



GCE AS MARKING SCHEME

SUMMER 2023

**AS
GEOLOGY - COMPONENT 1
B480U10-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2023 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCE AS GEOLOGY
COMPONENT 1 - GEOLOGICAL ENQUIRIES
SUMMER 2023 MARK SCHEME

Instructions for examiners of A Level 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 Annotated diagrams

Where a candidate has answered a question wholly or partly by use of an annotated diagram, credit must be awarded to the annotations which form credit-worthy responses as outlined in the marking details box. Candidates must be credited only once for valid responses which appear both as annotations to diagrams and within a section of prose in the answer to the same question.

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.

Specimen C (Oolitic limestone), Specimen B (Dolerite), Specimen N (Haematite) and Specimen L (Bivalve)

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
1	(a)	(i)	Any three x (1) from: - granular - rounded/oval grains - appropriate scale (0.5-2mm) - well sorted		3		3	1	3
		(ii)	Oolitic limestone (1)		1		1		
	(b)		Wave/tidal/shallow (1) Sub-tropical/warm (1) Marine or coastal (1)	3			3		
			Question 1 total	3	4	0	7	1	3

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
2	(a)		Dolerite (1) Size of crystals medium or between 1-3 mm (1) Mafic/dark in colour (1)		3		3		3
	(b)		Unlikely/did not come from the same magma (1) Photograph 1 (Rock Unit A) contains quartz, Specimen B does not (1) Photograph 1(Rock Unit A) is silicic (light in colour)/ Specimen B is mafic (dark in colour) (1) Rock Unit B cuts Rock Unit A/metamorphic aureole/F1 (so is younger) (1) Credit reference to magmatic differentiation/contamination had occurred to a primary magma to generate two contrasting magma types.			4	4		4
			Question 2 total	0	3	4	7	0	7

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
3	(a)	(i)	Drawn to correct scale (1) Correct shape of shell (1) Internal detail drawn (e.g. pallial sinus, muscle scar) (1)		3		3	1	3
		(ii)	Muscle scar correctly labelled (1)	1			1		
		(iii)	Pallial sinus correctly labelled (1)	1			1		
	(b)	(i)	2 marks for all four columns drawn correctly 1 mark if two or three columns are drawn correctly	2			2	2	2
		(ii)	3-5.9cm (1)		1		1	1	1

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
		(iii)	The conclusion is unreliable with one reason (1) Any three x (1) from: • range of sizes • may indicate a living community (adults and juveniles) • and so a life assemblage • one dominant group size • may indicate sorting/transport • and so a death assemblage • cannot tell because sample too small so unreliable • cannot tell because do not know if fossils are broken or not • cannot tell because do not know if fossils are orientated or not • cannot tell because do not know if fossils in life position or not • cannot tell because do not know if adults or juveniles Credit other valid points			4	4		
			Question 3 total	4	4	4	12	4	6

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4	(a)		Hardness test: mineral does not scratch (1) <u>Description</u> Observe colour/crystal form or habit/lustre/streak test/heft (density) (1) <u>Result</u> red/kidney shaped masses or fibrous/metallic or dull/cherry red/heavy when hefted (1)		3		3		3
	(b)		Haematite (1)		1		1		1
			Question 4 total	0	4	0	4	0	4

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5	(a)		Any three x (1) from: • general trend is an increase from 0 to 1000 m • correct use of numbers for general trend • fluctuation in first 320m, gradual change in second 700m • reference to specific changes quantified	3			3	3	3
	(b)		Any three x (1) from: • use of grain size card/ruler to measure crystals • measure crystal sizes along a crystal axis • measured at regular intervals along the transect (e.g. every 1m or 10m) • measured at random intervals • measured using stratified sampling to cover different rock types • sampling wherever the rock is exposed • measure more than one crystal at each site • credit the use of quadrat to select crystals at each site			3	3	2	3

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
	(c)		Indicative content General trend is that the size of the crystals increases as distance into the pluton increases. Crystals are larger because they had longer to cool but only in Rock Unit A The decrease in crystal sizes at 240 and 320m are associated with the dyke (rock unit B), which cooled faster in the chilled margins against the older rock unit A 0-100m caused by contact metamorphism of the country rock-increases in size as the rock gets closer to the pluton. 5–6 marks This response relates to all three of; the country rock being metamorphosed, the intrusion of the dyke and the trends within Rock Unit A. Response has strong explanation. <i>There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant.</i> 3–4 marks The response relates to at least two of; the country rock being metamorphosed, the intrusion of the dyke and the trends within Rock Unit A. Response has some explanation, but also focuses on description. <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>		6		6		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
			1–2 marks The response refers to at least one of; the country rock being metamorphosed, the intrusion of the dyke and the trends within Rock Unit A. The response has little explanation, focussing more on description. <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> 0 marks No attempt made or no response worthy of credit						
			Question 5 total	3	6	3	12	5	6

Question			Marking details		Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
6	(a)		Fault 1	Fault 2		4		4		4
			Downwards (1)							
				90° or vertical (1)						
			Normal (1)	Strike-slip (1)						
	(b)		Displacement = 3cm on the map (1) Conversion to km (0.3km) (1)			2		2	2	2
			Question 6 total		0	6	0	6	2	6

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
7			Correct plot of pluton (1) Metamorphic aureole (1) F1 at correct location, dip angle 60-80°, and dip direction (1) Dyke in correct position and vertical (1) Bases of Rock Units H and G correct location and dip (1) Boundary of Rock Unit E-C in correct location and dipping 45° in both limbs southeast of F1 (1) Boundary of Rock Unit C/D in correct location and dip in both limbs under Rock Unit E/C southeast of F1 (1) NW limb of antiform (boundaries of E-C and C-D in correct location and dipping at 45° towards X) (1) SE limb of antiform (boundaries of E-C and C-D in correct location and dipping at 45° towards Y) (1) Synform axis correctly drawn and labelled (1) Antiform axis correctly drawn and labelled (1) Correct cross-cutting relationship of F1 with unconformity (1)		8	4	12	12	12
			Question 7 total	0	8	4	12	12	12
			Totals	10	35	15	60	24	44

B480U10-1 EDUQAS GCE AS Geology – Component 1 MS S23/CB