

A Level Physics (9702)

Frequently Asked Questions

1. Changes for 2007

1.1 Changes to entry options

Some entry options have disappeared. What does this mean?

The standard arrangement of options A, B, C, D and S, which is common to most CIE A/AS level syllabuses, continues. Options E and F are withdrawn – their last availability was November 2006. This means that it is no longer possible to carry forward only the AS practical paper. Candidates wishing to take a staged-route (options B or C) must carry forward all three AS components.

Why are some options split into X and Y?

Options A, D and S are divided into AX and AY, DX and DY, and SX and SY respectively.

The difference between the X and Y versions of entry options A, D and S is in the AS practical paper. There are two parallel practical papers, called papers 31 and 32. The entry options with an X include Paper 31 and the entry options with a Y include Paper 32. These papers contain different questions but are identical in style, format, difficulty and the skills that they assess, so it will not matter which paper a candidate is entered for. The two papers are timetabled on different days.

The intention is as follows.

- If a school has limited laboratory space and consequently has difficulty conducting an examination for all their candidates on the same day, then they can divide their entries between the X entry options and the Y entry options, so that their laboratories only have to accommodate half of the candidates on any one day. This will avoid the need to sequester candidates for long periods of time.
- If a school has ample laboratory space and can accommodate all of the candidates without difficulty, then all of the candidates could be entered for the X entry options or all of them for the Y options. It does not matter which paper is chosen, so choose the date most convenient for your Centre. This will avoid the need to prepare the laboratory on two different days.

So what options are now available?

Options B and C continue to be available for staged route A Level candidates.

Options A and D continue to be available for linear route A level candidates but these are each split into two options, AX and AY, DX and DY. AX is for linear route candidates taking practical paper 31 and AY is for linear route candidates taking practical paper 32. DX and DY are for linear route candidates who are also going to carry forward their AS level marks. DX has practical paper 31, and DY has practical paper 32.

Option S continues to be available for AS level candidates and those taking the AS part of a staged-route A Level programme. There are two options, SX and SY. SX is for AS candidates taking the practical paper 31, and AY is for where centres choose practical paper 32.

Options E and F are withdrawn – their last availability was November 2006.

My students have previously been able to carry forward their AS practical paper mark. What should these students do in 2007 where this option does not appear to be available?

This entry option is no longer available. It was withdrawn to bring A level sciences into line with all other CIE AS and A Levels and CIE's regulations which state 'it is not possible ... to carry forward a result in an individual (AS) component'. Very few candidates took up this entry option. Candidates should either carry forward their entire AS (entry option B or C) or re-sit all of the AS components (entry option AX or AY) or both (entry option DX or DY).

1.2 Using the correct syllabus

My staged-route students did their AS in 2006, using the 2006 syllabus. Which syllabus should they use for their A2 papers in 2007?

The simple rule for CIE qualifications is, always use the syllabus for the year in which the candidates sit the examination. This means that, for the A2 components sat in 2007, the students should use the 2007 syllabus (which includes the Applications of Physics section instead of the options, which are no longer available).

My linear-route A level students are not doing any of their components in 2006, but will do all AS and A2 components in 2007. Which syllabus should they use for their AS and A2?

The simple rule for CIE qualifications is, always use the syllabus for the year in which the candidates sit the examination. This means that these candidates should use the 2007 syllabus for all of the components that they are sitting in 2007. The entries should be made using entry option AX or AY.

My staged-route A level students did their AS in 2006, using the 2006 syllabus. They are planning to re-sit their AS components in 2007. Which syllabus should they use for the re-sit in 2007?

The simple rule for CIE qualifications is, always use the syllabus for the year in which the candidates sit the examination. This means that, for the re-sit, these candidates must use the 2007 syllabus. If the Centre wishes the original AS to be included, the entry option should be DX or DY. If the Centre does not want the original AS to count, the entry option should be AX or AY.

1.3 Changes to papers

Why are there two AS practical papers?

There are two parallel AS practical papers, called papers 31 and 32. These papers contain different questions but are identical in style, format, difficulty and the skills that they assess, so it will not matter which paper a candidate is entered for. The two papers are timetabled on different days.

The intention is as follows.

- If a school has limited laboratory space and consequently has difficulty conducting an examination for all their candidates on the same day, then they can divide their entries between papers 31 and 32, so that their laboratories only have to accommodate half of the candidates on any one day. This will avoid the need to sequester candidates for long periods of time.
- If a school has ample laboratory space and can accommodate all of the candidates without difficulty, then all of the candidates could be entered for paper 31 or all of them

for paper 32. It does not matter which so choose the date most convenient for your Centre. This will avoid the need to prepare the laboratory on two different days.

Do candidates have to take both papers 31 and 32?

No. Centres choose to enter candidates for either paper 31 or paper 32. These papers contain different questions but are identical in style, format, difficulty and the skills that they assess, so it will not matter which paper a candidate is entered for. See the previous question for guidance on choosing which paper to enter.

Why is there only one specimen practical paper when there are two new papers?

Because the two new papers are exactly comparable. The specimen paper is typical of the style and type of the new papers. Centres can confidently use this specimen paper for examination preparation. In preparing for this examination, it is much more important to practice the skills in laboratory experiments and investigations than it is to do lots of past papers. For this reason CIE has published the booklet Teaching AS Physics Practical Skills, which is available:

- from CIE publications (PSAS97020501),
- on the CD Science Support Resources for Teachers, sent to all Centres in Summer 2006
- on the CIE Teacher Support Site (available to subscribers)
- on the October 2006 syllabus and support materials CD.

Centres should encourage their students to practice the skills they will need in the examination by doing as many practicals as possible at appropriate points during their course. If further practice or mock examination papers are required, Centres would be advised to adapt old examination papers using the specimen paper 9702/31 and the information in the syllabus to show the style of questions and mark scheme required. The experience of doing this will help teachers to understand the requirements of this new style of practical paper.

Paper 5 is very different from the old paper 5, so how will I know what to teach?

Your students need a lot of experience of doing practical investigations in order to succeed with this new paper. The paper tests skills that all build on laboratory practical work and so this is the most suitable context in which to develop the skills. For this reason CIE has published the booklet Teaching A2 Physics Practical Skills, which is available:

- from CIE publications (PSA297020105),
- on the CD Science Support Resources for Teachers, sent to all Centres in Summer 2006
- on the CIE Teacher Support Site (available to subscribers)
- on the October 2006 syllabus and support materials CD.

This booklet includes a wide variety of suggested practicals, 10 of which are developed into equipment lists, teachers' guidance notes and student worksheets. The remainder are presented in outline for Centres to develop for themselves. This process of developing practical lessons will greatly enhance the quality of the A2 practical teaching of Centres.

What has happened to the options paper 6?

Paper 6 is no longer available. The options part of the syllabus has been replaced by a compulsory section on Applications of Physics. All students will complete the 2007 syllabus having covered the same material and will be assessed by the same examination questions.

How will the Applications of Physics be assessed?

This section of the syllabus will be examined as section B of paper 4. The new paper 4 has 100 marks. The first 70 marks (section A) will cover the A2 core syllabus and the remaining 30 marks (section B) will cover the Applications of Physics. The paper is 1 hour 45 minutes in duration.

2. Examinations

2.1 General

Can my candidates take a dictionary / calculator into the examination?

Calculators can be used in all science papers and students should take a calculator, ruler, pencil, protractor and set of compasses into all science exams. Dictionaries are not allowed.

How many significant figures should my students give in their answers?

They should use as many significant figures as given in the data. It is common for examination questions to give 2 or 3 significant figures.

2.2 Practical examinations

Is there an option available which doesn't involve any assessment of practical skills?

No. Practical skills are an integral part of Physics. A Physics qualification without a practical component would be a second-rate assessment of the subject, and CIE aims to provide valid qualifications accepted in all areas of the world.

What is the difference between the AS and the A2 practical assessment?

The practical skills to be taught in the AS and the A2 parts of the course are different, and the assessments are different as a result. The AS paper assessing practical skills (paper 31 or paper 32) involves laboratory work under exam conditions. The A2 paper assessing practical skills takes the form of a written paper (paper 5) which assesses the advanced practical skills of planning, analysis and evaluation.

What equipment should I provide for the practical paper and for general teaching?

The minimum requirements are given in the syllabus but a more comprehensive guide is given in CIE's booklet '*Planning Science in Secondary Schools*', available free from our publications department.

I am in the middle of setting up the practical examination, and I need to look at the question. Am I allowed to look at a copy of the question paper?

No. You should prepare the examination using the Confidential Instructions only. These instructions tell you all you need to know about the apparatus and materials required. If you have a problem which cannot be resolved using the Confidential Instructions, please telephone our Customer services line on +44 1223 553554 or e-mail International@cie.org.uk.

There is an item required in the Confidential Instructions that I can't obtain in time for the exam - what should I do?

First, see if there are any alternative suppliers that may be able to supply you more quickly than your usual supplier. But if you have concerns that the item may not arrive in time please contact CIE Customer Services international@cie.org.uk as soon as possible. CIE may be able to offer advice on alternative suppliers or in some cases there might be an alternative item that can be used. Please record any substitute items of equipment used on the Supervisor's Report so that the examiners are aware.

In order to be fair to your candidates, it is always preferable to obtain the items intended rather than to use substitutes. For this reason you should always look at the Confidential Instructions as soon as they arrive and, as soon as possible, order any items that you do not already have.

I haven't got the exact apparatus specified in the Confidential Instructions, but I do have something similar. Am I allowed to use different apparatus at all?

You should normally ask for advice from CIE using the contact details on the Confidential Instructions.

In many cases, the Confidential Instructions give a specification (e.g. voltmeter capable of measuring voltages in the range 0 – 5 V to a minimum precision of 0.01 V).

- If your apparatus is better than the specification (e.g. a 10 V meter that can be read to the nearest 0.01 V) then you can use your apparatus and you do not need to consult CIE.
- However, if your apparatus does not meet the specification (e.g. a 5 V voltmeter that can only be read to the nearest 0.05 V), then it may not be suitable for the experiment. If in doubt, consult CIE.

Please record any differences on the Supervisor's Report.

Will candidates need to use every item listed in the Confidential Instructions?

Not necessarily, no. In the Confidential Instructions, CIE sometimes includes a small number of items that are not required for the experiment in the examination. We do not tell you which items these are, so you have to provide them.

There are two reasons for this. The first is to require candidates to show that they can select the apparatus they need for an experiment, which is an important practical skill. The second is to improve examination security by making it difficult to predict the question from the information given on the Confidential Instructions.

What help and advice can you give me about health and safety in the laboratory?

The most important point of first contact is with the organisation responsible for health and safety in schools locally. They must be consulted if you are in any doubt and will advise on any local legal requirements. In addition, there are several useful guides available and many are listed in the booklet 'Planning Science in Secondary Schools'.

3. Teaching

3.1 Teaching order

Can I just teach through the syllabus in the order it is written?

The syllabus is not intended to represent a teaching order, and it is assumed that teachers or heads of department will devise their own teaching sequence. Schemes of work, giving a suggested teaching order with activities and resource materials, are available on the Teacher Support Site and support materials CD.

My students are taking the AS and A2 papers together at the end of the course. Do I have to teach the AS material before the A2 material?

No, if you feel that the subjects should be taught in a different order, then teach it in the order with which you feel most comfortable. For candidates who are sitting the AS and A2 in the same session, some subjects for the A2 may well be better dealt with in the first year.

What can I do to ensure that I focus my teaching on the key areas of the syllabus?

Firstly, make sure you have the correct syllabus. This should always be the syllabus for the year in which the candidates are taking the examination. You are strongly recommended to make use of the specimen papers and mark schemes and past examination papers and mark schemes, together with the Report on the Examination (published after every examination session) which gives a wealth of advice on teaching and highlights where candidates have most difficulty, allowing you to concentrate on these areas. All these resources can be found on the Teacher Support Site or can be ordered in hard copy from CIE Publications
<http://www.cie.org.uk/profiles/teachers/orderpub>

3.2 Teaching the Applications of Physics section

Do students have to study all parts of the Applications of Physics section?

Yes. All three parts of the Applications of Physics section are compulsory.

Where can I find resources for teaching the Applications of Physics section?

The A Level Physics Application Support Booklet provides a source of information for teachers and students. It is available:

- from CIE publications (SA97010105),
- on the CD Science Support resources for Teachers, sent to all Centres in Summer 2006
- separated into parts on the CIE Teacher Support Site (available to subscribers)
- on the October 2006 syllabus and support materials CD.

In addition, there is a Scheme of Work on the CIE Teacher Support Website which, in addition to a great deal of information about how to teach the course and appropriate learning activities, has a number very useful website addresses that will add considerably to the information that is available to support learners.

The resource list on the CIE website lists a number of publications that have relevant content. Teachers who are members of the CIE Physics Discussion Group (available through the Teacher Support Site) are encouraged to share links to online resources.

How much time should I take to teach the Applications of Physics section?

The Applications of Physics section of the syllabus represents about 12% of the full A level course, or 23% of the A2 course. Centres should spend the appropriate proportion of the A2 year

teaching material from the applications syllabus in order to prepare their candidates adequately, and this time should include practical work related to the Applications of Physics section.

3.3 General

What is the correct textbook for the course?

CIE doesn't require Centres to use one particular textbook and we would hope that, wherever possible, teachers will make use of a variety of different resources, drawing from the best parts of each. Students will often find that if they do not fully understand an explanation in one textbook, they fare better with a different book. Students at this level should be encouraged to read widely in order to increase their understanding of topics covered in the syllabus and the links between them, particularly the Applications of Physics. The Resources Lists given at the back of the syllabus and on the CIE website have lists of up-to-date books and some on-line resources. Those textbooks endorsed by CIE are identified.

My candidates did OK last session but I would like advice on how to improve my teaching and where they were losing marks unnecessarily – what help can I get?

It is possible to request a detailed breakdown on the performance of your candidate(s) by asking for an Individual Candidate Report or a Group Report. A senior examiner will re-mark the scripts of your candidates and write a report on how the candidates performed on each question. However, both of these will cost you money and so are only really worth doing if you are new to teaching at this level and feel uncertain about the standard expected, or if you see a serious mismatch between the grades you thought your candidates would get and the grades they actually got. If you want more general advice the Report on the Examination gives a wealth of advice on teaching and highlights where candidates have most difficulty, allowing you to concentrate on these areas.

Where can I get advice on how to improve my teaching?

CIE offers a variety of training courses, both face-to-face and online, for teachers with all levels of experience. See <http://www.cie.org.uk/profiles/teachers/profdev> for further information, and to find out what events are offered in your region, visit <http://www.cie.org.uk/events>

Another potentially valuable source of advice and ideas comes from joining the CIE Physics Discussion group. This is an electronic email-based discussion group for Physics teachers worldwide. Through this you can ask specific questions about teaching and learning in Physics A level and receive a variety of advice and guidance from your colleagues around the world. The discussion is moderated and augmented by input from CIE subject specialists and examiners. Subscription details can be found on the Teacher Support Site.