Oxford Cambridge and RSA Examinations

RECOGNISING ACHIEVEMENT

Physics A - Student Guide for Advanced Subsidiary/Advanced GCE Specifications

Physics is the study of the whole range of science dealing with matter and energy and the relationships between them. It is a science subject, so practical work is an important element.

Before you start this course

You should have studied Science to Intermediate level (either GCSE or GNVQ Intermediate) or Physics to GCSE.

Other subjects that would go well with Physics at AS or GCE Advanced level are Chemistry, Biology and Mathematics. However, other combinations of subjects including Further Mathematics, Electronics and Geology are also suitable. You may be concentrating on arts, humanities or modern language subjects and wish to take Physics to AS level to broaden your studies by continuing to take a science subject.

With a qualification in Physics you could go on to Further or Higher Education, studying Physics or one of the other sciences or related subjects, or work in science-based industry, or engineering.

This subject has 6 Units of Assessment, with choices in Units C, E and F:

- To get a certificate for Advanced Subsidiary (AS), you will need to have been assessed on your performance in three AS units.
- To get a certificate for Advanced GCE, you will need to have been assessed on your performance in the three AS Units, together with three further units, known as A2 units.

Before taking the AS units of assessment you will study the following modules of work:

Module A Forces and Motion

In this module you will learn about rectilinear and non-linear motion, force, work and power and the effects of forces on motion, solids and on vehicles. Also included is a section on car safety. A 90 minute written examination (unit of assessment) will test your understanding of this module.

Module B Electrons and Photons

In this module you will learn about electric current and the concept of charge, potential difference and resistance, D.C circuits and the magnetic effect of current. Also included are sections on quantum physics and electromagnetic waves. A 90 minute written examination (unit of assessment) will test your understanding of this module.

Module C1 Wave Properties

In this module, which is shorter in length than A and B, you will learn about different kinds of waves, wave motion and energy transfer and the principle of superposition. Also included is a study of diffraction and interference. A 60 minute written examination (unit of assessment) will test your understanding of this module.

Practical and investigative work in AS is assessed by means of coursework or a practical examination.

Before taking the A2 units of assessment you will study the following modules of work:

Module D Forces, Fields and Energy

In this module you will learn about dynamics, work and energy. Ideas of motion in a circle are developed and there is a section in which oscillations, including simple harmonic motion, and the effects of damping are studied. You will also learn about gravitational, electric and electromagnetic fields. There are sections about the nuclear atom, radioactivity and thermal physics. A 90 minute written examination (unit of assessment) will test your understanding of this module.

Module E Options

There are 5 optional modules available of which one only is studied. You may be able to make a choice, or your teacher may choose one for the whole group.

- **E1 Cosmology**
  In this module you will learn about models of the known Universe, stars and galaxies, the structure of the Universe and how it may evolve, information that can be obtained from stellar observation, and relativity.

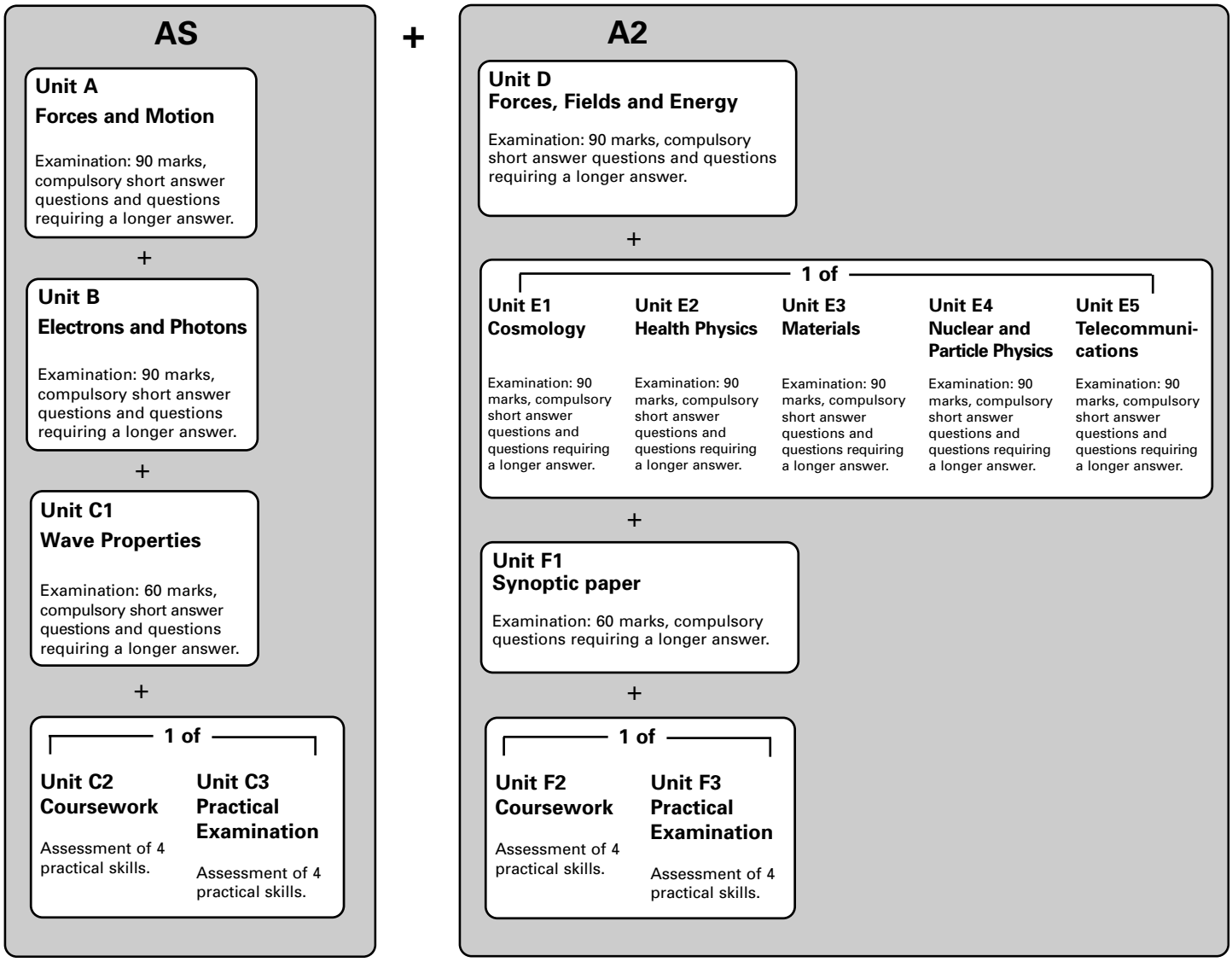
- **E2 Health Physics**
  In this module you will learn about the mechanics of the body, the eye and sight, and the ear and hearing. Medical treatment and the different methods of medical imaging are also covered.
- **E3 Materials**
  In this module you will learn about the mechanical, electrical, magnetic and optical properties of materials.
- **E4 Nuclear and Particle Physics**
  In this module you will learn about the nucleus and fundamental particles, neutrons and nuclear fission and nuclear fusion. There is also a section about matter and antimatter, which includes a study of the use of particle accelerators.
- **E5 Telecommunications**
  In this module you will learn about telecommunication systems and networks, electronic signals, the principles of communication, digital systems and amplifier circuits.

A 90 minute written examination (unit of assessment) will test your understanding of this module.

Practical and investigative work in A2 is assessed by means of coursework or a practical examination.

At the end of the course you will take a **synoptic examination** of 75 minutes. This will test the knowledge, understanding and skills you have learnt throughout the course.

The assessment structure for Physics A is:



For more information, please view the OCR website: **www.ocr.org.uk**
or contact OCR Information Bureau 01223 553998 at OCR Head Office, I Hills Road, Cambridge CB1 2EU.