate parallel to the direction of wave travel.
- Ultrasound – a sound that has a frequency above 20,000 Hz.
- Wavelength – the distance between two neighbouring crests or troughs of a transverse wave or the distance between two compressions of a longitudinal wave.
- Frequency – the number of waves produced by a source each second OR the number of waves that pass a certain point each second.
- Wave amplitude – the maximum displacement of a particle in wave from its undisturbed position.

Reflection of light

- Law of reflection – the angle of incidence equals the angle of reflection.

Dispersion of white light

- Dispersion – the splitting up of white light into different colours.
- Spectrum – the range of colours produced when white light undergoes dispersion.

Lenses

- Focal length – the distance between the principal focus and the centre of a lens.

Ohm's Law

- Ohm's Law – at a constant temperature the current through a conductor is directly proportional to the voltage across it.

Electricity in the home

- Alternating current – current which changes direction periodically.
- Direct current – current which always flows in the same direction.
- Kilowatt hour (kWh) – the amount of electrical energy used by a device of power 1000W in one hour.
- Double insulation – when an appliance has all of its live internal components completely encased in an insulator.

The Earth and the Solar System

- Artificial satellite – a man-made satellite launched into space.
- Life cycle of our sun – when the star emerges as a protostar and develops into the main sequence transforming eventually into a red giant, then a white dwarf, finally finishing as a black dwarf.

Supernovae

- After the main sequence period a massive star becomes a red supergiant, then explodes and the outer layers of the star are ejected.

Black holes

- Black hole – what is left after a very massive star completes a supernova. The gravitational field is so strong that nothing can escape from it including e.m. radiation.

Big Bang model

- Big Bang – a large explosion led to rapid expansion and cooling of the universe forming neutrons and protons, further cooling formed nuclei and eventually more expansion and cooling allowed electrons to combine with nuclei to form hydrogen.

CMBR

- **C**osmic **M**icrowave **B**ackground **R**adiation is radiation left over from the Big Bang.