CP5: **Light and the Electromagnetic Spectrum** (Paper 1)

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
CP5a Ray diagrams	SP5.1P Explain, with the aid of ray diagrams, reflection, refraction and total internal reflection (TIR), including the law of reflection and critical angle.			
CP5a Investigating refraction – Core Practical	SP5.9 Investigate refraction in rectangular glass blocks in terms of the interaction of electromagnetic waves with matter.			
CP5b The electromagnetic spectrum	P5.10 Recall the main groupings of the continuous electromagnetic spectrum including (in order) radio waves, microwaves, infrared, visible (including the colours of the visible spectrum), ultraviolet, X-rays and gamma rays.			
	P5.11 Describe the electromagnetic spectrum as continuous from radio waves to gamma rays and that the radiations within it can be grouped in order of decreasing wavelength and increasing frequency.			
	P5.13 **H** Recall that different substances may absorb, transmit, refract, or reflect electromagnetic waves in ways that vary with wavelength.			
CP5c Using the long wavelengths	P5.13 **H** Recall that different substances may absorb, transmit, refract, or reflect electromagnetic waves in ways that vary with wavelength.			
	P5.14 **H** Explain the effects of differences in the velocities of electromagnetic waves in different substances			
	P5.22 Describe some uses of electromagnetic radiation: (a) radio waves: including broadcasting, communications and satellite transmissions (b) microwaves: including cooking, communications and satellite transmissions (c) infrared: including cooking, thermal imaging, short range communications, optical fibres, television remote controls and security systems (d) visible light: including vision, photography and illumination.			

	P5.23 **H** Recall that radio waves can be produced by, or can themselves induce, oscillations in electrical circuits.			
CP5d Using the short wavelengths	P5.13 **H** Recall that different substances may absorb, transmit, refract or reflect electromagnetic waves in ways that vary with wavelength.			
	P5.14 **H** Explain the effects of differences in the velocities of electromagnetic waves in different substances.			
	P5.22 Describe some uses of electromagnetic radiation: (e) ultraviolet: including security marking, fluorescent lamps, detecting forged bank notes and disinfecting water (f) X-rays: including observing the internal structure of objects, airport security scanners and medical X-rays (g) gamma rays: including sterilising food and medical equipment, and the detection of cancer and its treatment.			
CP5e EM radiation dangers	P5.20 Recall that the potential danger associated with an electromagnetic wave increases with increasing frequency			
	P5.21 Describe the harmful effects on people of excessive exposure to electromagnetic radiation, including: (a) microwaves: internal heating of body cells (b) infrared: skin burns (c) ultraviolet: damage to surface cells and eyes, leading to skin cancer and eye conditions (d) X-rays and gamma rays: mutation or damage to cells in the body			
	P5.24 Recall that changes in atoms and nuclei can: (a) generate radiations over a wide frequency range (b) be caused by absorption of a range of radiations.			