

**FINAL EXAM
EQUATION “CHEAT SHEET”**

Name	Equation	Variables
Work	$W = F \cdot d$	W: work F: force d: distance force is applied over
Power	$P = \frac{W}{t}$	P: power W: work t: time
Work-Energy Theorem	$W = \Delta E$	W: work ΔE : change in energy
Kinetic Energy	$KE = \frac{1}{2}mv^2$	KE: kinetic energy m: mass v: velocity
Gravitational Potential Energy	$GPE = mgh$	GPE: gravitational potential energy m: mass g: 9.81 m/s ² h: height above the ground
Elastic Potential Energy	$EPE = \frac{1}{2}kx^2$	EPE: elastic potential energy k: spring constant x: distance object is stretched or compressed
Mechanical Energy	$ME = KE + GPE + EPE$	ME: mechanical energy KE: kinetic energy GPE: gravitational potential energy EPE: elastic potential energy
Frequency of a Wave	$f = \frac{\text{cycles}}{\text{time}} = \frac{1}{T}$	f: frequency t: time T: period
Period of a Wave	$T = \frac{\text{time}}{\text{cycles}} = \frac{1}{f}$	T: period t: time f: frequency
Wave Speed Equation	$v = \lambda f$	v: wave speed λ : wavelength f: frequency
Energy of a Photon	$E = hf$	E: photon energy h: 6.6×10^{-34} (Planck constant) f: frequency
Index of Refraction	$n = \frac{c}{v}$	n: index of refraction c: speed of light in vacuum (300,000,000 m/s) v: speed of light in the medium
Coulomb's Law	$F = k \frac{q_1 q_2}{d^2}$	F: electric force k: 9×10^9 N m ² /C ² q ₁ : charge of object 1 q ₂ : charge of object 2 d: distance between objects