A-Level Physics Formula List

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

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

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

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

$$\text{energy} = \text{potential difference} \times \text{current} \times \text{time} \qquad E = V\,I\,t$$

$$\text{wave speed} = \text{frequency} \times \text{wavelength} \qquad v = f\,\lambda$$

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

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

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

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

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