Summer Work

Subject: Physics

Deadline: Sept 2019

Task: prior knowledge preparation

Module 4: Electrons, waves and photons

Introduction: Quantum physics is one of our greatest achievements. It allows us to make incredibly accurate predictions on what happens on a scale far smaller than an atom. In order to help you understand its key ideas, this module makes the journey from electrons and how they behave through an exploration of wave properties to end with quantum physics.

Knowledge and Understanding Checklist:

From your Key stage 4 study you should be able to carry out the following tasks. Work through each point, using your Key stage 4 notes and revision guides to help:

- What do we mean when we talk about an 'electric current'?
- Draw a circuit diagram with labelled components. Describe/explain what causes the current to flow and what controls the size of the current.
- Describe the difference between series and parallel circuits.
- What equations do you recall and explain how can you apply them to the circuit you have drawn?
- Make a list of all the components and symbols that you know.
- Describe wave motion in terms of amplitude, wavelength, frequency and period.
- Ripples on water surfaces are examples of transverse waves whilst sound waves in air a are longitudinal waves: describe the differences between longitudinal and transverse waves
- What do you know about electromagnetic waves?

Maths Skills Checklist:

In this module, you will need to use the following maths skills:

- Working with standard form and significant figures, and using appropriate units.
- Changing the subject of an equation.
- Using ratios, fractions and percentages
- Calculating mathematical means
- Determine the gradient and intercept from a graph and use the equation y = mx +c to find unknown values.
- Sketch relationships which are modelled by equations.
- Substitute numerical values into algebraic equations using appropriate units for physical quantities.

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