

IGCSE Definition List (2016)

General Physics

Speed

Speed is the distance travelled by an object per unit time.

Acceleration

Acceleration is the rate of change of an object's velocity.

Resultant force

Resultant force is the single force that has the same effect as two or more forces.

Weight

Weight is the product of the mass and the acceleration of free fall.

Force

Force is the product of the mass and the acceleration of the body.

Newton

Newton is the force required to give a mass of 1 kg an acceleration of 1 m s^{-2} .

Momentum

Momentum is the product of the mass and the velocity of the body.

Impulse

Impulse is the change in momentum of a body.

Principle of conservation of momentum

The principle of conservation of momentum states that the total momentum before a collision equals to the total momentum after the collision.

Conditions for equilibrium

For an object to be in equilibrium, it must satisfy two conditions:

- there is no net forces on the body, **AND**
- there is no net moment on the body.

Moment of a force

The moment of a force is the product of the force and the perpendicular distance from the pivot to the force.

Principle of moment

The principle of moment states that for an object to be in equilibrium, the total clockwise moments about a point is the same as the total anticlockwise moments about the same point.

Hooke's Law

Hooke's law states that the extension of a spring is proportional to the load applied to it,

Pressure

Pressure is the force acting per unit area at right angles to a surface.

Pascal

Pascal is the SI unit of pressure, equivalent to one newton of force per square metre.

Principle of conservation of energy

In any energy conversion, the total amount of energy before and after the conversion is constant.

Efficiency

The efficiency of an energy conversion is the fraction of the energy that ends up in the desired form.

Work done

Work done is the product of the force and the distance moved by the force in the direction of the force.

Joule

One joule of energy is the energy transferred by a force of 1 newton when it moves through a distance of 1 m.

Power

Power is the rate at which energy is transferred.

Watt

Watt is the power when 1 J of work is done in 1 s.

Thermal Physics

Specific heat capacity

Specific heat capacity is the energy required per kilogram and per degree Celsius to raise the temperature of a substance.

Specific latent heat of vaporisation

Specific latent heat of vaporisation is the energy per kilogram required to cause a substance to change state from liquid to gas at its boiling point.

Specific latent heat of fusion

Specific latent heat of fusion is the energy per kilogram required to cause a substance to change state from solid to liquid at its melting point.

Physics of Waves

Law of reflection

Law of reflection states that in a reflection, the angle of incidence equals to the angle of reflection.

Refractive index

Refractive index of a medium is the ratio of the speed of light a vacuum to the speed of light in the medium.

Snell's law

Snell's law states that when a wave travels from vacuum to the medium, the refractive index of the medium is the ratio of sine of the incidence angle to the sine of the refraction angle.

Electricity and Magnetism

Current

Current is the rate at which electric charge passes a point in a circuit.

Resistance

Resistance is the ratio of the potential difference across a resistor to the current flowing through it.

Electromotive force

Electromotive force is the amount of energy needed to push one coulomb charge round a circuit.

Potential difference

Potential difference is the amount of energy released from a resistor when one coulomb charge passes through it.

Volt

One volt is the potential difference when 1 joule of energy is produced when 1 C charge passes through a point.

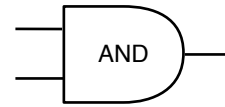
Transducers

An input transducer produces a voltage due to a change in the environmental conditions.

Logic Gates

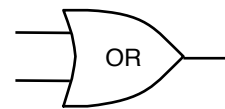
AND gate

input 1	input 2	output
0	0	0
0	1	0
1	0	0
1	1	1



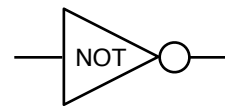
OR

input 1	input 2	output
0	0	0
0	1	1
1	0	1
1	1	1



NOT

input 1	output
0	1
1	0



NAND

input 1	input 2	output
0	0	1
0	1	0
1	0	0
1	1	0



NOR

input 1	input 2	output
0	0	1
0	1	1
1	0	1
1	1	0

