KS5 Long Term Plan – 2021-2022

Subject – Physics Mapping

Yr 12	Aut 1	Aut 2	Spring 1	Spring 2	Summer 1	Summer 2
	Force Energy and Momentum	**Force Energy and Momentum**	**Materials**	**Periodic motion 1**	**Periodic motion 2**	
	3.4.11 Vectors and Scalars	3.4.1.5 Newton's laws of motion	3.4.2.1 Bulk properties of solids	3.6.1.1 Circular motion	3.6.1.2 Simple harmonic motion	
	3.4.1.2 Moments	3.4.1.6 Momentum			3.6.1.3 Simple harmonic systems	
	3.4.1.3 Motion along a straight line	3.4.1.7 Work, energy and power	3.4.2.2 The Young modulus		3.6.1.4 Forced vibrations and resonance	
	3.4.1.4 Projectile motion	3.4.1.8 Conservation of energy	**Required practical 4: Determination of the Young modulus by a simple method**	**Consolidation lesson**	**Required practical 7: Investigation into simple harmonic motion using a mass–spring system and a simple pendulum**	
	Consolidation lesson	**Consolidation Lesson**	**Consolidating lesson**	**Test 3.6.1.1**		
	Test 3.4.1 (1st part)	**Test 3.4.1 (2nd part)**	**Test 3.4.2**			
	Required practical 3: Determination of g by a freefall method.					
	P2. Particles and Radiation	**P2. Particles and Radiation** **P3. Waves**	**P3. Waves**	**P5. Electrcity**	**P5. Electrcity**	
	-P2.1 Constituents of the atom	-P2.8 The photoelectric effect	-P3.3 Principle of superposition of waves and formation	-P5.1 Basics of Electricity	-P5.4 Circuits	
	-P2.2 Stable and unstable nuclei	-P2.9 Collisions of electrons with atoms	**TEST 3.1 - 3.3**	-P5.2 Current-voltage characteristics	-P5.5 Potential divider	
	-P2.3 Particles, anti-particles and photons	-P2.10 Energy levels and photon emission	-P3.4 Interference	-P5.3 Resistivity	-P5.6 Electromotive force and internal resistance	
	-P2.4 Particle interactions	-P2.11 Wave-particle duality	-P3.5 Diffraction		**TEST 5.1 - 5.6**	
	-P2.5 Classification of particles	**TEST 2.8 - 2.11**	-P3.6 Reflection at a plane surface	**Consolidating lesson**	**Consolidating lesson**	
	-P2.6 Quarks and anti-quarks	-P3.1 Progressive waves	**TEST 3.4 - 3.6**	**RP 5 Determination of the resistivity of a wire using a micrometer screw gauge, ammeter and voltmeter.**	**RP 6 Investigation of emf and internal resistance of electric cells and batteries by measuring the variation of the terminal pd of the cell with current in it.**	
	-P2.7 Applications of conservation laws	-P3.2 Longitudinal and transverse waves	**RP 2 Investigation of interference in Young's slit experiment and diffraction by a diffraction grating.**			
	TEST 2.1 - 2.7	**RP 1 Investigation into the variation of the frequency of stationary waves on a string (or wire) with length, tension, and mass per unit length of string.**	**Consolidating lesson**			

Yr 13	Aut 1	Aut 2	Spring 1	Spring 2	Summer 1	Summer 2
	Finishing off SHM and consolidation	3.7.3.1 Coulomb's law	**EXAM**	3.12.3.1 The Michelson-Morley experiment		
	Required practical 7: Investigation into simple harmonic motion using a mass–spring system and a simple pendulum.	3.7.3.2 Electric field strength	3.7.5.5 Alternating currents	3.12.3.2 Einstein's theory of special relativity		
	Test on periodic motion	3.7.3.3 Electric potential	3.7.5.6 The operation of a transformer			
	3.7.2.1 Newton's law (A-level only)	3.7.4.1 Capacitance	**Required practical 10: Investigate how the force on a wire varies with flux density, current and length of wire using a top pan balance.**	3.12.3.3 Time dilation		
	3.7.2.2 Gravitational field strength	3.7.4.2 Parallel plate capacitor	**Required practical 11: Investigate, using a search coil and oscilloscope, the effect on magnetic flux linkage of varying the angle between a search coil and magnetic field direction.**	3.12.3.4 Length contraction		
	3.7.2.3 Gravitational potential	3.7.4.3 Energy stored by a capacitor	3.12 Turning points in physics	3.12.3.5 Mass and energy		
	3.7.2.4 Orbits of planets and satellites	3.7.4.4 Capacitor charge and discharge	3.12.1.1 Cathode rays			
		3.7.5.1 Magnetic flux density	3.12.1.2 Thermionic emission of electrons			
		33.7.5.2 Moving charges in a magnetic field (	3.12.1.3 Specific charge of the electron			
		3.7.5.3 Magnetic flux and flux linkage	3.12.1.4 Principle of Millikan's determination of the electronic			
		3.7.5.4 Electromagnetic induction	3.12.2.1 Newton's corpuscular theory of light			
	Consolidation Lesson	**Consolidating lesson**	3.12.2.2 Significance of Young's double slits experiment			
	Test 3.7.2	**Test 3.7.3/3.7.4/3.7.5**	3.12.2.3 Electromagnetic waves (A-level only)			
	PPE exams (Early oct)	**Required practical 9: Investigation of the charge and discharge of capacitors.**	3.12.2.4 The discovery of photoelectricity			
			3.12.2.5 Wave–particle duality			
	3.6.2 Thermal physics	**3.8 Nuclear physics**	3.12.2.6 Electron microscopes			
	3.6.2.1 Thermal energy transfer	3.8.1.1 Rutherford scattering				
	3.6.2.2 Ideal gases	3.8.1.2 α, β and γ radiation				
	3.6.2.3 Molecular kinetic theory model	3.8.1.3 Radioactive decay				
	RP 8: Investigation of Boyle's law (constant temperature) and Charles's law (constant pressure) for a gas.	3.8.1.4 Nuclear instability				
	PPE exams (Early oct)	3.8.1.5 Nuclear radius	3.12.2.1 Newton's corpuscular theory of light			
	Consolidating lesson	3.8.1.6 Mass and energy	3.12.2.2 Significance of Young's double slits experiment			
		3.8.1.7 Induced fission	3.12.2.3 Electromagnetic waves (A-level only)			
	No test on 3.6.2 due to early PPE exam	3.8.1.8 Safety aspects	3.12.2.4 The discovery of photoelectricity			
		Required practical 12: Investigation of the inverse-square law for gamma radiation.	3.12.2.5 Wave–particle duality			
		TEST 3.8	3.12.2.6 Electron microscopes			
		Consolidating lesson	**TEST 3.12**			