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# ENTRY LEVEL CERTIFICATE **SCIENCE**

5961 & 5962: Single Science award  
Report on the Examination

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5960  
June 2019

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## General

The subject content for this specification covers the KS4 Programme of Study and is based on the specification for GCSE Combined Science: Trilogy (8464). Although Entry Level Science may be delivered as a stand-alone subject, sample schemes of work are available to enable teachers to co-teach ELC with either Trilogy or Synergy. Assessments for ELC Science are undertaken at a time chosen to suit the centre and students. Both single (5961) and a double (5962) awards are available.

The subject content is split into six components from each of the three subject disciplines:

- Biology (components 1 and 2)
- Chemistry (components 3 and 4)
- Physics (components 5 and 6)

For each component, the student is assessed by means of an Externally Set Assignment (ESA) and a Teacher Devised Assignments (TDA).

For the Double Award, work from all six components must be submitted. For the Single Award, work from three components, one from each of Biology, Chemistry and Physics must be submitted. In the Single Award, the ESA and the TDA for each subject discipline do not need to be taken from the same component. For example, for Biology the ESA could be from Component 1 and the TDA from Component 2.

For awarding in 2019, three sets of ESAs were available. These ESAs should be downloaded from the Secure Key Materials section of the e-AQA website at point of use. They remain operational for the duration of the Specification and must be conducted under high control. Should students not perform to expectations, they may attempt all three versions for each component and the one that has resulted in the best mark can be used for inclusion in the total.

These ESAs must be kept secure and never returned to students. If a centre wishes to practise ESAs, then they should use the specimen ESAs and mark schemes available on the AQA website.

The comments in this report are supplied for the guidance of teachers and centres and should not be taken to imply criticism. The majority of centres operate to a very high standard in terms of both their marking of the ESAs and TDAs and their compliance with the administrative procedures.

AQA provides support and guidance for centres in a variety of ways. These include:

- Feedback forms (CAW/FB) from moderators to centres
- ELC Coursework Advisor
- Specification Support Material and Teachers' Guide, to be found on the AQA website
- Reports on previous series: these can be found on the AQA website
- Teacher on-line standardisation (T-OLS)
- On-line CPD: details can be found on the AQA website and include feedback on the current series.

## Administration

Marks are submitted electronically using E-sub system. This has proved to be beneficial to both centres and moderators and helps to speed up the moderation process. Likewise, the introduction of the electronic form MOD/CEN/ADM/E-SUBS has made it much quicker to inform centres and AQA of any mark changes.

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**Common themes noted:**

- Centres not acting on MOD/CEN/ADM/E-SUBS forms sent by the moderator and not going back into E-subS to correct marks. This meant that moderators could not enter their marks and the centre could then wrongly go out of tolerance.
- Withdrawing all students and not amending this on E-subS. The centre then sits in the 'Awaiting Centre Marks' section of the system and the process cannot be completed. There were also issues if students are registered to one centre but are taught at a different institution, and a lack of liaison between the two centres lead occasionally to inaccuracies or lack of information about the status of a student.
- Most centres managed to meet the 15th May deadline for submission of marks. However, with E-subS, centres can upload marks and submit the sample to the moderator before this deadline. If they did so, this greatly helped the moderation process. However, some centres were extremely tardy and did not inform AQA of the need for an extension to be granted. It is important that centres communicate with AQA and their moderator if problems arise, so that all parties may work together to resolve issues.
- Most centres supplied the Centre Declaration Sheet. For NEA (Non-exam Assessment), this is essential to authenticate students' internally-assessed work and confirm the internal standardisation of marking.
- Most students signed the CRF to authenticate their work. Failure to do so can result in a delay in the moderation process. Completion of these forms is a JCQ requirement.
- Some centres were still sending bulky folders containing the complete portfolio of notes, exercise books, worksheets, etc. These were not only superfluous to the moderation process but hamper the moderator's work; moderators require only the marked ESAs and TDAs which have contributed to the subject total mark. Centres are reminded that the portfolios should be presented with the ESAs and TDAs collated for each student, with the CRF showing the mark analysis as the front. These items should be either in a card folder or held together with a treasury tag and not submitted in A4 plastic wallets.
- Centres should ensure that the student's name and number and the centre number appear on all the pages of the student's work.
- For the Single Award, almost all centres correctly submitted evidence from three different complete components. Students who did fail to complete any of the required components may still be entered for an award – they simply score zero for any missing component.
- Page 50 of the Specification (Section 4.3) and the CRF outline the requirements for the evidence that needs to be submitted
- If a student is missing a number of pieces of evidence for the double award, an entry for single award could well be advantageous. This can be done free of charge up until the date stated in the Exams Administration part of the AQA website. Centres are reminded that AQA does send out a communication to all centres with entries in March of the year of entry: 'ELC Science (5960) checklist (Submitting summer 2019 marks and portfolios – guidance for teachers)' which will aid with the preparations for moderation.

**Marking of the ESAs**

The standard of marking of the ESAs was generally good this year. The great majority of centres adhered closely to the published mark scheme. There were very few errors of judgement in evidence.

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It is important to follow the procedure below which is also available in the SKM area. Failure to do so often led to incorrect totals on the CMF:

- ESAs should be marked in red, using one tick for each mark awarded.
- Subtotals should be put in the right-hand margin at the end of each part of each question.
- Incorrect answers should be marked with a cross.

Moderators need to be sure that all student responses have been seen and marked accordingly.

Students may be given verbal feedback about their achievement and the ESAs then stored securely until required for moderation.

Although this is the second full year of this specification, a few centres made the mistake of using specimen ESAs or those from the previous specification (5948). Specimen papers may be used for practice but they must not be used for submission for an award. Use of past (5948) papers for practice purposes should take into account that the style and content has changed and these may be of limited value.

ESAs should be downloaded from SKM when required so that the most recent version of an ESA is used. Centres are reminded that ESAs must be undertaken in a high control setting; there is a full range of access arrangements available for those students who require them. However, centres should remember to include the appropriate JCQ cover sheet.

### **Marking and annotation of the TDAs**

Although the specification is now in its second full award, some centres are still using templates relevant to 5948 and/or marking using the old skill criteria.

The current practical skill areas are now designated:

- A - experimental design
- B - working safely and making measurements and observations
- C - recording data
- D - presenting data
- E - identifying patterns and relationships.

Most teachers annotated work to indicate where and why they had made their judgements of the students' levels in each skill area. This annotation is extremely helpful for the moderators where borderline judgements were made. The simplest way to record marks on the script is to write, for example, 'C2' to indicate that an award of 2 marks has been given in skill area C. If this is written at the point where the student has met the criterion, the moderator can then easily verify whether the mark is appropriate.

When the student is not able to provide written evidence of their achievements, annotation must be provided to justify the award of marks in a skill area. This is particularly important for the ephemeral skills B1 and B2 and also to justify the award of 3 marks for Skills C and D for a student's unaided work. Annotation is particularly important with regard to the amount of help that the student has been given. Without such annotation, it is extremely difficult for the moderator to form an appropriate judgement.

Although the criteria for marking the TDAs appear hierarchical, it is possible to award marks on a 'best-fit' basis. Therefore, if a student has matched the criteria for Level 1 and for Level 3 but has missed out some of the requirements for Level 2, two marks could be awarded on a 'best-fit' basis.

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If a student has a scribe/reader, this should be noted on the CRF and relevant work, and the appropriate JCQ form should be included in the portfolio.

Centres are reminded that, although there may be discussion about how to go about an investigation and students may work collaboratively to obtain results, the write-up of an investigation must be individual work. Once completed and marked, students may be given verbal feedback about their achievement but the work must not be returned to them and should be stored securely until required for moderation.

### **Choice of suitable investigations**

Nearly all centres used an appropriate context for the practical investigation, ie one that was related to the subject content of the specification. The majority of teachers used the suggestions given in the specification, through 'discussion' during an AQA online training session or with an advisor. Centres are encouraged to develop new ideas for TDAs so that they fit in with the centre's teaching and learning programme.

Some centres include photographs showing students at work. It is pleasing to see evidence that students are enjoying their practical work, although it should be noted that this rarely adds value to the marking.

It is evident that a number of centres are co-teaching ELC with the Trilogy specification and therefore submitted TDAs based on the Required Practicals for the Double Science programme. These are, as stated, practicals, not investigations. Care needs to be taken that the practical is adapted so that it does allow ELC students to demonstrate achievement in all the Skill areas, particularly in Skill areas A, C and D. The work must also be part of the ELC specification eg Hooke's Law is not required for ELC and cannot be submitted.

It is important that any TDA is designed so that all the criteria for the Skill Areas can be addressed within the capability of the students. Some centres carried out investigations which had several independent variables so it was very difficult for students to understand what they were doing or to draw any conclusions; a single independent variable should be the aim.

A number of centres undertook the paper chromatography practical. In some cases, this was well-contextualised as a forensic-style investigation. Other centres relied on the Required Practical format and only submitted chromatograms; the investigation must be devised to enable students to gather numerical values in order to score in Skill Areas C and D. Other investigations relating to microbiology also only yielded qualitative results which limited access to Skills C and D. It is also important that microbiology investigations comply with recommended procedures to ensure safe practice. A number of centres used TDAs relating to water quality which did not yield quantitative outcomes.

### **Worksheets:**

- It is helpful if the task is phrased as a question that can be answered by carrying out the experiment; the worksheet/template may include some information from the specification to set the scene for the student.
- Many centres used or adapted the templates available on the AQA website. These demonstrate the appropriate level of prompting that can still access the full mark range.

- Some centres produced excellent worksheets for their students. These can be very useful providing that they are generic and not specific to a particular investigation. In a few cases the worksheets were over-prescriptive; this limits access to higher marks in some skill areas.
- Where worksheets were not used, students generally scored fewer marks.
- In addition, centres using commercially produced templates must ensure that these do not limit the student's performance by being too prescriptive.

If a centre is unsure of the suitability of a given worksheet or investigation, they should contact their coursework adviser who can provide guidance.

### **Skill Area A: Experimental design**

**Level 1 (1 mark):** students should be able to identify the technique or equipment that can be used to investigate the chosen problem. This may be done by using a worksheet which lists or shows diagrams of different items of equipment. The students can then tick or circle the ones which they think appropriate to use. The list should be generic in nature so that there is an active selection on the part of the student. There should be an opportunity to add investigation-specific equipment.

**Level 2 (2 marks):** students need to describe the way in which the technique or equipment could be used. The student's method should be capable of producing sensible and meaningful results. The method should enable another person to carry out the experiment.

Some students find extended writing a challenging task and may need structured support to gain marks. Students may not gain marks for copying out a given method; however, they may achieve this level for ordering a set of instructions correctly or by use of a flow chart showing the different steps in the method. Students can then join up the different steps in the correct order to show the method. A labelled diagram showing how equipment was set up may also enable them to demonstrate achievement at this level without extended writing.

If none of the above are sufficient to enable the student to gain marks, a given method would still allow progress to achievement in the other skill areas.

**Level 3 (3 marks):** students need to make a simple prediction and give a reason for this. Most students made a good attempt at a prediction. Teachers are asked to encourage their students to make a prediction based on either scientific understanding or general knowledge not just a guess. Information provided in the introduction may assist with this.

### **Skill Area B: Working safely and making measurements and observations**

**Level 1 (1 mark):** most worksheets seen by moderators this year included a reference to safety, such as:

- Safety: Are there any dangers in this experiment?
- What will you do to make sure you are safe?

Written statements as to how the student worked safely must be relevant to the investigation undertaken, not merely generic statements such as 'wear goggles' irrespective of the context.

If a worksheet does not contain something similar to this, an annotation to confirm that the student worked safely should be given.

**Level 2 (2 marks):** students need to show the ability to make simple measurements or observations. The fact that students have made such measurements or observations may be recorded by a scribe.

**Level 3 (3 marks):** students should explicitly show recognition of the need for the results to be meaningful. Often moderators saw repeated procedures, but without any link to meaningful results. Students may gain credit here for either repeating tests to obtain a mean or by reference to the variables and how these were controlled to achieve a fair test.

If students work in small groups and then pool results, it is important the contribution of an individual student is evident in the account of the investigation.

### **Skill Area C: Recording data**

**Level 1 (1 mark):** students simply need to record their results. This does not need to be made in any organised way.

**Level 2 (2 marks) and Level 3 (3 marks):** students need to record their results in a table. Most centres this year gave students the opportunity to construct their own table. If done correctly, this would enable the award of three marks. If a teacher deems a student's constructed table is not adequate, a template with headings can be provided: this would then limit the award to a maximum of two marks for correct completion.

**For Level 3,** tables should have the correct headings and units. Some teachers were being too generous in awarding three marks to tables that had incorrect headings or missing units. In addition, if results are inaccurately recorded or calculated the student cannot score full marks against skill area C. This may be an instance where a 'best fit' of 2 marks may be awarded for an imperfect attempt by the student. Unaided work should be annotated to this effect.

### **Skill Area D: Presenting data**

The criteria for achievement in this skill area are limited to graphical representation. Inclusion of photographic evidence of microbial growth or chromatograms cannot be credited.

**Level 1 (1 mark):** students simply need to select the most appropriate form of graphically showing the results.

Normally this would be:

- a bar graph if the data is categoric (eg different species of plant or different types of metal)
- a line graph if the data is continuous (eg how temperature is changing with time).

In the AQA template and in other worksheets, students are asked to select the appropriate format; this enables students to gain this mark even if they were unable to produce the actual graph. It was noted that, some centres awarded this mark when the student had made the wrong choice.

**Level 2 (2 marks) and Level 3 (3 marks):** students need to display their results graphically.

Most centres gave students the opportunity to draw their own pie chart, bar graph or line graph. If done correctly, this would result in three marks. If a student's attempted graph is not adequate, the teacher may give the student a framework to complete. For example, the teacher could give the



student a piece of graph paper with the axes already scaled and labelled. This would then limit the award to a maximum of two marks.

If the student draws a line graph, we would normally expect a smooth trend line or line of best fit. Some centres had not supplied their students with graph paper: some used centimetre squared paper, and some used plain paper and some merely drew sketches. This disadvantages the students, as they are unable to show that they can plot data correctly.

It is important that teachers check that students have:

- shown the correct labels and values on each axis
- plotted the values correctly
- and, if appropriate, drawn a line of best fit.

Some centres were awarding Level 3 when graphs or bar charts had incorrect or missing labels, scales or units or when the data had been drawn or plotted incorrectly.

For full marks in Skill Area D, the data needs to be plotted correctly, axes need to be linear, labelled and have units and be annotated as the student's unaided work.

If students cannot produce a paper version, it is acceptable to use a suitable computer program providing the student chooses the relevant scales, labels and axes and inputs the data. For a line or scatter gram, it is better to print the plots and draw the line free-hand.

### **Skill Area E: Identifying patterns and relationships**

**Level 1 (1 mark):** students merely need to state their results. In most cases teachers were providing a line on a worksheet that simply said: 'What did you find out?'

**Level 2 (2 marks):** students need to draw a simple conclusion or recognise a pattern in the results. Many students found this difficult and moderators noted that in many cases teachers had been too generous in awarding this mark.

Students are required to take a step beyond simply repeating the result and try to say what this means. For example:

Result: 'I found out that the hotter the oil the quicker it ran down the tile'

Conclusion: 'This means hot liquids are less viscous (are runnier) than cold liquids'

A well-constructed worksheet or template may have included some information from the specification in the introduction which would enable the student to draw a sound conclusion. Exemplars may be seen on the AQA website.

**Level 3 (3 marks):** students need to make a simple evaluation. In some cases moderators found that centres had been too generous by awarding three marks when all the student had said was: 'I think the experiment worked well' or said 'do it again' without giving any justification for this or made reference to other investigations that could be done.

For full marks in Skill Area E, there needs to be an evaluative comment about the success or otherwise of this investigation. This evaluation must use results from the investigation eg anomalous results or state that the conclusion is sound as repeats are similar. Marks cannot be awarded for suggestions about alternative tests or equipment.

### **Use of statistics**

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

### **Mark Ranges and Award of Grades**

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.