PH40S TABLE OF INFORMATION

CONSTANTS			
Proton mass,	$m_p = 1.67 \times 10^{-27}$ kg	Elementary charge,	$e = 1.60 \times 10^{-19}$ C
Neutron mass,	$m_n = 1.67 \times 10^{-27}$ kg	Coulomb's law constant,	$k = 9.0 \times 10^{9}$ N·m^2/C^2
Electron mass,	$m_e = 9.11 \times 10^{-31}$ kg	Universal gravitational constant,	$G = 6.67 \times 10^{-11}\ m^3/kg \cdot s^2$
Mass of Earth,	$m_{Earth} = 5.98 \times 10^{24}$ kg	Acceleration due to gravity at Earth's surface,	$g = 9.8$ m/s^2
Radius of Earth,	$r_{Earth} = 6.38 \times 10^{6}$ m	Speed of light,	$c = 3.00 \times 10^{8}$ m/s

UNIT SYMBOLS									
meter,	m	second,	s	joule,	J	watt,	W	volt,	V
kilogram,	kg	newton,	N	hertz,	Hz	coulomb,	C	ohm,	Ω

METRIC PREFIXES		
Factor	Prefix	Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{-2}	centi	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p

GEOMETRY	
Rectangle $A = bh$ Triangle $A = \frac{1}{2}bh$ Circle $A = \pi r^2$ $C = 2\pi r$ Rectangular solid $V = \ell wh$ Cylinder $V = \pi r^2 \ell$ $S = 2\pi r\ell + 2\pi r^2$ Sphere $V = \frac{4}{3}\pi r^3$ $S = 4\pi r^2$	A = area C = circumference V = volume S = surface area b = base h = height ℓ = length w = width r = radius

PH40S EQUATIONS

MECHANICS

$v = v_0 + at$

$x = \left(\frac{v_0 + v}{2}\right)t$

$x = v_0 t + \frac{1}{2}at^2$

$v^2 = v_0^2 + 2ax$

$F_{net} = \sum \mathrm{F} = ma$

$F_g = mg$

$|F_f| = \mu |F_N|$

$a_c = \frac{v^2}{r}$

$v = \frac{2\pi r}{T}$

$T = \frac{1}{f}$

$p = mv$

$\Delta p = F\Delta t$

$W = Fd\cos\theta$

$\Delta K = \sum \mathrm{W}_i$

$K = \frac{1}{2}mv^2$

$U_g = mgh$

$|F_s| = k|x|$

$U_s = \frac{1}{2}kx^2$

a = acceleration

A = amplitude

d = distance

E = energy

F = force

f = frequency

K = kinetic energy

k = spring constant

m = mass

P = power

p = momentum

r = radius or separation

T = period

t = time

U = potential energy

v = speed (velocity)

W = work done on a system

x = position

μ = coefficient of friction

θ = angle

$P = \frac{W}{t} = \frac{\Delta E}{\Delta t}$

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

$g = G\frac{m}{r^2}$

$U_g = -G\frac{m_1 m_2}{r}$

ELECTRICITY AND MAGNETISM

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

$E = \frac{F_E}{q}$

$E = k\frac{q}{r^2}$

$U_E = k\frac{q_1 q_2}{r}$

$U_E = qE\Delta d$

$V = k\frac{q}{r}$

$U_E = qV$

$E = \frac{\Delta V}{d}$

$F_M = BIl\sin\theta$

$F_M = qvB\sin\theta$

$I = \frac{\Delta \mathrm{Q}}{\Delta t}$

$R = \rho\frac{L}{A}$

$V = IR$

$R_s = \sum_i R_i$

$\frac{1}{R_p} = \sum_i \frac{1}{R_i}$

$P = IV = I^2R = \frac{V^2}{R}$

$\frac{I_s}{I_p} = \frac{V_p}{V_s} = \frac{N_p}{N_s}$

A = area

B = magnetic field

d = distance

E = electric field

ε = emf

F = force

I = current

l = length

P = power

Q = charge

q = point charge

R = resistance

r = radius or separation

t = time

U = potential energy

V = electric potential

v = speed (velocity)

ρ = resistivity

θ = angle

Φ = flux

$\Phi = BA\cos\theta$

$\varepsilon = -N\frac{\Delta\Phi}{\Delta t}$