

Examiners' Report/
Principal Examiner Feedback

November 2012

GCSE Science 2011 (5SC04)
Paper 01

2SC01 Science

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Overview

The controlled assessment unit forms 25% of the GCSE science 2011 specification. Controlled assessments are based on specification statements or 'further suggestions for practical work'.

There are three parts to the controlled assessments: A, B and C. Part A is a planning task, Part B is an observations task and Part C is a conclusions task. A candidate must submit one mark from each part and these may come from a single controlled assessment task. Marks from the best of the candidate's work can also be submitted. For example, Part A from Biology, Part B from Chemistry and Part C from Physics, or any other combination of subjects. However, a candidate must complete a full controlled assessment task to submit a mark for one part. All work for a task needs to be sent for moderation, rather than just the part for which the mark is being submitted. This enables moderators to evaluate all three parts of the controlled assessment tasks within the correct context.

Controlled assessment tasks are available approximately one year in advance of each examination series, but teachers must note that these tasks are only valid for that particular series. A few centres submitted controlled assessment tasks valid for June 2013 which cannot be moderated until next summer. After June 2013, the next moderation window will be June 2014. There will no longer be a November moderation window.

General comments

The Principal Moderators are pleased to report that centres have for the most part interpreted the assessment criteria appropriately. There were some new centres that submitted work for moderation for the first time in this moderation window. There was good agreement with the marks awarded by many centres and this clearly reflected the time and effort taken by teachers to attend Edexcel training events.

The majority of centres used the workbook provided by Edexcel, at least in part. The sub-sections of the workbook gave candidates a good idea of what they needed to do to address the criteria for a particular section.

Some centres adapted the workbooks to provide candidates with more space for responses, but importantly, kept the wording the same; this is acceptable practice. However, the workbooks must not be altered in such a way that the wording of the statements is changed, as this may provide too much scaffolding, or fail to give candidates all the information they require to complete each section correctly.

A minority of centres reduced the workbook to A5 size and this was considered to disadvantage candidates as they had too little space for their responses. Some excellent detailed work was also submitted on loose-leaf A4 paper, although moderators commented that in some instances work in this format lacked structure and focus and was not always annotated adequately. It should be noted that evidence to support a mark may be found 'out of place' in different sections of a candidate's workbook, e.g. information about equipment or controls could be written in the plan and the candidate should be credited accordingly. Careful annotation is essential for moderators in these situations.

All three tasks were seen and most centres submitted marks for a single task. Submitting a combination of marks from different controlled assessments was less common.

Some excellent annotation was seen on scripts, demonstrating that some teachers have an excellent grasp of how to interpret and apply the generic assessment criteria. Unfortunately such good practice was not uniformly widespread across all centres. The work received from some centres had either no, or minimal annotation, or was just ticked in various places. This was particularly unhelpful where candidates submitted their responses on A4 paper where it was unclear which aspects of the criteria were being addressed in a particular paragraph. It should be noted that annotation is a JCQ requirement which not only aids moderation but, more importantly, enables accurate assessments to be achieved.

Centres continue to use the specific marking guidance for each controlled assessment task to aid their assessment decisions. The specific marking guidance provides examples of responses that can achieve particular marks. It is important that the generic criteria are used to make holistic judgements about a candidate's overall performance.

Comments on the performance of candidates and the application of the assessment criteria

In general, Parts A and B gave candidates across the ability range the opportunity to demonstrate positive achievement in all sections. The Conclusions section discriminated more in terms of the performance of stronger candidates than weaker candidates. More blank sections were seen in Part C of the workbooks in comparison to Parts A and B.

Part A Planning

The equipment section was well answered and many candidates gained 4 marks here, with useful diagrams often supporting the mark awarded. However, some candidates missed out essential items such as limewater in the C1 task and were awarded full marks inappropriately. Weaker candidates found it difficult to explain the reasons for their choice of equipment.

The majority of candidates were able to identify relevant variables to control and could describe how this would be achieved. Fewer candidates could develop their ideas and explain how to control the variables. In some cases candidates were given high marks for simple responses such as 'keeping things all the same' or 'keep it a fair test'.

Some good responses relating to risks were seen, and this section was quite mark yielding. However, centres should guard against awarding high marks for generic comments such as 'tie hair back' or 'put all bags and stools under benches'. It is important that the risks identified are relevant and specific to the task, e.g. identifying 'suck back' as a risk in the C1 controlled assessment.

The majority of candidates could write an ordered method that would produce results and hence gain 2 marks. To gain the marks for 3 – 4 (a) and (b), candidates must explain why their method would test the hypothesis and explain why a particular range of measurements were chosen. This last aspect remains a problem for some centres and has led to some centres giving full marks in this

section when this should have not been the case. Candidates found the 3 - 4 (b) mark the most difficult to gain. It was encouraging to see that the Overall Plan section had been marked accurately in many centres, although generous marking was not uncommon.

Part B Observations

Candidates performed well in this section of the controlled assessment. In many cases 3 or 4 marks were scored for 'Primary evidence and recording', even when candidates found other areas of the assessment difficult to access. Tables tended to be well drawn with good headings and units included. Many candidates also include processed evidence, e.g. averages, in tables with their primary evidence, which is a logical thing to do. However, centres should remember to assess averaging and other mathematical processes in Part C.

The generic assessment criteria state that secondary evidence should be collected and recorded. Some excellent practice was seen where relevant secondary evidence had been collected in the form of data, e.g. results from other groups of candidates, graphs or factual information. In some cases candidates discussed secondary evidence but no supporting information was provided for the moderator to see. It is acceptable for centres to provide a range of sources of information from which candidates can select the material that they consider to be the most appropriate. Comments must be made about the quality of the sources of secondary evidence to gain two marks for this section; however comments about the quality of the sources were often quite weak or missing altogether. It is often easier for candidates to use secondary evidence in Part C if it is quantitative but, of course, this is not essential.

Part C Conclusions

This section discriminated well between candidates of different abilities. However, some candidates and occasionally teachers seem to be confused about the difference between evaluating the conclusion and evaluating the method. A large number of candidates demonstrated that they were able to process and present evidence. In many cases processing requires little more than averaging collected data or re-ordering data to show a clear trend. Centres should check that processing has been done correctly, because there were a number of cases where a candidate's mathematical skill had let them down, yet their work had been marked as being correct. As mentioned in the previous section, it is also important to look for evidence of processing in Part B.

Line graphs and bar charts were frequently drawn correctly, but in some instances full credit was given even when there were obvious errors in scaling and labelling axes, or plotting points or when a line graph was drawn for a discrete variable.

The quality of evidence section was challenging for weaker candidates, particularly 3-4 (a). It was apparent that many candidates had clearly not looked at their evidence with sufficient care, and made sweeping comments about anomalies. Obvious anomalies were sometimes ignored, yet the text in the section claimed that they had been dealt with. It was also apparent that some candidates did not know how to deal with anomalies appropriately and this is a broad issue that needs to be addressed. Centres are reminded that the 1 – 2 mark (b) statement requires candidates to comment on the quality of their secondary evidence, but this aspect was not always addressed particularly well and full marks awarded without reference to this criterion.

Some excellent conclusions were seen where there was a detailed discussion of relevant scientific ideas and the hypothesis had been referred to appropriately. However, moderators remarked that some assessments of this section were generous because responses were brief and clearly lacked the detail needed to match the criteria for 5 and 6 marks. In particular for 5 -6 (a) and (b) the use of scientific ideas needs to be present to explain the conclusion. This is an area where centres need to give time in formative work prior to taking the task to practice the points already mentioned. Candidates should be encouraged to look carefully at their evidence for mathematical relationships. At a low level this could include a comparison of quantitative evidence or at intermediate level reference could be made to data points. At higher levels this could develop into comments about the impact of one variable on another, such as *'if x is doubled, y is doubled'*, or reference to the gradient of a graph.

Only the most able candidates scored well on the evaluation of conclusion section. Evaluation remains a real discriminator of ability. It is important that candidates use all the evidence available to them when writing about the conclusion. Comments were often very simplistic, particularly when suggesting how the evidence could be improved. When candidates used the workbook they often wrote some creditworthy comments as a result of having the guidance provided at the top of the section in the booklet. Statements such as *'do the experiment better'*, *'do more repeats'* or *'do the experiment more accurately'* were not uncommon and such stock answers do not show that the candidate understands the issues related to the particular task in question. Indeed, some candidates who suggested further repeats had already carried out a suitable number of repetitions. In some instances these low-level comments had been awarded high marks. References to scientific ideas are needed for the 3 – 4 (a) mark and for 3 – 4 (b) the candidates need to suggest how to improve and extend their evidence.

There was greater opportunity for weaker candidates to gain marks when evaluating their method. The emphasis of this section is an evaluation of the method in terms of the equipment used and the procedure. In some cases candidates interpreted this as another opportunity to discuss the evaluation of the conclusion. Many candidates could state a strength or weakness in their method and suggest how to improve it. This section proved to be more accessible but some candidates wandered off the point and gave examples of strengths or weaknesses that were irrelevant to the task. Candidates should be discouraged from making comments such as *'use better equipment'* or *'use a computer'* when discussing possible improvements to a method. Improvements should relate to the method used and should be justified. Few candidates specifically discussed how their method could have produced anomalies and how changes to that method would minimise anomalies and improve the quality of the evidence.

Administration

The deadline for the submission of work to the moderators was 4th November 2012 and it was pleasing that the majority of centres sent their samples of work by the deadline as this was within the half-term holiday for many centres. However some centres were considerably late in submitting samples as they waited until the return to school or even later before sending the material to the assigned moderator. It was frustrating in some cases to have work arrive by the correct date, but for the moderator to then find the sample was incorrect. In addition to the randomly selected sample of candidates asterisked on the OPTEMS, centres should also send the work of the highest and lowest scoring candidates to the moderator if they are not included in that random sample.

The national deadline for the June examination is 15th May 2013

The moderators' work was made difficult in cases where there were no record sheets to identify the marks awarded for each Part and section of the Controlled Assessment Tasks, particularly when more than one task contributed to the final mark. A suitable example of a record sheet can be found in Appendix 5 of the specification and this also includes a declaration of authentication.

Centres should note that it is not necessary to send any work that does not contribute to the final mark. For example, if B1 does not contribute to the final mark submitted, then it is not necessary to include work for that task with the moderation sample.

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Science subject advisor

Sciencesubjectadvisors@edexcelexpert.co.uk

Contact us on 0844 576 0037

Ask the expert

gcsescience@edexcelexperts.co.uk

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The consultancy service will be available from 1 October 2012 until 24 February 2013 for additional and separate Science units (5SA04, 5BI04, 5CH04 & 5PH04) and from the 1st of November for Science (5SC04)

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