GCE AS EXAMINERS' REPORTS

GEOLOGY
AS

SUMMER 2023

Introduction

Our Principal examiners' reports offer valuable feedback on the recent assessment series. They are written by our Principal Examiners and Principal Moderators after the completion of marking and moderation, and detail how candidates have performed.

This report offers an overall summary of candidates' performance, including the assessment objectives/skills/topics/themes being tested, and highlights the characteristics of successful performance and where performance could be improved. It goes on to look in detail at each question/section of each component, pinpointing aspects that proved challenging to some candidates and suggesting some reasons as to why that might be.[i]

The information found in this report can provide invaluable insight for practitioners to support their teaching and learning activity. We would also encourage practitioners to share this document – in its entirety or in part – with their learners to help with exam preparation, to understand how to avoid pitfalls and to add to their revision toolbox.

Further support

Document	Description	Link
Professional Learning / CPD	Eduqas offers an extensive annual programme of online and face-to-face Professional Learning events. Access interactive feedback, review example candidate responses, gain practical ideas for the classroom and put questions to our dedicated team by registering for one of our events here.	https://www.eduqas.co.uk/home/professional-learning/
Past papers	Access the bank of past papers for this qualification, including the most recent assessments. Please note that we do not make past papers available on the public website until 6 months after the examination.	www.wjecservices.co.uk or on the Eduqas subject page
Grade boundary information	Grade boundaries are the minimum number of marks needed to achieve each grade. For unitised specifications grade boundaries are expressed on a Uniform Mark Scale (UMS). UMS grade boundaries remain the same every year as the range of UMS mark percentages allocated to a particular grade does not change. UMS grade boundaries are published at overall subject and unit level. For linear specifications, a single grade is awarded for the overall subject, rather than for each component/unit that contributes towards the overall grade. Grade boundaries are published on results day.	For unitised specifications click here: Results and Grade Boundaries (eduqas.co.uk)

Exam Results Analysis	WJEC Eduqas provides information to examination centres via the WJEC secure website. This is restricted to centre staff only. Access is granted to centre staff by the Examinations Officer at the centre.	www.wjecservices.co.uk
Classroom Resources	Access our extensive range of FREE classroom resources, including blended learning materials, exam walk-throughs and knowledge organisers to support teaching and learning.	https://resources.eduqas.co.uk/
Bank of Professional Learning materials	Access our bank of Professional Learning materials from previous events from our secure website and additional pre-recorded materials available in the public domain.	www.wjecservices.co.uk or on the Eduqas subject page.
Become an examiner with Eduqas.	We are always looking to recruit new examiners or moderators. These opportunities can provide you with invaluable insight into the assessment process, enhance your skill set, increase your understanding of your subject and inform your teaching.	Exam Marking jobs | Examiner & Moderator Vacancies From Eduqas

Subject Officer's Executive Summary

Each component had a similar structure to those in previous years. The performance of candidates on both components was similar to that previously seen, with the papers showing similar levels of accessibility. Questions requiring the use of mathematical skills were answered better in general across both components than in the past. The QER question in Component 1 and also in Component 2 question 6, were answered well, but that in Component 2 question 2 was less successfully completed, because of mis-identification of the rocks.

Areas for improvement	Classroom resources	Brief description of resource
Rock identification	**IGNEOUS ROCKS INTRODUCTION** **A SET OF PRESENTATIONS ON SEDIMENTARY ROCKS 1** **A PRESENTATION ON METAMORPHIC ROCKS**	Powerpoint presentations on igneous, sedimentary and metamorphic rocks

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COMPONENT 1 - GEOLOGICAL ENQUIRIES

Overview of the Component

Generally there was a good range of marks across all questions and the paper differentiated well. Candidates were comfortable with the exam style and process, with very few questions left blank. Overall, there is evidence that candidates may have lost marks due to lack of clarity rather than knowledge, with candidates often not fully answering questions, often inferring or lacking detail despite having answers that were heading in the right direction. Newer aspects to the course remain less well answered, such as Q3b and Q6b, where mathematical skills are being tested. That being said, there is a consistent improvement in the answers to these questions each year since the 2019 examination series. There was also a marked improvement in answers to the QER.

Comments on individual questions/sections

Q.1 This was generally well answered with the mean mark being 4.6 out of 7. Candidates were very confident in drawing textures of rocks. There was a range of answers to part (b) and candidates should look to make a clear geological point for each mark available.

Q.2 Question 2 was less well answered than Question 1 with a mean mark of 2.8 out of 7. Many candidates identified that the rock was igneous but many confused the dolerite with basalt or gneiss. Many could identify a mineral or the fact it was mafic but crystal size was not identified as readily (which likely explains why the rock was incorrectly named). In section (b) many candidates could explain that there was cross-cutting relationship between Rock Unit A and B, and therefore could explain why the candidate was wrong in their evaluation. Many candidates forgot to clearly evaluate (i.e. state that the student's evaluation is wrong). Candidates struggled to articulate the compositional reasons for why the two rocks are likely to be from different events, with several mentioning a mineral in one rock but not explaining how it is different from the other rock. When comparing it is important to detail points from both rocks, rather than explaining that Rock Unit A has quartz without saying what Rock Unit B is made of or stating that quartz is not present in B. A few candidates stated they could be from the same igneous event but are differentiated- these answers were awarded marks.

Q.3 Question 3 was generally well answered with a mean of 6.9 out of 12. Part (a) was generally well answered. There was a distinct minority that still struggled with scale and others that drew the external rather than internal features. There were a large minority of candidates that could not identify the pallial sinus.
Part (b) differentiated well with precision being important when drawing the graph. Not all candidates drew a histogram, with a number of line graphs drawn. Some candidates struggled with the scale and it is worth practicing using a range of scales.

Part (c) had a similar issue as Q2b, where candidates often stated facts but did not evaluate and clearly link their answers back to the question.
There were two possible approaches with this question. Candidates could evaluate the quality of the dataset, considering the lack of information (are the samples whole, is the dataset large enough, can we really tell?) and this approach generally received higher marks. Others approached it by using the evidence to argue whether it was a life or death assemblage. This received lower marks with many candidates often confusing the characteristics of the two assemblages.

Q.4 Question 4 was very well answered with the mean being 3.4 out of 4. Generally candidates could describe the observation with the copper coin with very few now just giving a Mohs hardness number. Most descriptions of observations were appropriate with most candidates choosing streak. A few candidates selected another hardness test for the second description which did not receive marks. Some candidates confused haematite with garnet.

Q.5 There was a considerable range with regards to the quality of answers produced by candidates with the mean being 6.6 out of 12. Part (a) was generally well answered, with the best answers clearly describing the trends and the changes across the 1000m of the transect.
Part (b) was less well answered with some candidates focusing on the sampling method (random or systematic) but not explaining the processes that they would undertake. Few candidates explained the sampling issues that would often be faced along a 1000m transect i.e. having to rely on where rock exposures are visible, and few candidates noted the need to measure along the longest axis. In part (c) there was a clear improvement in the answering of the QER, with candidates that took a systematic approach receiving the highest marks. This suggests candidates are becoming more confident with the QER style questions.

Q.6 Question 6 provided a wide range in the quality of responses, but the naming of both fault types did prove particularly difficult for the candidates. Like in previous years, there was a mixed response to the question concerning the relative movement of the hanging wall, but most were able to estimate a suitable angle for the fault plane. The calculation in part (b) was either fully answered correctly or not, with few receiving 1 mark. Some candidates would benefit from some map practice that involves scale use.

Q.7 As in previous years there was a considerable range with regards to the quality of answers produced by candidates but there was not the same link between individual centres and candidate performance, with a good range of results found in larger centres. Overall, the improvement seen in recent years has been maintained but not improved further, suggesting candidates are becoming more confident in the style of map and cross-section drawing, but such tasks are still giving an appropriate level of challenge.
The most common errors included not having the boundaries E-C and C-D in the correct places on the right side of the fault to create a synform. Some candidates did not differentiate between the unconformable beds, the dyke and the pluton, and instead drew them all as a series of beds at 15 degrees. Very few candidates achieved the cross-cutting relationship mark. There were fewer candidates not using rulers or protractors than in previous years but there were still a notable number in this position. It should be recommended to candidates that they ensure beds are plotted as accurately as possible.

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COMPONENT 2 – FOUNDATION GEOLOGY

Overview of the Component

The general performance from candidates was higher than in 2022 on the paper. Overall, candidates are accessing the whole of the paper, with very few questions left blank across the cohort. The standard of AO1 was good, with candidates demonstrating a good level of core knowledge. However, generally, AO2 performance was not to the same standard. Many AO2 focussed parts of questions lacked enough geological explanation when giving the reasons for the evidence presented, such as Q2 (c) and Q3(d)(ii). Generally, candidate's mathematical skills were good, with candidates of all abilities being able to access marks on questions asking for calculations to be completed. Candidates looked to structure their QER answers in a logical manner. However, many candidates incorrectly identified rocks in Q2, and did not discuss the rock deformation in Q6 to be able to access the highest level.

Comments on individual questions/sections

Q.1 Overall, the question was completed well by students, having the highest facility factor of the paper.
Candidates demonstrated good knowledge of Goldschmidt's classification in part (a). The most common mistake was failing to identify the Core as the layer of the Earth that corresponds with Siderophile classification.
Most candidates completed the mathematical equations with accuracy producing the correct numerical result. However, some lost marks for failing to include the units as part of their answer.
In part (c) candidates identified the high density of the core and linked this to the density of Iron/Nickel. The most successful candidates also looked to discuss the average density of the Earth's layers given in Table 2 and compared this to the Earth's average density, however, this was the most commonly lost mark.

Q.2 Candidates found this question the most challenging on the paper. Most identified the rock type in part (a), and the principle of uniformitarianism in (d)(i). The drawing of the rock texture in part (b) showed a wide range of variation across all candidates. Many produced a crystalline texture, however, there were a lot of diagrams with incorrect crystal shapes.
In part (c) it was common that candidates identified that Figure 2d was a schist, and many correctly identified the location on Figure 2a. However, many candidates did not link the textural evidence of the rock to the correct location.
Many candidates identified at least one rock in (d)(iii) correctly, and linked its formation to the conditions it formed in. There were two common errors made in this question. The first was failing to identify that the laminations identified in Rock A made this a sedimentary rock (it was commonly misidentified as slate). The second was identifying Rock C as a granite and not a gneiss. Some candidates used the chiastolite labelled in Rock B effectively to discuss the geological setting it formed in, but many did not use this evidence effectively.

It was common that candidates approached this question by looking to identify each rock separately and then described the conditions it formed in. Higher scoring candidates discussed the link between the three rocks and how Rocks B and C could have formed from Rock A under different conditions.

Q.3 Question 3 was generally answered well and had the second highest facility factor on the paper. Candidates commonly answered parts (a) and (b) accurately. In part (c)(i) discussion of decompression melting was common. High scoring candidates highlighted that partial melting was occurring and linked this to the change of thickness of the crust. A common mistake was discussing that magma was forming deep in the mantle and then rising up and through the crust, instead of mantle rising due to the thinner crust, and then linking this process to magma forming. In question (c)(ii) many candidates identified both lava compositions, with the most common misidentification occurring for volcano B with candidates calling the lava type silicic. Textural descriptions of the rock in Figure 3c were overall good. The strongest candidates used clast size data alongside overall descriptive terms.
Many candidates identified the correct volcano in (d)(ii), with most discussing silica content and explosiveness. Fewer candidates linked this back to the texture of the rock in Figure 3c. The best answers had a natural flow to them, moving from the volcano, to the magma type, the characteristics of the magma before linking this to the evidence in Figure 3c.

Q.4 Most candidates identified the suture line on fossil L, although fewer linked the simplistic nature of the line to the goniatite, with misidentification as a ceratite common. The drawing of the suture line in (a)(iii) produced a range of diagrams. The best answers had deep saddles/high lobes and clear frilling throughout the suture line, compared to the weakest where lines lacked amplitude and were straight. Many candidates' drawings resembled a suture line found in a ceratite, with only frilled saddles.
Most candidates identified the brass-yellow mineral in Figure 4b as pyrite in (a)(iv). The best answers described the stages of fossilisation either through mineral replacement or moulds/casts. There were many examples of candidates mixing the two fossil processes together to create an answer that lacked one clear method of fossilisation.
Candidates' knowledge of zone fossils was good in (b)(i), and there was clear understanding from most candidates that Fossil M was younger than Fossil L in (b)(ii). When identifying the age of the three locations in Figure 4c, it was common for candidates to identify location 1 as the youngest due to cross-cutting relationships. Fewer candidates were able to use the dipping nature of rock units B and A to identify location 3 as being below location 2 and therefore likely to be older.

Q.5 Overall, candidates completed the mathematical elements of this question accurately. The most frequent errors came in (c)(i) with some miscalculations and failure to include the negative symbol present. Some candidates did not show their workings when requested and this impacted the amount of marks received.
The majority of candidates found part (a) challenging, with few drawing all four arrows correctly.
Many candidates were able to discuss the role of iron bearing minerals in (b)(ii), however, some discussed the alignment of the minerals instead of the magnetic fields of the minerals. The best answers described the impact of the Curie point on the magnetic fields, instead of simply naming it.
Part (c)(iii) was answered poorly overall. Many candidates highlighted the range difference between the two locations, however few discussed the geological reasons behind the variation in the ranges.

Q.6 Candidates answered parts (a) and (b) well, however, some identified the vertical nature rather than the linear shape of the dyke.

Many candidates found part (c) challenging. The best candidates focussed their answers on the fault's impact on the antiform and the vertical nature of the fault and its impact on determining the fault classification. Some candidates chose to identify reasons why the fault could not be the incorrect answers, and this was a valid approach.

Many candidates were able to identify one or two observations that could be used in part (d), however identifying three was not common. Some candidates did not link their observations to one of the igneous body types, instead they just stated what they would look for which lost them marks. Many candidates chose to bullet point their observations and this is a valid strategy.

Most candidates were able to access some marks on part (e) with at least one cross-cutting relationship used to highlight the age of some of the rocks. The most common steps missing were the two rock deformations. Strong candidates wrote answers either moving from oldest to youngest, or the opposite way around, identifying the next rock alongside the geological principle used to determine this. Some candidates discussed the how the age relationship of certain beds is unknown, and explanation of this was rewarded. Candidates producing a flow diagram of the sequence without explanation of the reasons behind their ordering, limited the overall mark band achievable.

Supporting you

Useful contacts and links

Our friendly subject team are on hand to support you between 8.30am and 5.30pm, Monday to Friday.
Tel: 029 2240 4253
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Qualification webpage: Eduqas AS/A level Geology

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[i] ***Please note that where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.***