A-Level Physics Formula List

Below is a list of the essential formulae not provided to students during A-Level physics examinations.

$speed = \frac{distance}{time}$	$s = \frac{d}{t}$
$force = mass \times acceleration$	$F = ma$
$acceleration = \frac{change\ in\ velocity}{time\ taken}$	$a = \frac{\Delta v}{t}$
$density = \frac{mass}{volume}$	$\rho = \frac{m}{V}$
$momentum = mass \times velocity$	$\rho = mv$
$work\ done = force \times distance\ moved\ in\ direction\ of\ force$	$W = Fs$
$power = \frac{energy\ transferred}{time\ taken} = \frac{work\ done}{time\ taken}$	$P = \frac{W}{t}$
$weight = mass \times gavitational\ field\ strength$	$W = mg$
$kinetic\ energy = 1/2 \times mass \times velocity^2$	$E_k = 1/2\, mv^2$
$change\ in\ potential\ energy = mass \times gravitational\ field\ strength \times change\ in\ height$	$\Delta E_p = mg\Delta h$
$pressure = \frac{force}{area}$	$p = \frac{F}{A}$
$pressure \times volume = number\ of\ moles \times molar\ gas\ constant \times absolute\ temperature$	$pV = nRT$
$charge = current \times time$	$q = It$
$potential\ difference = current \times resistance$	$V = IR$
$electrical\ power = potential\ difference \times current$	$P = VI$

$$potential\ difference = \frac{energy\ transferred}{charge} \qquad V = \frac{W}{q}$$

$$resistance = \frac{resitivity \times length}{cross-sectional\ area} \qquad R = \frac{\rho l}{A}$$

$$energy = potential\ difference \times current \times time \qquad E = V\ I\ t$$

$$wave\ speed = frequency \times wavelength \qquad v = f\ \lambda$$

$$centripetal\ force = \frac{mass \times velocity^2}{radius} \qquad F = \frac{mv^2}{r}$$

$$capacitance = \frac{charge\ stored}{potential\ difference} \qquad C = \frac{q}{V}$$

$$\frac{voltage\ across\ coil\ 1}{voltage\ across\ coil\ 2} = \frac{number\ turns\ coil\ 1}{number\ turns\ coil\ 2} \qquad \frac{V_1}{V_2} = \frac{N_1}{N_2}$$

$$electrostatic\ force = k\frac{q_1 q_2}{r^2}$$

$$gravitational\ force = \frac{G m_1 m_2}{r^2}$$