

SRI LANKAN SCHOOL - MUSCAT			SCHEME OF WORK		ACADEMIC YEAR2016 / 2017	
CLASS : 13			SUBJECT: Physics		TEACHER : Mr.Thushara, Mr.Viduransi	
Month	No.of Periods	Unit No.	TOPIC / DETAILS	Intended Learning Objectives	Remarks	
<b>September</b>						
<b>School Reopens - 1st Term</b>						
Week 1	4	4	Momentum , Collision	Investigate and apply the principle of conservation of linear momentum to problems in one dimension and two dimensions Analyse and interpret data to calculate the momentum of (non-relativistic) particles and apply the principle of conservation of linear momentum to problems in one and two dimensions		
Week 2	10	4.1	Energy in collision , Real collisions	Explain and apply the principle of conservation of energy, and determine whether a collision is elastic or inelastic		
Week 3			Eid Holidays			
Week 4	10	4.2	Circular Motion	Express angular displacement in radians and in degrees, and convert between those units		
Week 5	10	4.21	Angular displacement , Centripetal force	use the expression for centripetal force $F = ma = mv^2/r$ and hence derive and use the expressions for centripetal acceleration $a = v^2/r$ and $a = r\omega^2$		
<b>October</b>						
Week 6	10	4.3	Electric fields	Explain what is meant by an electric field and recognise and use the expression electric field strength $E = F/Q$		
Week 7	10	4.31	Uniform and Radial fields , Coulomb's Law	Draw and interpret diagrams using lines of force to describe radial and uniform electric fields qualitatively Use the expression $F = kQ_1Q_2/r^2$ , where $k = \frac{1}{4\pi\epsilon_0}$ and derive and use the expression $E = kQ/r^2$ for the electric field due to a point charge		
Week 8	10	4.32	capacitors	Investigate and recall that applying a potential difference to two parallel plates produces a uniform electric field in the central region between them, and recognise and use the expression $E = V/d$ Investigate and use the expression $C = Q/V$ Recognise and use the expression $W = \frac{1}{2}QV$ for the energy stored by a capacitor, derive the expression from the area under a graph of potential difference against charge stored, and derive and use related expressions, for example, $W = \frac{1}{2}CV^2$ Investigate and recall that the growth and decay curves for resistor-capacitor circuits are exponential, and know the significance of the time constant RC		
Week 9	10	4.4	Magnetic field , Electromagnetic Forces	Explore and use the terms magnetic flux density B, flux $\Phi$ and flux linkage $N\Phi$ Investigate, recognise and use the expression $F = BIl \sin \theta$ and apply Fleming's left hand rule to currents		
<b>November</b>						
Week 10	8	4.4	Generating Electricity	Investigate and explain qualitatively the factors affecting the emf induced in a coil when there is relative motion between the coil and a permanent magnet and when there is a change of current in a primary coil linked with it		
Week 11	10	4.5	Probing matter	Use the terms nucleon number (mass number) and proton number (atomic number) Describe how large-angle alpha particle scattering gives evidence for a nuclear atom		
			Monthly Test			
Week 12	10	4.51	Particle accelerators	Explain the role of electric and magnetic fields in particle accelerators (linac and cyclotron) and detectors (general principles of ionisation and deflection only)		
Week 13	10	4.52	Particle interactions	Recall and use the fact that charge, energy and momentum are always conserved in interactions between particles and hence interpret records of particle tracks Explain why high energies are required to break particles into their constituents and to see fine structure Recall that in the standard quark-lepton model each particle has a corresponding antiparticle, that baryons (e.g. neutrons and protons) are made from three quarks, and mesons (e.g. pions) from a quark and an antiquark, and that the symmetry of the model predicted the top and bottom quark		
Week 14	6		Revision			
<b>December</b>						

Week 15	10		Revision	
Week 16	10		1st term end exams	
Week 17	10		1st term tests and report work	
Week 18			December Vacation	
<b>January 2014</b>				
<b>School Reopens - 2nd Term</b>				
Week 19			Vacation	
Week 19	10	5	Heat and Temperature	Investigate, recognise and use the expression $\Delta E = mc\Delta\theta$ Explain the concept of internal energy as the random distribution of potential and kinetic energy amongst molecules
Week 20	10	5.1	Kinetic theory of gases	Explain the concept of absolute zero and how the average kinetic energy of molecules is related to the absolute temperature Use the expression $pV = NkT$ as the equation of state for an ideal gas
Week 21	12	5.2	Nuclear decay	Investigate and recognise nuclear radiations (alpha, beta and gamma) from their penetrating power and ionising ability Determine the half lives of radioactive isotopes graphically and recognise and use the expressions for radioactive decay: $dN/dt = -\lambda N$ , $\lambda = \ln 2/t_{1/2}$ and $N = N_0e^{-\lambda t}$
Week 22	12	5.21	Nuclear fission and fusion	Discuss the applications of radioactive materials, including ethical and environmental issues
<b>February</b>				
Week 23	8		Revision Monthly (Test)	
Week 24	10	5.3	Simple harmonic motion	Recall that the condition for simple harmonic motion is $F = -kx$ , and hence identify situations in which simple harmonic motion will occur Recognise and use the expressions $a = -\omega^2x$ , $a = -A\omega^2 \cos \omega t$ , $v = -A\omega \sin \omega t$ , $x = A \cos \omega t$ and $T = 1/f = 2\pi/\omega$ as applied to a simple harmonic oscillator
Week 25	10	5.31	Oscillations	Distinguish between free, damped and forced oscillations Investigate and recall how the amplitude of a forced oscillation changes at and around the natural frequency of a system and describe, qualitatively, how damping affects resonance
Week 26	10	5.41	Gravitational field	Use the expression $F = Gm_1m_2/r^2$
Week 27	6			Derive and use the expression $g = -Gm/r^2$ for the gravitational field due to a point mass
<b>March</b>				
Week 27	4	5.42	Starshine	Recognise and use the expression relating flux, luminosity and distance $F = L/4\pi d^2$ Explain how distances can be determined using trigonometric parallax and by measurements on radiation flux received from objects of known luminosity (standard candles) Recognise and use a simple Hertzsprung-Russell diagram to relate luminosity and temperature. Use this diagram to explain the life cycle of stars Recognise and use the expression: $\lambda_{max} T = 2.898 \times 10^{-3} \text{ m K}$ (Wien's law) for black body radiators
Week 28	10	5.43	Hubbles Law	Recognise and use the expressions $z = \Delta\lambda/\lambda \approx \Delta f/f \approx v/c$ for a source of electromagnetic radiation moving relative to an observer and $v = H_0d$ for objects at cosmological distances
Week 29	10		Monthly Test	
Week 30	10		Revision	
Week 31	10		2nd term end exams	
<b>April</b>				
Week 31			2nd term end exams	
Week 32			2nd term end exams and report work	
Week 33			April vacation	
Week 34			School Reopens - 3rd Term - Seminar for year 13	
Week 35			Seminar for Year 13	
<b>May</b>				
Week 36			Edexcel Exams	