



GCSE EXAMINERS' REPORTS

GEOLOGY

SUMMER 2012

Statistical Information

The Examiners' Report may refer in general terms to statistical outcomes. Statistical information on candidates' performances in all examination components (whether internally or externally assessed) is provided when results are issued.

Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

GEOLOGY

General Certificate of Secondary Education

Summer 2012

Chief Examiner: Dr. Alan Seago

	Entry	Max Mark	Mean Mark
On-screen Examination	1067	100	59.5
Controlled Internal Assessment	1067	50	34.3

On-screen Examination

The second year of the on-screen examination ran very smoothly with virtually all centres being able to complete on-screen as intended. Feedback from centres suggested that the candidates enjoyed the experience, especially the quality of the diagrams and style of questioning. Candidates were not confused by the use of photographs of microscope thin sections and seemed to appreciate the greater accuracy and quality, compared with hand drawn sketches.

It is pleasing to report another successful year for centres and that the cohort included some exceptional candidates. The examination is evolving from the foundation tier style of the past, e.g. this year's multiple choice questions were made a little harder by increasing the number of options in order to provide a more challenging test for the higher ability candidates. This resulted in a slightly lower mean mark than in 2011. The ability of the candidates seemed very similar to that of last year. Candidates at the lower end of the ability range showed positive achievement and almost all gained a reasonable number of marks on each question.

General Advice

Questions should be read carefully, e.g. Section 4 Question 14 - a significant number of candidates read the question as 'coral' rather than 'coal' and lost a lot of marks. It was evident that candidates found the extended writing more challenging than the other styles of questioning. Poor grammar often detracted from the clarity of the answer. Candidates should be encouraged not to rush through multiple choice questions as all should be able to complete the examination well within the time limit.

As the majority of the paper is now machine marked it is not possible to make detailed comments about every question and the report will concentrate on those questions which were marked by examiners.

Section 1

This section was relatively low scoring demonstrating some lack of knowledge and interpretive skills in structural and metamorphic geology. Some of the low scoring can be attributed to Q.7.

Q.1 Candidates had difficulty picking out the downthrow side.

Q.2 and Q.3 The usual confusion by some candidates over normal/thrust/tension/compression.

Q.7 Most candidates found this question very difficult with only the most able achieving three marks. Many candidates tried to explain the age of the rocks in the section in terms of superposition (erroneously) or cross cutting relationships (no evidence) rather than using the evidence of folding and metamorphism.

Section 2

Very well answered. Candidates have a good basic knowledge of global warming and the potential effects it can have on sea level change. Some candidates misinterpreted Figure 4 as the sea level having dropped (rather than the tide being out).

Q.10 Able candidates could clearly describe and use the evidence to determine whether sea level had fallen or risen. Answers were not always clear and only the more able achieved all three marks. Approximately equal numbers of candidates chose to explain the raised beach/submerged forest.

Q.13 Most candidates explained the links between carbon dioxide level and changes in sea level clearly.

Section 3

Surprisingly quite a low scoring section given that plate tectonics is a popular topic, which is familiar to all candidates.

Candidates were able to answer Q.1 and Q.2 using either the resource or their knowledge so a wide variety of answers were acceptable.

Q.3 Confusion by some candidates over the types of plate boundary and the relative movement along the San Andreas Fault.

Q.5 Poorly answered with many candidates unable to envisage the three dimensional nature of the subduction zone as depicted in the map and the question stem.

Section 4

Generally well answered.

Q.8 Some errors in the interpretation of the graph.

Q.9 Some candidates either did not refer to the Data Sheet or did not read the question carefully enough and chose the 'Palaeozoic'.

Q.14 A disaster for those candidates who inexplicably read 'coral' for 'coal'. Those candidates who answered the question asked could usually come up with two or three environmental factors but the quality of responses was not as good as it would have been three or four years ago.

Section 5

The weakest of the responses were seen in this section. Geotechnics is new to this specification but landfill sites should be a familiar topic for candidates.

- Q.1 Some candidates did not recognise the structure as a syncline.
- Q.2 Some candidates identified one advantage of the structure but this was generally poorly answered. Many responses were very vague making the question difficult to mark.
- Q.4 A number of candidates repeated information given in the question and little explanation was included. Candidates seemed unable to apply basic principles to what might have been a new situation to them.
- Q.7 Surprisingly few candidates had any basic knowledge of landfill sites or the geological principles behind their construction.

Section 6

Very well answered. A traditional question involving interpretation of sedimentary and igneous rocks in an exposure and unravelling the geological history.

- Q.16 Some errors in the geological history mainly involving the 'intrusion of the igneous body' or 'uplift, tilting and erosion'.

Section 7

Quite well answered but maybe higher quality answers were expected due to the overlap with Geography specifications.

- Q.1 A lot of 'V' shaped valleys were seen.
- Q.5 Freeze-thaw weathering was clearly described.
- Q.8 and Q.9 Some candidates did not recognise the link between the two rocks. Vague answers such as 'stronger', 'weaker' or 'softer' gained some marks but the desired reference to hardness values from the Data Sheet or cleavage and use of terminology such as 'hydrolysis' was rarely seen.

Controlled Internal Assessment

WJEC and the Moderators recognise the effort and enthusiasm that Geology teachers invest in their candidates, which certainly shines through in the quality of work that they produce. Sixty two centres submitted coursework for moderation.

Administration

The administration and moderation of the coursework samples ran smoothly once again this year. The Moderators are very grateful for the efficient organisation and punctuality of the majority of centres. The system of task accreditation assisted centres by highlighting possible problems at an early stage. The use of inappropriate activities was not entirely removed but this is now a problem at only a very small number of centres.

Some centres did not complete a Task Accreditation Form for 2012. All centres should ensure that this form is submitted at least one month before the field work for the 2013 assessment is to be carried out.

Points which can be emphasised as a result of this year's submission include:

- Copy of Task Accreditation Form to be included when the sample is sent to Moderator;
- Where a Centre has some candidates who have completed Option 1 and others Option 2, this should be made clear on the GL2 form. Both options should be included in the moderation sample, even though this may require additional candidates' work being added;
- Mark totals should be double-checked and great care taken to ensure that these are correctly entered into the online mark input system.

Packaging Coursework

When packing the coursework samples, please try to reduce bulk and weight as far as possible. A4 hardback ring binders should not be used. It is helpful (and cheaper for centres) to use slim plastic folders that can be packed efficiently. The use of large and heavy field notebooks containing only a few pages of assessed material is to be discouraged. Please consider detaching or photocopying the relevant pages of field notes and attaching them to the front of the report e.g. with a treasury tag.

Option 1 Virtual Fieldwork

A small number of centres attempted this option. Centres experiencing difficulties with Option 2 might consider switching to this option in the future. It was pleasing to see that a number of Centres who had entered candidates for this option in 2011 gained enough confidence to devise and carry out their own field-based task this year.

Candidates handled the data efficiently and logically and demonstrated their geological skills well. The observations in the field notes were accurate in the main and clearly recorded, particularly the specimen descriptions. However, one or two centres had no distinguishable field notes. Some centres used apparatus not allowed/specified in the instructions. In the analysis the graph of crystal size was accurately drawn and good use was made of geological cross sections in some cases. 'Planning an extension' is challenging for centres who attempt this option.

Marks awarded were often on the generous side and it was felt that in order to justify the higher marks, candidates should have included some of the following additional evidence:

- fully labelled field sketches
- annotation of the photographs
- a summary geological history (in the form of a table)
- more detailed planning of the extension
- cross sections across the map
- high quality sketching and interpretation of Photograph 7

Option 2 Actual Fieldwork

There were some excellent field investigations seen, which are being perfected by the centres and well suited to the specification. The best investigations allowed candidates to demonstrate essential field skills (such as rock descriptions, field sketching, fossil identification, dip and strike and sedimentary logging) and perform suitable analytical techniques on the data collected. It is good to see geological field skills being demonstrated with a high degree of competence. The work produced by the best candidates would be a credit to students at a higher level and Centres are congratulated on the continuing quality of work submitted by their candidates.

A mixture of field tasks was undertaken with a rough break down being investigations into:

- interpretation of sedimentary environments
- mapping exercises leading to geological sections and history
- structural analysis such as assessment of the degree of crustal shortening and joint analysis
- fossil studies
- clast analysis of pebble beds and interpretation of environment
- igneous structures e.g. dykes

Centres are to be congratulated on the variety of opportunities given to candidates in areas of outstanding geology such as the Tout Quarry (Isle of Portland), Lulworth, Cornwall, Traeth Bychan, Llanddwyn Island (Anglesey), Thurstaston (Wirral), Arran, Ogmorie, Sully (Barry), Trefor (Llangollen), Crookdale Crag (A6 Shap), Howick Bay (Northumberland), Salt Hill Quarry (Clitheroe), Sedbergh, Millers Dale (Derbyshire), Shropshire, Cudmore Grove (Essex) Amroth (Pembrokeshire), Woolhope (Hereford), Isle of Man, Sussex Coast, Tedbury Camp, Portishead, Kilve, Doniford Bay (all Somerset) and Hunstanton. Other centres used a variety of local geological locations.

However centres need to take note of the following as a result of this year's submission.

1. Some centres do not seem to be fully aware of the assessment criteria. Planning was incorrectly assessed as part of the field investigation carried out by the candidate and devised by the Centre. The specification clearly states that the controlled assessment is a directed investigation planned by the centre and **planning is assessed** as an **extension** of the Centre planned investigation. The main investigation should be planned in detail by the centre and the plan provided to the students who then **plan a further investigation** based on the model they have used.
2. Some candidates had little or no data in the field notes yet were able to produce lots of data in a report.
3. In a number of cases, opportunities for the collection of basic field data have been missed. Observations such as rock identification, grain size, sorting, direction of cross-bedding, clast roundness/orientation, field sketches, dip and strike measurements and sedimentary logs should normally be part of every investigation (where appropriate).
4. Some thought has to be given at the data collection stage as to whether the form of the data being collected is suitable for processing and analysis, e.g. histograms, cross-sections, logs, rose diagrams, maps and geological histories.
5. There is no need for candidates to repeat observations made in the field notebook within a report unless it contributes significantly to the analysis. It is more advantageous for candidates to concentrate their efforts on the analysis and evaluation.
6. It is strongly recommended that candidates practise field sketching from photographs or slides prior to fieldwork being carried out. The field notes provide the basis for the report and should be considered an important part of the investigation.
7. Evaluation is a difficult skill which requires more attention within the teaching scheme. The emphasis of this skill has now changed to an evaluation of the methods of data collection, which includes an awareness of the accuracy of the equipment and methods used for making the measurements. **Evaluation is not a list of excuses.** Simplistic statements regarding lack of time and bad weather do not form the basis of an evaluation with any merit.
8. Presentation of work was generally good and many centres have found a suitable way to allow candidates to use ICT in the production of their reports without them being able to access their work outside the classroom. This will not be possible for all centres and well-presented hand-written work is perfectly acceptable. Quality rather than quantity is to be encouraged. The reports should be concise, relevant and clearly focused. Please dissuade students from including large amounts of photocopied material from secondary sources.
9. Some centres did not heed the advice given in previous Moderators' Reports.
10. Centres using tuition at Field Studies Centres should make sure that staff are fully conversant with the assessment criteria and regulations for report writing.

Assessment

Many centres are to be congratulated on the accuracy of their assessment so that the need for scaling is progressively being reduced. There are four main reasons why scaling has to be applied.

- Awarding of marks on inappropriate tasks e.g. lack of focus for the investigation or lack of opportunity for the candidates to collect suitable data. Advice is given to centres at the Task Accreditation stage.
- Reliable rank order but marks generous or severe. This can be rectified by scaling but scaling is a crude instrument and can be disadvantageous to some candidates.
- Failure to recognise that candidates have not met some aspect of the specification, e.g. not planning an extension to an investigation already carried out. This can be avoided by careful reading of the specification.
- Failure to show how criteria have been achieved by annotation of candidates' work. Accurate but brief annotation is beneficial to the candidates.

Support

The Moderators are always willing to provide as much support as is requested by the centre. Centres should be aware that there is help available from the WJEC. Moderators' Reports on the current moderation process are sent out to centres. Centres are urged to act on any recommendations in the Moderators' Reports. The Moderators do not enjoy moderating work which achieves low marks as this is going to be disappointing for the centre and the candidates, especially when there is often so much suitable geology on the centre's doorstep, which, with a little help and guidance can result in a successful submission.

The fieldwork proposal for Option 2 should be submitted to me at the following e-mail address a.seago@open.ac.uk or to the subject officer Jonathan Owen (jonathan.owen@wjec.co.uk) at WJEC at least one month before undertaking the field work. Details of the specification can be downloaded from the WJEC website where the appropriate forms and guidance for teachers can also be found. For further support contact Jonathan Owen or the subject support officer at WJEC (sarah.price@wjec.co.uk). Centres can also contact me direct for advice at the above email address.



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