



GCSE MARKING SCHEME

SUMMER 2024

**GEOLOGY - COMPONENT 1
C480UA0-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

GCSE GEOLOGY
COMPONENT 1 - GEOLOGICAL PRINCIPLES
SUMMER 2024 MARK SCHEME

Instructions for examiners of GCSE Geology when applying the mark scheme

1 Positive marking

It should be remembered that candidates are writing under examination conditions and credit should be given for what the candidate writes, rather than adopting the approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Worthwhile answers that meet the requirements of the question, but do not appear on the mark scheme are to be given credit.

2 Tick marking

Low tariff questions should be marked using a points-based system. Each credit worthy response should be ticked in red pen. The number of ticks must equal the mark awarded for the sub-question. The mark scheme should be applied precisely using the marking details box as a guide to the responses that are acceptable. Do not use crosses to indicate answers that are incorrect.

3 Multiple-choice marking

For all questions involving multiple choice (tick box) answers, where a candidate has ticked more than the required number of boxes, deduct 1 mark for each box which is wrongly chosen, to a minimum of 0. The answers to these questions are indicated with a * in the mark scheme. This applies to both on-screen and paper versions of Component 1.

4 Banded mark schemes

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. **Do not use ticks** on the candidate's response. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner. When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
1.	(a)	Weathering and erosion C Melting D Cooling and crystallisation B Deposition and burial A Recrystallisation E 1 or 2 correct (1) 3 or 4 correct (2) All 5 correct (3)	3			3		
	(b)	Volcanic island arc gr Antiform gr Thrust Fault ca Unconformity gr Earthquake triggering landslides ca Pyroclastic flow ca 1, 2 or 3 correct (1) 4 or 5 correct (2) All 6 correct (3)	3			3		
	(c)	(i) Garnet	1			1		1
		(ii) Any three (x1) from: <ul style="list-style-type: none"> • Crystalline / recrystallised • medium grained or size(s) quoted • foliated / schistosity • porphyroblastic or description of 	3			3		3
		(iii) $45/2 (1) = \times 22.5 (1)$		2		2	2	
		(iv) real size of min F = size of image of min F / magnification factor (1)		1		1	1	

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
	(v)	<p>Indicative content</p> <p>Schist-formerly clay rich sediment deposited slowly on seabed (shale) (reference to gradualism) Undergoes regional metamorphism in a subduction zone causing recrystallisation as schist very slowly- (gradualism) Schist is uplifted and eroded to form a plane of unconformity-slow process/long time interval for which there are no rocks evident- (gradualism) Sea level rise, deposition of turbidite Submarine avalanche rapid process involving deposition of poorly sorted sediment in deep water resulting in graded bedding- (catastrophism) Deposition of shale with laminations – slow process (gradualism)</p> <p>5–6 marks The answer refers to at least three of schist, turbidite, shale, unconformity and explains relative rate of processes. <i>There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant.</i></p> <p>3–4 marks The answer refers to at least two of schist, turbidite, shale, unconformity and explains relative rate of processes. <i>There is a line of reasoning which is partially coherent, supported by some evidence and with some structure. Mainly relevant information is included but there may be some irrelevant information or minor errors.</i></p>			6	6		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
			<p>1–2 marks The answer refers to at least one of schist, turbidite, shale, unconformity and explains relative rate of processes. <i>There is a basic line of reasoning which is not coherent, supported by limited evidence and with very little structure. There may be significant errors or the inclusion of much irrelevant information.</i></p> <p>0 marks no attempt made or no response worthy of credit.</p>						
			Question 1 total	10	3	6	19	3	4

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
2.	(a)	(i)	Divergent plate boundary (1)	1			1		
		(ii)	Shows pillow lava (1) Formed by submarine eruption (1)	2			2		
		(iii)	Mantle (1)	1			1		
		(iv)	A basalt (1) B peridotite (1)	2			2		
		(v)	Partial melting / melting (1) Of the mantle / peridotite (1)	2			2		
	(b)	(i)	Normal fault (1)	1			1		

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
	(ii)	<p>Any three x (1) from:</p> <ul style="list-style-type: none"> • Figure 2a spreads faster than Figure 2b or vice-versa • Figure 2a basalt at surface on both sides, Figure 2b basalt one side, peridotite other side • Figure 2a greater volume of magma, Figure 2b lower volume of magma • Figure 2a is symmetrical, Figure 2b is asymmetrical • Figure 2a topography the same on both sides, Figure 2b left side is higher / raised / curved • Figure 2b shows displacement due to a major normal fault in Figure 2b but not Figure 2a • Magma generated deeper on Figure 2b, shallower on Figure 2a • Reference to the base of lithosphere being different on the two models (depth / shape) • Figure 2a thicker crust, Figure 2b thinner crust • Magma rises along fault in Figure 2b but not in Figure 2a • Magma reaches surface in Figure 2a (volcanoes) but not in Figure 2b <p>Credit reference to</p> <ul style="list-style-type: none"> • Figure 2a symmetrical spreading, Figure 2b asymmetrical spreading • Figure 2b has an ocean core complex at the surface on the left side, no ocean core complex in Figure 2a <p>Credit other sensible answers.</p>	3			3		
		Question 2 total	12	0	0	12	0	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
3.	(a)		Convergent oceanic-continental plate boundary (1)	1			1		
	(b)	(i)	Earthquakes became shallower / closer to the surface (1) Reference to actual depths e.g. 9 km up to 1.6 km (1) Magnitude increased (1) Reference to figures e.g. 2.6 to 5.1 (1)	4			4		
		(ii)	Any three x (1) from: <ul style="list-style-type: none"> • magma rises towards the surface • magma grows in volume • pressure from magma increases • more gas released from magma • pressure build up causes north side of cone to deform 		3		3		
		(iii)	Tiltmeter / EDM / GPS / Lasers (1) Measures change in angle of slope / change in fixed positions / height (1)	2			2		
		(iv)	Groundwater changes (1) Gas emissions (1)	2			2		
			Question 3 total	9	3	0	12	0	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4.	(a)	(i)	Location P (1)	1			1		
		(ii)	Anticlinal structure is a common type of trap for oil (1) Any two (x1) from: <ul style="list-style-type: none"> shale is the source rock as it is rich in organic matter sandstone is a reservoir rock-has a high porosity of 30% impermeable halite is the cap rock 		3		3		
		(iii)	Any two (x1) from: <ul style="list-style-type: none"> sandstone anticline exposed at surface so oil escapes igneous rock above shale prevents oil from migrating out of it high temperature of magma may have destroyed any oil 			2	2		
	(b)	(i)	5.0 to 5.5 km (1) 125 to 135°C (1)		2		2	2	
		(ii)	225°C / 9km (or equivalent pair of values) (1) 25°C km ⁻¹ (1)		2		2	2	
	(c)	(i)	Hypothetical oil resources (1)	1			1		
		(ii)	The boundary would move down (1)		1		1		
			Question 4 total	2	8	2	12	4	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5.	(a)	(i)	Mesozoic (1)	1			1		
		(ii)	Scanning electron microscope (1)	1			1		
		(iii)	Any two x (1) from: <ul style="list-style-type: none"> made of calcite / calcium carbonate presence of micro-fossils reference to Cretaceous age 		2		2		
		(iv)	More land above sea level than now (1) Higher albedo than now (1)		2		2		
	(b)	(i)	Any three x (1) from: <ul style="list-style-type: none"> clastic / fragmental angular fragments poorly sorted coarse grained or reference to range of appropriate particle sizes up to 80cm 	3			3		3
		(ii)	Glacial till / tillite / boulder clay / breccia (1)		1		1		
		(iii)	Any three x (1) from: <ul style="list-style-type: none"> tillite forms under glaciers / ice sheets deposited close to the equator / in the tropics tropical areas must have been very cold at this time – ice sheets / glaciers if tropics had ice so must the majority of the Earth = icehouse 		3		3		
			Question 5 total	5	8	0	13	0	3

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
6.	(a)		Astronauts weigh about 1/3 of their body weight on Mars (1) Earth is volcanically active compared to Mars (1)		2		2		
	(b)	(i)	13117 metres (1)		1		1	1	
		(ii)	Diameter measured as 500 km (1) Radius = $500/2$ or 250 km (1) Area = $3.142 \times 250^2 = 196,375 \text{ km}^2$ (1) accept correct rounding of answer		3		3	3	
		(iii)	<p>Indicative content</p> <p>Plate Tectonics Mars has no plate tectonics Volcanic structures are not destroyed / subducted. No plate movement on Mars So any magma source will be fixed for a long time beneath volcano allowing it to grow large.</p> <p>Atmosphere Mars has a thin atmosphere and no liquid water therefore very little weathering/erosion except for wind so volcanic structures are not worn down.</p> <p>Gravity Mars has much weaker gravity compared to Earth allowing volcanic structures to grow taller on Mars mass movements limited due to weak gravity</p>			6	6		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
			<p>5–6 marks The answer refers to all three of plate tectonics, gravity, atmosphere / weathering / erosion <i>There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant.</i></p> <p>3–4 marks The answer refers to at least two of plate tectonics, gravity, atmosphere / weathering / erosion <i>There is a line of reasoning which is partially coherent, supported by some evidence and with some structure. Mainly relevant information is included but there may be some irrelevant information or minor errors.</i></p> <p>1–2 marks The answer refers to at least one of plate tectonics, gravity, atmosphere / weathering / erosion <i>There is a basic line of reasoning which is not coherent, supported by limited evidence and with very little structure. There may be significant errors or the inclusion of much irrelevant information.</i></p> <p>0 marks no attempt made or no response worthy of credit.</p>						
			Question 6 total	0	6	6	12	4	0
			Paper Totals	38	28	14	80	11	7