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EXAMINATION DATA SHEET FOR FURTHER STUDIES PHYSICS**Physical Constants**

Name	Symbol	Value with unit
Acceleration due to gravity	g	$9,81 \text{ m}\cdot\text{s}^{-2}$
Speed of light in a vacuum	c	$3,00 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
Universal gravitational constant	G	$6,67 \times 10^{-11} \text{ N}\cdot\text{m}^2\cdot\text{kg}^{-2}$
Coulomb's constant	k	$8,99 \times 10^9 \text{ N}\cdot\text{m}^2\cdot\text{C}^{-2}$
Magnitude of charge on an electron	e	$1,602 \times 10^{-19} \text{ C}$
Mass of an electron	m_e	$9,109 \times 10^{-31} \text{ kg}$
Mass of a proton	m_p	$1,673 \times 10^{-27} \text{ kg}$
Mass of a neutron	m_n	$1,675 \times 10^{-27} \text{ kg}$
Unified atomic mass unit	u	$1,660 \times 10^{-27} \text{ kg}$
Avogadro's constant	N_A	$6,022 \times 10^{23} \text{ mol}^{-1}$
Absolute zero temperature	T_0	$-273,15 \text{ }^\circ\text{C}$
1 light-year	ly	$9,461 \times 10^{15} \text{ m}$
Stefan-Boltzmann constant	σ	$5,67 \times 10^{-8} \text{ W}\cdot\text{m}^2\cdot\text{K}^{-4}$

Formulae

Thermal Physics		
$\Delta L = \alpha L_0 \Delta T$	$Q = mc\Delta T$	$Q = mL_f$
$\Delta V = \beta V_0 \Delta T$		$Q = mL_v$
Modern Physics		
$\lambda = -\frac{\ln 2}{t_{\frac{1}{2}}}$	$t = -\frac{\ln\left(\frac{A}{A_0}\right)}{\lambda}$	
$x = x_0 e^{-\lambda t}$		
$\lambda_{\max} T = 2,9 \times 10^{-3} \text{ m}\cdot\text{K}$	$\frac{L_{\text{star}}}{L_{\text{sun}}} = \left(\frac{m_{\text{star}}}{m_{\text{sun}}}\right)^a$	

Mechanics		
$v = u + at$ or $v_f = v_i + a\Delta t$	$s = \left(\frac{v+u}{2}\right)t$ or $\Delta x = \left(\frac{v_f + v_i}{2}\right)\Delta t$	
$v^2 = u^2 + 2as$ or $v_f^2 = v_i^2 + 2a\Delta x$	$s = ut + \frac{1}{2}at^2$ or $\Delta x = v_i\Delta t + \frac{1}{2}a(\Delta t^2)$	
$f = \frac{1}{T}$	$\omega = \frac{\theta}{t}$	$T = \frac{2\pi}{\omega}$
$s = \theta r$	$v = \omega r$	$a = \frac{v^2}{r}$
$g = \frac{GM}{r^2}$	$a = \omega^2 r$	$F = m\omega^2 r$
$\tau = r F \perp$	$\tau = r \perp F$	
Charged Particles in Fields		
$E = \frac{F}{q}$	$E = \frac{V}{d}$	$F = qvB \sin\theta$
Oscillations		
$a = -\omega^2 x$	$x = x_0 \sin \omega t$	$x = x_0 \cos \omega t$
$v = v_0 \cos \omega t$	$v = v_0 \sin \omega t$	$v = \pm \omega \sqrt{(x_0^2 - x^2)}$
$E_K = \frac{1}{2}m\omega^2(x_0^2 - x^2)$	$E_P = \frac{1}{2}m\omega^2 x^2$	