

Module 2

Physics

	Level		
	A	B1	B2
2.1 Matter	A	B1	B2
Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds; States: solid, liquid & gaseous; Changes between states.	1	1	1
2.2 Mechanics	A	B1	B2
Statics	1	2	1
Forces, moments & couples, representaton as vectors; Centre of gravity; Elements of theory of stress, strain & elasticity: tension, compression, shear & torsion; Nature & properties of solid, fluid & gas; Pressure & buoyancy in liquids (barometers).			
Kinetics	1	2	1
Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.			
Dynamics	1	2	1
a) Mass, Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;			
b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature & effects, coefficient of friction (rolling resistance).	1	2	2
Fluid Dynamics	2	2	2
a) Specific gravity & density;			
b) Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; Static, dynamic & total pressure: Bernoulli's Theorem, venturi.	1	2	1
2.3 Thermodynamics	A	B1	B2
a) Temperature: thermometers & temperature scales: Celsius, Fahrenheit & Kelvin; Heat definition	2	2	2
b) Heat capacity, specific heat; Heat transfer convection, radiation & conduction; Volumetric expansion; First & second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume & constant volume & pressure, work done by expanding gas; Isothermal, adiabatic expansion & compression, engine cycles, constant volume & constant pressure, refrigerators & heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	-	2	2
2.4 Optics (Light)	A	B1	B2
Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	-	2	2
2.5 Wave Motion & Sound	A	B1	B2
Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch & quality, Doppler effect.	-	2	2

