

# **Report on the Components**

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**June 2008**

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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 syllabus 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 (R482)

#### REPORT ON THE COMPONENTS

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## R482 ELC Science

### Introduction

**Please note that the deadline of 9<sup>th</sup> March is for centres to send material to their moderator. The work should include examples of the Study of a Science Topic and a Data Analysis Task in order for the moderator to return an interim report form and then the centre can amend marks accordingly before the final submission of total points by the 15<sup>th</sup> May. The overall points should be rounded down.**

The new R482 specification has proved to be a success after only one year. This must be due to the popularity of the course and the training events that have taken place around the country. The possibility of using the Study of a Science Topic in Gateway Science or in Twenty First Century Science has also not escaped the notice of centres who have also double entered candidates for Entry Level Science and GCSE Science.

Please note however, that the Gateway Science writing frameworks do not cover the same criteria as Entry Level Science and using these unadapted could place extra demands on candidates and reduce the ability to score well.

Accreditation meetings continue to take place every year and there is no charge for attendance. There will be a repeat of the R482 meetings and details are available on line from the OCR website [www.ocr.org.uk](http://www.ocr.org.uk). Click on *Training* and then *Science* (not on Entry Level Basic Skills).

The training events for 2008 are proposed as follows:

Date				
Thursday	25 <sup>th</sup>	September	LONDON	OSCA101
Thursday	25 <sup>th</sup>	September	BIRMINGHAM	OSCA102
Friday	3 <sup>rd</sup>	October	EXETER	OSCA103
Tuesday	7 <sup>th</sup>	October	NEWCASTLE	OSCA104
Thursday	6 <sup>th</sup>	November	NOTTINGHAM	OSCA105
Thursday	20 <sup>th</sup>	November	LEEDS	OSCA106
Thursday	4 <sup>th</sup>	December	MANCHESTER	OSCA107
Tuesday	13 <sup>th</sup>	January	BIRMINGHAM	OSCA108
Friday	16 <sup>th</sup>	January	LONDON	OSCA109

The popularity of the course is indicated by the entry numbers and this year 7532 Candidates were entered from 891 Centres

### Moderation procedure.

Internal moderation should take place in Centres before submission to the Board's moderator.

A disadvantage with this early moderation and the production of an Interim Report is that entries for Final Certification will not all have been processed by OCR and moderators will be working with the Provisional entries submitted by Centres.

The one major advantage is that errors can be corrected before final submission of marks.

## Administration

One problem again this year appeared to be the omission of the Centre Authentication Form (CAF). This form *must* accompany any coursework from a Centre to a moderator. Another problem that still arises is the late entry from Centres. Many Centres made provisional entries and then did not make final entries. This increased the workload for moderators in chasing up non-existent work.

Moderators continued to send out letters to Centres early in the moderation process pointing out where administration, particularly arithmetic, was not correct (form L3). Sometimes this was from Centres in which the marking of tests and Study of Science Topics and Data Analysis Tasks was otherwise exemplary.

Part of internal moderation within a Centre should be checking that marks have been correctly added and transferred. Centres should use 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.

- Delayed submission of the sample of work, even after being contacted by the moderator.
- 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 on tests or assessed work which causes serious problems over identification of work.
- Submitting tests for moderation that had not been entered on a Candidate's Record Card, or had not been marked.
- Incorrect totalling of points for End-of-Item tests on page 4 of the record card.
- Rounding 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 Study of Science Topics and Data Analysis Tasks for the selected candidates.
- Not rounding down the final mark.
- Sending the moderator copies of the MS1 in May. It is not necessary to send this to the moderator, just to OCR.
- Counting more than 30 End-of-Item tests. Candidates can take more than the 30 tests up to the maximum of 39 but only the best 30 are counted.
- Not counting the best 8 Can-do tasks (or counting more than 8).
- Not posing the Study of a Science Topic as a question. It is difficult to award marks under Aspect C if the Study of a Science Topic task has not been posed as a question.
- Sending the original of the Candidate Record Cards. Photocopies should be sent as they will not be returned and Centres need to refer to the originals when the Interim Report Forms come back, and these may point to errors.

In 2009 the Centre **must send**:

1. Centre Authentication Form (CAF)
2. A headed piece of paper with the name of the teacher responsible and preferably including an email address as well as telephone number and Centre address
3. A letter stating how standardisation was carried out in the Centre
4. A **photocopy** of the Candidate Record Card (CRC)
5. Marked examples of the Study of a Science Topic
6. Marked examples of Data Analysis
7. ALL marked End-of-Item tests for the six chosen candidates

### **End of Item Tests**

The 'colour' of End-of-Item tests that Candidates take depends on the year in which they start the course, and they should not normally use a mix of colours. As expected, moderators received mostly blue tests this year corresponding to Candidates starting the course in September 2006.

Moderators take and remark a sample of 6 tests per Candidate selected 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 tests closely following the published mark scheme 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.

Errors that did occur with the assessment of tests included

- Marking the tests in colours other than red (especially green, - used for moderation).
- Marking 'list' 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 test on the record card
- Recording a mark for a test not sent as part of the portfolio

On rare occasions, teachers may consider that an answer a student has given is correct but is not covered by the mark scheme. It is acceptable to mark such an answer as correct but there should be annotation on the script to explain why the mark has been given - even if only *bona fide* (benefit of doubt).

### **Can-do Tasks**

Some Centres had students completing several End-of-Item tests and Practical Activities but ticked very few Can-do tasks; this was even though the Skills Assessment work carried out must have involved the Candidate demonstrating some tasks successfully

Only the best 8 tasks can be chosen so the maximum is 8 three point tasks = 24 which is then halved to give a total out of 12 points. Low level tasks are useful for training and allowing candidates to show their progress, but opportunities need to be given to allow candidates to perform some of the higher level tasks.

### **Skills Assessment**

In attempting to take the course in one year, some centres did not provide the candidates with the opportunity of gaining points for the two Skills Assessments prior to moderation taking place. Some centres had completed no Studies of a Science Topic and others had not completed a Data Analysis task whilst a few had done neither.

*Please send in samples of each, even if they may not be the final piece of work, as the moderator needs to see how these have been marked by the centre for the Interim Report.*

### **Study of a Science Topic**

The commonest Study of a Science Topic was "Is chocolate good for you?". This may be due to the fact that this topic had been mentioned at training events. The commonest faults, however, were omitting the references or not finding any scientific evidence for and against to allow a conclusion to be reached. Topics with titles that ask no questions, such as 'Pandas' make it hard to find science patterns in data, and this makes it difficult to reach a suitable conclusion based on the evidence collected.

## *Report on the Components Taken in June 2008*

In Aspect B we are looking for patterns and it is possibly easier to do so when data is used, but this can also be in the form of commenting on the information found.

Best practice is to allow candidates a limited free choice, and then allow some research time to see if they can find any information 'for and against'. Research can be from science books, library books, newspapers, or the internet. Candidates need to be encouraged to find suitable visual material, such as science diagrams, charts or data along with factual information. Once the research part has been done, candidates need to write their report. This could be done using IT (word-processed, powerpoint, printing out to make posters, or handwritten).

Where material has just been 'cut and pasted' from internet sites, teachers should annotate these sections as such. It is expected that marking will show where awards have been made, and this is best done using the codes, such as C=2 if a conclusion has been reached, but without using the data found.

Some suitable titles are:

Should whale hunting be banned?

Do supermarkets use too much packaging?

Should smoking be banned in public places?

Is junk food linked to obesity?

Is it okay to diet?

Is sunbathing good or bad?

Is drinking alcohol harmful?

Should we put endangered animals into zoos?

Should mobile phones be banned for under 8's?

Or more generally – Are cell phones dangerous?

Is the climate changing?

Is Pluto a planet?

"Car Safety" as a Study of a Science Topic would be better approached as "Does speed kill?".

"Petrol versus Diesel" would also be better posed as a question.

"Sunbathing", "Kilauea Tsunami" and "Mobile Phones" are not suitable as they stand but also would need to be set as a question so that Aspects B and C, mark descriptor 4, can be reached if relevant data can be found and utilised.

Candidates are able to get better and easier access to Aspects B and C if the topic is posed in the form of a question. For example: "Are we doing enough to preserve the wild tigers?", "Is chocolate really good for you?", "Was the government right to ban smoking in public places?". If candidates are given Topics in this format they can use their research to answer the question and to justify it.

### **Data Analysis**

Many Centres used the whole class to collect data – and craters and electromagnets proved popular, but few surveys were seen.

It would be useful for centres to annotate work so that an individual's contribution can be identified and this is most important when the data is collected by more than one candidate.

Best practice is to use a class activity where candidates can collect data, and then share it – making an individual decision about how much, and what to use. This would allow full access to the Aspect A marking criteria of selecting results, plotting charts, and for Aspect B of stating a trend. Tasks which involve science and use equipment are preferable, so that a trend can be explained using science ideas, and comments on the reliability of the data can be made.

## Report on the Components Taken in June 2008

Many of the Practical Activities that used to be carried out for 3970 are suitable for Data Analysis and an extract of the list provided for 3970 may be useful:

- Investigate the effect of exercise on pulse rate. (Beware of over-marking because of the simplistic nature.)
- Which foods contain most energy? Which foods contain most water?
- Investigating the effect of exercise on breathing. (Again beware of the simplistic nature of the experiment leading to over-marking)
- Investigation of the flow of gravy with different temperatures, or algal thickening.
- Investigate the effect of temperature or pH on enzyme activity.
  
- Investigation into the stretchiness of fibres.  
Investigating the strength of fibres.
- Investigating the strength of 'concrete' beams.
- Investigate the strength of paper bridges.
  
- Investigate the effect of length or thickness of wire on electrical current.
- Investigate the size of current needed to burn out a wire.
- Investigate how to make an electromagnet stronger.
- Relating stretching force to extension and thickness for elastic bands.
- Investigate the effect on the shadow of changing the relative positions of a screen and a puppet.
- Investigate the effect of speed and 'weight' on the size of craters made by falling objects.
- Find the effect of using packaging materials of different types to keep a small beaker of water warm.
- Investigate the insulation of various materials for keeping something cool.
- Investigate the effect of friction on stopping distance.

There were a number of discontinuous variables used for the Data Tasks, such as a *type of bridge*, and these prove difficult to mark as it is impossible to find a trend. Similarly, *the type of crisp* might be an interesting activity but it is not suitable as a Data Task.

# Grade Thresholds

Entry Level Certificate

June 2008 Series

## Component Threshold Marks

Component	Max Mark	3	2	1	U
1	100	75	50	25	0

## Option/Overall

	Max Mark	3	2	1	U
Percentage in Grade	100	22.36	41.24	30.42	5.98
Cumulative Percentage in Grade		22.36	63.61	94.02	100

The total entry for the examination was 7533.

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