

A Level Chemistry (9701)

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 Options E and F are withdrawn – their last availability was November 2006.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 the AS practical exam only. Candidates wishing to enter the 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 (formerly paper 3). 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 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 available to me in 2007?

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 the Advanced Practical Skills paper 31 and AY is for linear route candidates taking Advanced Practical Skills paper 32 (see the previous question for advice on whether to enter candidates for paper 31 or 32 or some for each). DX and DY are for linear route candidates who are also going to carry forward their AS components. DX has Advanced Practical Skills exam 31, and DY has Advanced Practical Skills exam 32.

Option S continues to be available for AS 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 Advanced Practical Skills paper 31, and AY is for where centres choose Advanced Practical Skills paper 32 (see the previous question for advice on whether to enter candidates for paper 31 or 32 or some for each).

Options E and F are withdrawn – their last availability was November 2006.

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, including the Applications of Chemistry instead of the options which are no longer available. The entries should be made using entry options B or C.

My linear-route 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 candidates did their AS in 2006, using the 2006 syllabus. They are planning to resit their AS components in 2007. Which syllabus should they use for the resit 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 resit 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.

My candidates have previously been able to carry forward their AS practical exam 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 resit all of the AS components (entry option AX or AY) or both (entry option DX or DY).

1.2 Changes to papers

Why are there two AS practical papers?

There are two parallel 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.

See also section 1.1 on entry options for guidelines on how to enter for papers 31 and 32.

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 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 Chemistry Practical Skills available:

- from CIE publications (PSAS97010105),
- 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.

Centres should encourage their candidates to practice the skills they will need in the examination by doing as many as possible of the practicals in the booklet at appropriate points during their course. If further practice or mock examination papers are required Centres would be advised to adapt old 9701/03 examination papers using the specimen paper 9701/31 and the information in the syllabus to show the style of questions and mark scheme required. The experience of doing this will help the Centre to understand the requirements of this new style of practical paper.

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

While the AS practical exam (papers 31 and 32) still involves laboratory work under exam conditions, the A2 practical assessment takes the form of a written paper (paper 5) which assesses the advanced practical skills of planning, analysis and evaluation.

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 Chemistry Practical Skills available:

- from CIE publications (PSA297010105),
- 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.

This includes a practical course of 32 practicals which Centres could use throughout the A2 year of the course. 14 of these are fully detailed and ready for centres to use. The other 16 are presented in outline for Centres to develop for themselves. This process of practical development will greatly enhance the quality of the A2 practical teaching of Centres.

What has happened to the options paper 6?

The options part of the syllabus has been replaced by a compulsory section on Applications of Chemistry (section 11 of the syllabus). The Applications of Chemistry section aims to cover some of the exciting aspects of modern chemical research and application. Some of the material will be familiar as it takes the most interesting parts of the some of the options (biochemistry, spectroscopy and phase equilibria). It also incorporates some new material, for example on drug

design and nanotechnology. In addition a small part of the transition elements option has been incorporated into the core A2 syllabus. 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 Chemistry be assessed?

This section of the syllabus will be examined as part 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 Chemistry. The paper is 1 hour 45 minutes in duration.

Do students have to study all the sections of the Applications of Chemistry syllabus?

Yes, all students have to study all sections of the applications syllabus in order to give a broad and balanced perspective of the applications of chemistry. Paper four will cover some of the applications material in each session and CIE will ensure that all areas of the applications syllabus are regularly examined.

Why can't I have more than one specimen paper?

It is normal practice for exam boards to produce only one specimen paper, even where papers are a considerable departure from previous practice. This is, in part, because it encourages Centres make up their own specimen papers, and in doing so, to think about the specimen paper and syllabus requirements carefully. Centres that make several such practice papers will be the ones with the best understanding of the syllabus and its requirements and thus the centres with the best prepared candidates.

It is suggested that Centres make use of the relevant questions from the past options papers (9701/06) as there is much overlap between the options (particularly biochemistry, spectroscopy and phase equilibria) and the Applications. These questions can be adapted to suit style of questions required for the Applications syllabus. In addition material from the A-level Chemistry Applications Support Booklet, scheme of work or the internet can be used to develop suitable questions.

The A-level Chemistry Applications Support Booklet contains further specimen questions and 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.

How can I teach the Applications when they are not covered in the text book?

The A Level Chemistry Application Support Booklet (see previous question for details) provides a source of information for teachers and students. It contains a number of useful web addresses so that you can access further resources online. In addition, there is a Scheme of Work on the 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 Chemistry Discussion Group (available through the Teacher Support Site) are encouraged to share links to online resources.

There seem to be a lot of new learning outcomes in the syllabus. How am I going to teach more material if I only have the same time available to teach?

The Applications section of the syllabus replaces the content of two of the old options and has been designed to reduce this volume by 25% so that students can study the material in more depth and develop the skill of applying their knowledge to novel contexts. The new material in the Applications section has been kept to a minimum, particularly in the Design and Materials section, with the emphasis on using knowledge gained through the AS and A2 course.

The Applications section of the syllabus represents about 12% of the full Advanced 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 (for ideas, see the support booklet, Teaching A2 Chemistry Practical Skills) and time to explore aspects of this chemistry that relate to their local environment and economy.

To help you with these changes in teaching style and to give you ideas to promote effective learning, CIE runs many excellent training courses, including face-to-face training around the world and online training as well as providing a range of resources – more details of these are at <http://www.cie.org.uk/>

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 a general rule, as many significant figures as given in the data. It is usual to work to 2 or 3 significant figures depending on how accurate the data allows.

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 chemistry. A chemistry 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?

While the AS practical exam (papers 31 and 32) still involves laboratory work under exam conditions, the A2 practical assessment takes the form of a written paper (paper 5) which assesses the advanced practical skills of planning, analysis and evaluation.

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

The minimum requirements are given in the syllabus but a more comprehensive guide is given in Cambridge International Examination'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 chemicals 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 a chemical required in the Confidential Instructions that we can't obtain in time for the exam - what should I do?

First see if there are any alternative chemical suppliers that may be able to supply you more quickly than your usual supplier. But if you have concerns that the chemical 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 chemical that can be used. When you contact CIE it is helpful if you can tell us which other similar chemicals you have, i.e. if you don't have the indicator required, please tell us what other indicators you have; if you don't have, for example, manganese(II) carbonate, please tell us what other carbonates and manganese salts you have. Please record any substitute chemicals used on the Supervisor's Report so that the examiners are aware.

Please be aware in order to be fair to your candidates it is always preferable to obtain the chemicals intended rather than to use substitutes. For this reason you should always look at the Confidential Instructions as soon as they arrive and make your chemical order as soon as possible.

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?

Yes, you are allowed to make minor adaptations to the apparatus, providing that the apparatus performs the same function. For example, if a 20 cm³ measuring cylinder is specified and you have a 25 cm³ measuring cylinder, this will be adequate (unless the Instructions specifically state a 20cm³ measuring cylinder). If you have any doubt about whether your apparatus will be satisfactory please contact CIE. Please record any differences on the Supervisor's Report.

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' and in the 9701 syllabus. Most chemical suppliers' catalogues have details of safety requirements for specific chemicals, and 'Hazard cards' (published by CLEAPSS, www.cleapss.org.uk/secmbfr.htm) are an excellent reference point. There are several online resources e.g.

www.labsafety.org

www.chemsoc.org/networks/learnnet/Safety.htm

www.ncbe.reading.ac.uk/NCBE/SAFETY/menu.html

3. Teaching

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

Yes you can - but you don't have to. The syllabus has been deliberately set out to give a clear and structured teaching order but many teachers prefer to devise their own teaching sequence. Schemes of work giving 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 manner 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 marks schemes and past examination papers and mark schemes,

together with the Report on the Examination 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>

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 Chemistry. 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 Candidates report or a Group Report. A senior examiner will remark 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 Chemistry Discussion group. This is an electronic email-based discussion group for chemistry teachers worldwide. Through this you can ask specific questions about teaching and learning in Chemistry 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.