AQA GCSE Physics
Student Checklist

P13 Electromagnetic waves

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P13.1 The electromagnetic spectrum	I can state that electromagnetic waves transfer energy without transferring matter.	☐	I can describe the relationship between the energy being transferred by an electromagnetic wave and the frequency of the wave.	☐	I can apply the wave model of electromagnetic radiation as a pair of electric and magnetic disturbances that do not require a medium for travel.	☐
	I can identify the position of EM waves in the spectrum in order of wavelength and frequency.	☐	I can calculate the frequency and the wavelength of an electromagnetic wave.	☐	I can use standard form in calculations of wavelength, frequency, and wave speed.	☐
	I can state that all EM waves travel at the same speed in a vacuum.	☐	I can explain why the range of wavelengths detected by the human eye is limited.	☐	I can explain the interactions between an electromagnetic wave and matter.	☐
P13.2 Light, infrared, microwaves, and radio waves	I can state that white light is a part of the EM spectrum and composed of a range of frequencies.	☐	I can describe how a range of electromagnetic waves are used in a variety of scenarios.	☐	I can determine the wavelength of radio waves in air.	☐
	I can list some simple examples of the uses of light, microwaves, and radio waves.	☐	I can explain why a particular wave is suited to its application.	☐	I can describe the interactions between a range of waves and matter, including the effect of absorption.	☐
	I can carry out a practical task to determine the penetrating power of an electromagnetic signal.	☐	I can determine whether the law of reflection applies to a microwave signal.	☐	I can plan, carry out, and evaluate in detail an investigation into the penetrating power of microwaves.	☐

AQA GCSE Physics Student Checklist

P13 Electromagnetic waves

Name ..... Class ..... Date .....

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P13.3 Communications	I can state that radio waves and microwaves are used in communications through the atmosphere.	☐	I can compare the rate of information transfer through optical fibres and radio signals.	☐	I can describe in detail how carrier waves are used in the transfer of information.	☐
	I can state that the higher the frequency of a wave, the greater the rate of data transfer possible.	☐	I can outline the operation of a mobile phone network and the waves used.	☐	I can describe the structure of a radio communication system, including the effect of a radio wave on the current in the receiver.	☐
	I can describe the sub-regions of the radio spectrum.	☐	I can discuss the evidence for mobile phone signals causing damage to humans.	☐	I can discuss the relationship between wavelength data transmission and range to explain to explain why particular frequencies are chosen for particular transmissions.	☐
P13.4 Ultraviolet waves, X-rays, and gamma rays	I can state that high-frequency EM radiation is ionising.	☐	I can describe the penetrating powers of gamma rays, X-rays, and ultraviolet rays.	☐	I can describe in detail the interaction between ionising radiation and inorganic materials.	☐
	I can describe the uses and dangers of UV radiation.	☐	I can compare X-rays and gamma radiation in terms of their origin.	☐	I can compare different regions of the electromagnetic spectrum in terms of their potential harmfulness.	☐
	I can describe the uses and dangers of X-rays and gamma radiation.	☐	I can describe the ionisation of atoms in simple terms.	☐	I can explain how the process of ionisation can lead to cell death or cancer through damage to DNA.	☐
P13.5 X-rays in medicine	I can state some safety procedures that take place during the operation of devices that produce ionising radiation.	☐	I can describe the operation of an X-ray machine.	☐	I can compare the operation of a CT-scanner and that of a simple X-ray device.	☐
	I can describe the formation of an X-ray photograph in terms of absorption or transmission.	☐	I can explain why contrast media can be used during X-rays.	☐	I can evaluate the doses of ionising radiation received in a variety of occupations or medical treatments.	☐
	I can state that X-ray therapy can be used to kill cancerous cells in the body.	☐	I can describe the factors that affect the radiation doses received by people.	☐	I can explain in detail how various safety features reduce exposure to ionising radiation.	☐