Physics Formula Revision (Conditions highlighted in red) [Draft Ver]

Topic	Formula	SI unit	Final unit
2.1: Kinematics	$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$	Distance (m) Time (sec)	m/s
	$\text{Velocity} = \frac{\text{Displacement}}{\text{Time}}$; $v = \frac{s}{t}$	Displacement (m) Time (sec)	m/s
	$\text{Acceleration} = \frac{\text{Diff. in Velocity}}{\text{Time}}$ Condition: Used only when acceleration is constant.	Velocity (m/s) Time (sec)	m/s^2
2.2 Dynamics	$\text{Resultant Force} = \text{Mass} \times \text{Acceleration}$ $F = ma$	Force (N) Mass (kg) Acceleration (m/s^2)	Newton (N)
2.3 Mass Weight Density	$W = mg$	Mass (kg) g = 10 N/kg	Newton (N)
	$\rho(\text{Density}) = \frac{m}{V}$;.	Mass (g/kg) Volume (cm^3/m^3)	g/cm^3 or kg/m^3
2.4 Turning Effect of Forces	$\text{Moments} = Fd$	Force (N) Perpendicular Distance (m)	Newton metre (Nm)
	Note: Perpendicular Distance is not always the length of the rod.		
2.5 Pressure	Solids: $\text{Pressure} = \frac{\text{Force}}{\text{Area}} = \frac{F}{A}$	Force (N) Area (m^2)	N/m^2 , Pa
	Liquids: $\text{Pressure} = h\rho g$	h (m): Depth of Liquid ρ (kg/m^3): Density of liquid g: 10N/kg	N/m^2 , Pa
	Gases (when temp. is constant) $P_1V_1 = P_2V_2$	P (Pa): Pressure V (m^3): Volume	NA
2.6 Energy, Work, power	$W(\text{Work Done}) = Fd$	F (N): Force d (Perpendicular dist): m	J
	$K.E.\ \text{Kinetic Energy} = \frac{1}{2}mv^2$	m (kg): Mass v (m/s): Velocity	J
	$P.E.\ \text{Potential Energy} = mgh$	m (kg): Mass g: 10N/kg h (m): Height	J
	$\text{X } P\ \text{Power} = \frac{W \text{ or Energy change}}{\text{Time}}$	Energy change /Work done(J) Time (s)	J/s, W (watt)
3.1 Principles of Thermometry	$\theta = \frac{X_\theta - X_0}{X_{100} - X_0}$ (For Celsius scale only)	Theta: Unknown temperature X_0: "ice point", X_{100}: Steam pt	^oC
3.2 Thermal Properties of Matter	$Q(\text{heat energy}) = C\theta$	C: Heat capacity	J
	$Q = mc\theta$	m: mass c: Specific Heat Capacity	J
	$Q = ml_f$	l_f : Latent heat of fusion	J
	$Q = ml_v$	l_v : Latent heat of vapourisation	J
4.1: General Wave Properties	$f = \frac{1}{T}$	f: Frequency t (sec): Time	Hz
	$v = f\lambda$	v (m/s): Velocity λ (m): Wavelength f(1/t): Frequency	m/s
4.2: Light	Snell's Law: $\frac{\sin i}{\sin r} = n$	n = refractive index (ratio) i/r (^{o}): angle of incidence/refraction *Set calculator in degree mode.	NA. Ratio.
	Condition: The angle of incidence must be in the less dense medium; angle r must be in the denser medium.		

4.2: Light	$\frac{c}{v} = \frac{\text{Real depth}}{\text{Apparent depth}} = \frac{\text{Ht of image}}{\text{Ht of object}} = n$	c (m/s): Speed of light in vaccum ($3x10^8$ m/s) v (m/s): Speed of light in medium.	NA. Ratio.
	$c = \sin^{-1} n$	c (^{0}): Critical angle.	^{0}
5.1: Current Electricity	$I = \frac{Q}{t}$	I: Current (A) Q: Charge (Columb) t: Time (sec)	Coloumb, C
	$\varepsilon = \frac{W}{Q}$	ε : E.m.f. (Volts – V) W: Work done/energy of circuit (J) Q: Charge (Columb)	V, J/C
	$V = \frac{W}{Q}$	V: Potential Diff. (V) W: Work done/energy across circuit component Q: Amount of charge	V, J/C
	Ohm's Law: $V = IR$ Condition: Only for ohmic conductors.	R: Resistance (Ω)	V
	$R = \rho \frac{l}{A}$	ρ : Resistivity (Ω m) L: Length A: Cross-sectional Area	Ω
5.2: Practical Electricity	$E = VIt = I^2RT = \frac{V^2 t}{R}$		J
	$P = VI = I^2R = \frac{V^2}{R}$	P = Power R = Resistance	W
5.3: Electromagnetic Induction	$\frac{V_s}{V_p} = \frac{N_s}{N_p} = \frac{I_p}{I_s}$		