



GCSE MARKING SCHEME

SUMMER 2024

**GEOLOGY - COMPONENT 2
C480U20-1**

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 2 - 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 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)		Any two x (1) from: <ul style="list-style-type: none"> • compass bearing • from a fixed point/landmark • GPS • use of grid references • pacing 	2			2		2
	(b)		Accept between 45-55 degrees (1) SW/225 degrees (1) SE-NW/135-315 degrees (1)	3			3	1	3
	(c)	(i)	Unconformity (1)	1			1		1
		(ii)	Any three x (1) from: <ul style="list-style-type: none"> • deposition / burial / compaction / lithification of Rock Unit B • uplift / folding / tilting • erosion of Rock Unit B • rise in sea level / submergence by the sea • then deposition of Rock Unit A 		3		3		
			Question 1 total	6	3	0	9	1	6

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
2.	(a)		Sandstone (1) Grains between 1/16 mm – 2 mm (1) Grains are rounded (1)	3			3		3
	(b)	(i)	Calcite (1)	1			1		1
		(ii)	Drop water on rock (1) Water absorbed (1) The rock effervesces (1)	3			3		3
	(c)	(i)	To scale (1) Correct shape (1) Detail of ribs (1)		3		3	1	3
		(ii)	Any four x (1) from: <ul style="list-style-type: none"> • medium sized grains indicate medium / high energy • rounded particles – high energy • cephalopods are marine organisms / fossils • cephalopod has thick shell / ribbed indicating high energy environment • complete fossil may indicate not high energy • reference to uniformitarianism 			4	4		
			Question 2 total	7	3	4	14	1	10

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
3.	(a)	Halite (1)	1			1		1
	(b)	Desiccation cracks (1) Any two x (1) from: <ul style="list-style-type: none"> • fine grained sediment • drying out / evaporation • contraction • infilling of cracks with later sediment 	3			3		
	(c)	Shallow water / lagoon / lake (1) Low energy (1) Hot / arid climate / desert (1)		3		3		
		Question 3 total	4	3	0	7	0	1

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4.	(a)	(i)	Crystalline (1) Correct size (1) All same size (1) Augite forms the largest category (1) Feldspar crystals approx. half the number / area of augite crystals (1)		5		5	1	5
		(ii)	Basalt (1)		1		1		
	(b)	(i)	Rock Unit D drawn to scale (1) Joints in Rock Unit D (1) Baked margin different widths on both sides as on photo, upper one narrower towards the right (1)		3		3	1	3
		(ii)	Any three x (1) from: <ul style="list-style-type: none"> • P is clastic - Q is crystalline • P is sedimentary / sandstone - Q is metamorphic / metaquartzite • P may contain the cephalopod / fossil – in Q cephalopod / fossil will have been destroyed • Q reduced porosity compared to P • P is grey / white - Q is red / orange • harder at Q 	3			3		
		(iii)	Any two x (1) from: <ul style="list-style-type: none"> • changes due to heat alone • recrystallisation • contact metamorphism 	2			2		
			Question 4 total	5	9	0	14	2	8

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5.	(a)	(i)	3 additional igneous bodies N-S, total 13 dykes (1) 1 additional igneous body NE-SW, total 3 dykes (1)	2			2		2
		(ii)	Correct plot N-S (1) Correct plot NE-SW (1) consider ecf	2			2	2	
	(b)		$\frac{150 (1)}{3000 (1) - 150} \times 100$ 5.26 % (1)		3		3	3	
	(c)		Any two x (1) from: <ul style="list-style-type: none"> • systematic sampling every 50m would result in a smaller number of dykes recorded • systematic sampling every 50m might miss dykes that were clustered in a small area • 3km transect made recording all dykes possible and higher level of accuracy • smaller sample size if only record the dykes / much larger sample size if every 50m 		2		2	2	2
			Question 5 total	4	5	0	9	7	4

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
6.	(a)		Horizontal base of Rock Unit A near Y (1) Horizontal base of Rock Unit A in the middle (1) Boundary between Rock Unit B and Rock Unit C below unconformity dipping towards Y (1) Dyke plotted vertically in correct location (1) Base of Rock Unit C dipping, from correct location, 30° towards Y (1)		5		5	5	5
	(b)		Agree because: Wider/narrower outcrop width of limbs (1) Wider = lower angle of dip / narrower = higher angle of dip (1) Credit reference to impact of variation in topography			2	2		
	(c)	(i)	75m (1)		1		1	1	1
		(ii)	Strike-slip fault (1) Any two x (1) from: <ul style="list-style-type: none"> the dyke has been displaced horizontally / to the left APT has been displaced horizontally / to the left Rock Unit F (core bed) has not changed thickness all beds displaced in same direction / to the left 		3		3		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
	(d)	(i)	Rock Unit E is older (1) D cuts E or equivalent (1) Rock Unit C is older (1) Principle of superposition / beds dip to younger rocks / C is beneath B (1)		4		4		
		(ii)	Unable to say (1) They do not cross-cut (1)			2	2		
			Question 6 total	0	13	4	17	6	6

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
7.	(a)	<p>Indicative content</p> <p>The formation of the following features explained relating to:</p> <p>Type of stress Compressional - folding Tensional - igneous Intrusion Shear – strike-slip fault</p> <p>Relative ages First compression of the sedimentary beds Second tensional stress due to dyke intrusion Third shear stress forming a strike-slip fault</p> <p>5–6 marks. There is a clear response which draws upon the interpretation of at least two types of stress and the correct relative ages. 6 marks needs all 3 stress types. The sources of evidence are interpreted coherently as outlined in the indicative content above. <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 response draws upon the interpretation of two or three of the four aspects (three types of stress and relative ages). The sources of evidence are interpreted quite well as outlined in the indicative content above. There is some attempt at an evaluation of the evidence. <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 response makes use of the interpretation of only one or two of the four aspects (three types of stress and relative ages) with rather superficial comment. There may be a lack of relevance in places. There is little evidence of evaluation. <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 <i>No attempt made or no response worthy of credit.</i></p>						
			Question 7 total	0	0	6	6	0	0

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
8.	(a)	<p>Four x (1) with max three from any one site:</p> <p>Site 1: a suitable site because:</p> <ul style="list-style-type: none"> impermeable granite and/or Rock Unit C slow flow of hazardous waste into the groundwater if buried in granite or Rock Unit C credit reference to Rock Unit B and/or conglomerate permeable and unsuitable <p>Site 2: not a suitable site because</p> <ul style="list-style-type: none"> permeable sandstone and/or jointed limestone chemical reaction of limestone with leachate fault therefore leakage of hazardous liquid fault reactivation so ground instability high chance of flow of liquid from hazardous waste into the groundwater 			4	4		
		Question 8 total	0	0	4	4	0	0
		Paper Totals	26	36	18	80	17	35