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ELC

Science

Entry Level Certificate **R591**

OCR Report to Centres June 2015

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It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

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Science (R591)

OCR REPORT TO CENTRES

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Entry Level Certificate R591

1. General Comments

The Entry Level Science course continues to be very successful. This must be due to the popularity of the course with both the teachers and the candidates and the training events that are now online. The possibility of using the course as a prerequisite to Gateway Science or Twenty First Century Science has also not escaped the notice of centres who have also double entered candidates for Entry Level Science and a GCSE Science.

Entry numbers are stable and this year 2856 Candidates were registered. There has been a significant rise in candidates from city academies. The quality of work appears to be of a similar standard to that in 2014.

2. Comments on Individual Components

Comments on End of Item Tests

It is most useful if the End-of-Item Tests are in numerical order

Please note the End-of-Item tests for 2016 should have the code R591 at the top. Tests cannot be taken more than once by a candidate.

Moderators select and remark a sample of seven End-of-Item tests per candidate chosen from the whole range of tests attempted by the centre so that a balanced overview of the centre's marking is obtained. Most centres had marked the End-of-Item tests following the published mark schemes and had marked in accordance with the instructions on the front cover of the schemes. Centres are to be thanked for the care that they put in to this part of the assessment.

If in a question that has a True/False answer the candidate writes something different but it is clear what was meant then the mark can be awarded. An example is in the test that required a correct date, the true answer was for a particular date so if this was written in as the answer then the mark is awarded and BOD (benefit of doubt) added in annotation.

Errors that did occur with the assessment of End-of-Item Tests included:

- Marking the tests in colours other than red (especially green which moderators use).
- Marking 'sequence' type questions incorrectly.
- Circling totals at the end of each question (use the one tick - one mark method).
- Incorrect transfer of points to record cards.
- Failing to record the End-of-Item test on the record card.
- Recording a mark for an End-of-Item test not sent as part of the portfolio.

If a teacher thinks an answer that a student has given is correct but is not covered by the mark scheme, the teacher should annotate the copy of the mark scheme and apply it to all the candidates from their Centre. It is acceptable to mark such an answer correct but there should be annotation on the script to explain why the mark has been given (even if only BOD – benefit of doubt).

A candidate did give the answer to B3 Q3(d) "You don't need yellow fever to go to Turkey. You need all the others". This conveyed the answer in a different way!

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Comments on Can-Do Tasks

Some centres had candidates completing several End-of-Item tests and Practical Activities but ticked very few Can-Do Tasks; this was even though the Practical Task carried out must have involved the candidate demonstrating some Can-Do tasks successfully.

Only the best 10 Can-Do tasks can be chosen so the maximum is 10 three point tasks = 30 which is then divided by 3 to give a total out of 10 points. The result should be to one decimal point. Low level tasks can be used for training and allowing candidates to show their progress, but opportunites need to be given to allow candidates to perform some of the higher level tasks. Can-do Tasks cannot be given part marks.

A centre cannot award 1 or 2 marks for a Level 3 task.

Some centres had all their candidates completing the same 10 Can-do Tasks.

Comments on Practical Tasks

It is advisable that centres use a continuous variable so that a trend can be identified.
Many centres used writing frames and these can be useful to guide candidates. However if too much guidance is given then Aspect A, **Planning to collect data,** may not be awarded the maximum 4 marks. General headings such as “What will I do?”, “The equipment I will need is”, and “How will I make it safe?” are acceptable. The safety aspect should relate to the actual task. However the candidates may then go on to gain marks for Aspect B, **Processing the data,** if they put results into a table. Here again if the table is given or the graph axes are given with labelled axes this limits the mark they should be awarded. Many centres have been awarding 4 marks for just completing the table (and sometimes these were given) but there is a need for a graph or bar chart.

There were some repeats of the Practical Tasks as in the guide or as discussed at Inset Training Sessions but some new ones appeared that were interesting such as “Candles burning in different size beakers”.

Examples of suitable and popular tasks were craters using different masses (as opposed to different objects), dissolving using different masses of sugar, insulation using different layers (as opposed to different materials). Poor choices were often just comparisons of two or three different discrete values - example pulse rate after running and walking or comparing absorbency in different nappies.

Also not so good was the use of GCSE Gateway Controlled Assessment tasks for candidates double entered (e.g. portable stoves), as the tasks did not lend themselves to covering all the aspects of R591.

Writing frames / help sheets were sometimes used but many had not updated them for the revised criteria. Some were task specific, and gave too much help - example for Aspect D - "Why did the time increase when more sugar was added?" effectively giving the trend.
Work seen was often very similar. Centres need reminding that while the practical data collection can be shared, the write up needs to be done independently.

Planning is best if done prior to the activity, taken in and marked. Following the data collection (presuming like GCSE, graph drawing can be done under low control), candidates then need to independently complete the Interpreting and Reviewing sections.

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Aspect A: Not a lot of equipment selection was seen. Plans - for 3 marks a useful indicator might be 'Can I do the task based on what has been written'. Many did have safety ideas, but often just goggles – they really need something specific to the task for a secure match.

Aspect B: Bar charts are acceptable for 4, but if a continuous variable has been selected, a line graph is more appropriate. Plotting needs to be reasonably accurate for 4 marks. Tables of results can score 2, but averages are no longer assessed, so help can be given here.

Aspect C: An easy four marks if a continuous variable was chosen, and the er...er ideas taught. Comparisons (best / worst) are only a match to 2 marks.

Aspect D: This is about explaining why it happened and often little evidence was seen for Centre awards. Some seemed to be using patterns and trends (Aspect C) for claimed matches. For 2 marks a simple explanation is needed and for 3 or 4 some simple science ideas.

Examples: Dissolving at different temperatures: 2 marks for heat makes the water move more. For 4 more heat means more particle collisions. Craters: 2 for larger objects are heavier. 4 needs a link to larger masses have more force (or acceleration).

There was a return to investigational experiments of the type “Does the height a meteor hits the earth affect the size of the crater?”, “Does the rate of reaction depend on the surface area?” “Does the mass added to an elastic band affect the how much the elastic bands stretches?” but in a lot of the tasks Aspect D, **Interpreting the data,** proved difficult to assess. This should not be a restatement of the trend or pattern which is Aspect C but requires the candidate to relate the trend or pattern to the relevant science. Sensible ideas for explaining the pattern can score 2 marks but for more marks some basic science ideas are needed. Common sense ideas might lead to 2 marks.

Aspect E, **Reviewing the method,** also proved problematical. It required candidates to comment on how suitable the method used was and how it affected the quality of the data collected. Ideas for improvements were not part of the criteria so did not count. Also some centres were awarding high marks for saying repeat when they already have a good set of results. The data had to be linked to quality.

If the Practical Task is a collaborative effort then it would be useful if centres annotated work so that an individual’s contribution is identified.

A list of Practical Tasks that have been seen in 2015:

- “Craters” (was the most popular investigation).
- Rate of reaction between different size pieces of magnesium (same mass so different surface area) and hydrochloric acid.
- Rate of reaction between magnesium and acid of different concentrations.
- Investigating the effect of ‘height’ and ‘weight’ on the size of craters.
- Investigating the effect of exercise on pulse rate (a very simplistic exercise that is still used but beware or over marking because of the simplistic nature).
- Investigating the rise of bread dough and the amount of baking powder added.
- Investigating the strength of plastic used in making plastic carrier bags.
- Investigating how to make an electromagnet stronger.
- Relating stretching force to extension and thickness for elastic bands.
- Investigating the insulation of various materials and keeping something cool (t is difficult to find a pattern if discrete materials are used - better to use different thicknesses of the same material).

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The Practical Task on the OCR website was not seen this year but perhaps next year it will be used by centres – the amount of fat in milk with a number of different "milks" used.

Aspect E: Not done well by many. This is about the method used and the data collected. For 1 or 2 marks there needs to be a relevant comment – it could be about whether the best equipment was selected, or the most precise measuring device, or any comment about how well the method worked (it's often easier to state a problem here). Something simple can match 1 or 2, but for 3 or 4 it needs to be about how this affected the data. One way to do this is by looking for results that do not fit the pattern and suggesting a reason why this might have occurred.

Whatever Practical Task is chosen the centre should check that it is appropriate for their candidates and that they have the resources for their candidates to tackle the task. The most important question to ask is "Can Aspect C be fully answered?" i.e. is there a trend or pattern that can be found? The variables, therefore, should not be discrete ones and more than three results (preferably five) to obtain a pattern.

3. Administrative Issues

The moderation of centres in 2015 was final moderation and centres were contacted by OCR with the name of their moderator and the numbers of the candidates whose work made up the sample to be sent to the moderator.

A list of what is required in 2016 from a centre is:

1. A Centre Authentication Form (CAF).
2. A photocopy of the Candidate Record Card (CRC) for each of the candidates in the sample selected correctly totalled for all sections and with the final marks transferred to the cover sheet. **This must be checked carefully.**
3. ALL marked End-of-Item tests for the requested candidates arranged in test order.
4. One Practical Task representing each requested candidate's best total mark with the completed cover sheet stapled to the front.
5. The final mark should be rounded down and transferred to the MS1, a copy of which should be included (or a copy of the electronic version).

It would be useful to the moderator if the following pieces of information were also supplied:

1. A headed piece of paper with the name of the teacher responsible and preferably including **an email address** as well as a telephone number and centre address.
2. A letter stating how standardisation was carried out in the centre and this may be included on the headed paper. This is especially useful if there is more than one teacher involved or more than one set of candidates.
3. It is best if work is held together, e.g. with a single treasury tag. Some were not held together well, resulting in stuff falling out, and some so were so well bound, they were difficult to separate for checking.

After moderation all the work will be returned to the centre except for the work of candidates that is retained for use by OCR in Awarding, Archiving and Training.

When the results are sent to centres in August they will also receive:

1. A copy of the Moderator's Report.
2. Any adjustments made to the points totals.

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Moderation procedure

Internal moderation should take place in centres before submission to the moderator. A piece of headed notepaper should contain information to say how this internal moderation has occurred even if it states that there is only one teacher and the marks are checked by the Head of Department and preferably the email address of the teacher responsible.

Problems with Administration

The Centre Authentication Form (CAF) must be included with any coursework from a centre to a moderator. Part of internal moderation within a centre should be checking that marks have been correctly added and transferred to the Candidate Record Cards as working documents throughout the course. Filling these in at the last minute can lead to errors. Many of these errors and omissions remain similar to those noted over previous years:

- The centre not sending all the End-of-Item tests as well as the Practical Task.
- Not enclosing a covering letter with the sample giving the name of the contact teacher or not saying in the covering letter how internal standardisation was carried out (if the course is taught by one teacher then the letter should simply say this).
- Not putting candidate names or candidate numbers on tests or assessed work which causes serious problems over identification of work.
- Submitting End-of-Item tests for moderation that had not been entered on a Candidate's Record Card, or had not been marked.
- The electronic version of the Candidate Record Card has a box on the front cover in which the number of End-of-Item tests is included.
- Incorrect totalling of points for End-of-Item tests on page 4 of the record card.
- Rounding-up the final total of End-of-Item test marks and/or final total of can-do tasks to whole numbers rather than to one decimal place.
- Not submitting practical tasks.
- Not rounding down the final mark.
- Counting more than 35 End-of-Item tests. Candidates can take more than the 35 tests up to the maximum of 39 but only the best 35 are counted.
- Not counting the best 10 Can-do tasks (or counting more than 10).
- Not putting forward the Practical Task as a question or using discrete variables. It is difficult to award marks under Aspect C if there is not an identifiable trend or pattern.
- The End-of-Item tests must be marked in red.
- Allowing a candidate to take a test more than once. Only the original mark from the first undertaking of the test will be counted.

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Candidate Record Card

Please note that there is an electronic version of the Candidate Record Card which automatically adds up the marks and converts them to points but please make sure the centre uses the version that has a box on the front cover that indicates the number of End-of-Item Tests taken.

If the Centre does use the electronic version of the Candidate Record Card and then adds marks at a late stage please make sure this is done electronically. If marks are just added to the sheet by hand the totals must be checked manually.

The latest revised version can be downloaded from the link, please refresh your cookies to ensure you are downloading the latest version.

http://www.ocr.org.uk/Images/81816-candidate-record-card-interactive.pdf

R591 and 2016

The Specification content includes 39 End-of-Item Tests

- 13 Biology
- 13 Chemistry
- 13 Physics

The Assessment Components

- End-of-Item Tests 70 points
- Can-Do Tasks 10 points
- Practical Task 20 points

Final certification is as follows:

(All mark schemes have been written to address the following targeted thresholds:)

- Entry Level 1 40 points
- Entry Level 2 60 points
- Entry Level 3 80 points

The End-of-Item Tests are converted to points as follows:
A maximum of 35 can be “counted” and they have 15 marks each. Each End-of-Item Test has a maximum of 2 points and the overall weighting is 70%. The marks are converted to points as follows:

Marks	Points
12 – 15	2
8 – 11	1.5
5 – 7	1
2 – 4	0.5

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Note that the marks to points are different to the previous R482 tests which should not be used. If the specification has been taken over a number of years and R482 tests have been used at the start then the conversion of marks to points should be as in R591.

The Can-Do tasks have been arranged as 1 mark, 2 mark and 3 mark tasks and the best 10 count. Therefore the maximum mark is 10 x 3 = 30 marks and this is divided by 3 to give the maximum 10 points.

No marks are awarded for a task only partially completed.

The Practical Task is a question that the caniddates are given to answer and they will need to:

- plan a procedure to arrive at an answer
- collect and display appropriate data
- process the data and identify trends
- interpret the data and link it to the science
- comment on the data and the procedure

The Practical Task will be teacher devised with some exemplars provided and

- are teacher assessed
- have five defined Performance Descriptions
- are each marked from 0 to 4
- have a total marked out of 20
- are directly converted into points

Some innovative Practical Tasks were in evidence this year such as:

- An investigation to find out the effects of adding varying amounts of bicarbonate of soda to bread dough and the height rise before eating the bread.
- Does a candle burn longer in a larger beaker? This was felt to be too simplistic an exercise.

Again in evidence this year there were a large number of digital photgraphs used. These were very useful in showing how the investigation was carried out but should not include a photograph of the candidate.

There are two options for entry R591/01 and R591/02. Please note that R591/01 is to use the Repository option where all the candidates' work needs to be scanned by the Centre.

Comments on End-of-Item Tests

There are 39 End-of-Item Tests each with about 4 questions.

There are 39 of these Tests per year and the course may take more than one year so a particular cohort of candidates could have answered questions from up to 5 x 39 End-of-Item Tests.

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Training 2015 - 2016

There will be half-day Accreditation training meetings taking place every year and there is a charge for attendance. There will be a repeat of the R591 meetings and details are available online from the OCR website www.ocr.org.uk. Click on Training and then Science (not on Entry Level Basic Skills). Also available (free of charge) are the booklets 'Distance Learning Support for Accreditation' and 'Practical Activities Support'. Copies of both can be obtained from OCR, 1 Hills Road, Cambridge, CB1 2EU.

The training events for 2015 – 2016 are proposed as follows:

Live online training course:

OCR Entry Level Certificate in Science (R591): Feedback on internally assessed units
Date: Wednesday 11 November 2015

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OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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Head office
Telephone: 01223 552552
Facsimile: 01223 552553

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