Physics – Combined Science (H&F) -Paper 1

Paper 1 Topics	Red Amber Green
Particle Theory (Paper 1):	
Kinetic theory (solids, liquids, gases)	
Density (p=m/v)	
Required Practical: Measuring the density of irregular object	
Internal energy (Paper 1):	
Particle model and changes of state (mass, energy, particles)	
Internal energy	
Latent heat (E=mL)	
Energy transfers (Paper 1):	
Thermal conductivity, heat transfer, heat loss, insulating the home	
IR Radiation	
Required Practical: IR radiation from black/shiny surfaces	
Energy stores and energy transfers	
KE, GPE, EPE and Work done equations and application	
SHC, Power and Efficiency (Paper 1):	
Specific Heat Capacity E = mcΔΘ	
Required Practical: Measuring specific heat capacity	
Power (P =E/t)	
Energy efficiency and increasing efficiency	
Energy resources	
Atomic and Nuclear Physics (Paper 1)	
Ionising radiation (Alpha, Beta, Gamma)	
Nuclear decay equations	
Half-life graphs and calculations	
Irradiation and contamination	
Radiation dose and dangers of EM waves	
Circuits (Paper 1):	
Circuit symbols, drawing series and parallel circuits	
Series and parallel circuit rules	
Rules for resistors in series and parallel	
Using V=I x R and Q = I x t	
Required Practical: How length of wire affects resistance	
Required Practical: Investigating IV characteristics	
Thermistors and LDRs	
Mains Electricity (Paper 1):	
Using P = I x V, E = P x t, E = Q x V	
National Grid	
Transformers (HT)	

Physics – Combined Science (H&F) -Paper 2

Paper 2 Topics	Red Amber Green
Motion (Paper 2):	
Calculate Speed, distance, time (s=d/t)	
Interpret distance-time graphs	
Calculate acceleration a= (v-u)/t	
Interpret velocity-time graphs	
Motion graph calculations	
Stopping distance, thinking distance and braking distance	
Forces Basics (Paper 2):	
Contact and non-contact forces	
Weight and Mass	
Newton's Laws of Motion (Paper 2):	
Investigating friction	
Calculating resultant forces	
Understanding Newton's Laws	
Newton's 2nd Law (F=ma)	
Required Practical: Investigating acceleration	
Forces on falling objects and terminal velocity	
Inertia (HT)	
Resolving forces and Equations of motion (Paper 2)	
Resolving forces, vector diagrams (HT)	
SUVAT equations	
Using p = m x v and momentum in collisions and explosions (HT)	
Changes in energy and Work done (Paper 1 and 2)	
Kinetic energy (KE = $1/2mv^2$)	
Gravitational potential energy (GPE = mgh)	
Elastic potential energy (EPE = $1/2ke^2$)	
Work done (W = F x d)	
Magnetism/Electromagnetism (Paper 2)	
Magnetic fields	
Electromagnetism	
Electric motors and Fleming's Left-hand rule (HT)	
Using F=BIL (HT)	
Waves (Paper 2):	
Labelling waves, longitudinal and transverse waves	
Calculating the speed of a wave (v = f x λ)	
Order and uses of the EM spectrum	
Required Practical: Waves on a string/in a ripple tank	
Refraction	

All **Revision** Materials are available for students on Teams: Click **here**