



GCSE MARKING SCHEME

AUTUMN 2020

**GEOLOGY - COMPONENT 2
C480U20-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2020 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.

GCSE GEOLOGY
COMPONENT 2 - GEOLOGICAL PRINCIPLES
AUTUMN 2020 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.

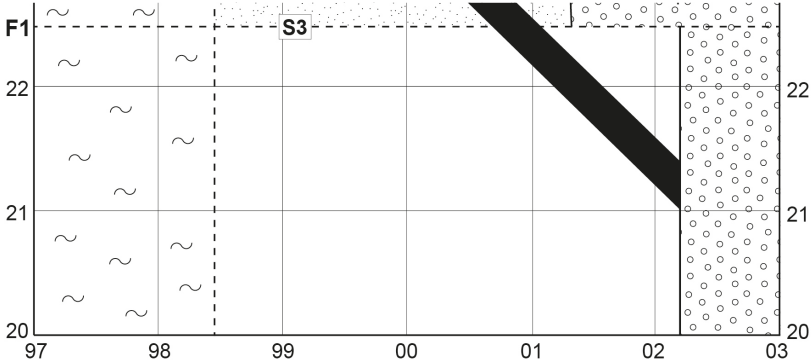
Stage 2 – Deciding on the mark

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)	(i)	GR 013240 or GR 014240(1)	1			1		1
		(ii)	To scale (1) Horizontal beds above unconformity (1) Line of unconformity (1) Beds dipping below unconformity (1)		4		4	1	4
		(iii)	37-43 (1)	1			1	1	1
		(iv)	Unconformity / erosional surface (1)	1			1		1
	(b)	(i)	Diagram and/or description to show: Any three x (1) from: <ul style="list-style-type: none"> • clinometer to measure dip amount • pour water on to give true dip/ move clinometer to get maximum angle / roll pebble to get maximum angle • compass to measure dip or strike direction • dip at 90 to strike / refer to right hand rule • strike direction is compass bearing of horizontal line on bedding plane 	3			3		3
		(ii)	Any two x (1) from: <ul style="list-style-type: none"> • wear a hard hat • don't climb exposure • use safety glasses when hammering • wear safety footwear • reference to other sensible safety measures 	2			2		
			Question 1 total	8	4	0	12	2	10

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
2	(a)	Garnet (1) Foliated/schistosity (accept porphyroblastic) (1) Metamorphic (1) Schist (1)	3	1		4		4
	(b)	Regional metamorphism or reference to high pressure (1) Any two x (1) from: <ul style="list-style-type: none"> • foliation linked to high pressure • parent rock shale • garnet forms under high pressure • high temperature produces medium-grained crystalline texture • recrystallisation • convergent plate margin • foliation forming at 90° to maximum stress • garnet forms first then groundmass 		3		3		
		Question 2 total	3	4	0	7	0	4

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
3	(a)	 <p>Correct plot of: F2 not displaced (1) Rock Unit C not displaced by F1 (1) Rock Unit B overlies Rock Unit C (1) Rock Unit B displaced to the right by 100m (1)</p>		4		4		4
	(b)	West side / left side (1) Any two x (1) from: <ul style="list-style-type: none"> older rocks on upthrown side / younger rocks on downthrown side Rock Unit F older than D because of included fragments regional metamorphic Rock Unit F must be older than sedimentary Rock Unit D 		3		3		
	(c)	Discordant (1) Linear / sheet-like (1)		2		2		
Question 3 total			0	9	0	9	0	4

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4	(a)	(i)	Any three x (1) from: <ul style="list-style-type: none"> grains range from 0.5 mm to 32mm coarse grained poorly sorted majority of grains between 16 to 32 mm angular clasts clastic / fragmental 	3			3	2	3
		(ii)	Breccia (1)		1		1		1
	(b)	(i)	Augite (1)	1			1		1
		(ii)	Any three x (1) from: <ul style="list-style-type: none"> random orientation equicrystalline crystalline / interlocking crystals coarse crystal size crystals range 3-9 mm accept reference to crystal shape 	3			3		3
		(iii)	Peridotite (1)		1		1		
	(c)	(i)	Basalt (1) Fine grained / refer to value <1mm (1) Mafic minerals / reference to olivine or augite (1)		3		3		
		(ii)	Pillow lavas (1) Any two x (1) from: <ul style="list-style-type: none"> lava / magma extruded into water surface cools quickly forming skin / glassy margin lava fills skin like a balloon/ vesicles trapped 	3			3		

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
	(d)	<p>Indicative content</p> <p>Interpretation of evidence False</p> <ul style="list-style-type: none"> • Mineralogy: Rock unit G and the igneous fragment have different mineral content. Rock Unit G is mafic whereas the igneous fragment is ultramafic • Grain size: Rock Unit G is fine grained whereas the igneous fragment is coarse grained • Age relationship: Syncline to determine age relationships Rock Unit D is older than Rock Unit G Using the law of superposition, it is not possible for it to be part of Rock Unit G <p>5-6 marks There is a clear response which makes at least one valid analytical comment from each of three bullet points as outlined in the indicative content above.</p> <p>The sources of evidence are interpreted coherently as outlined in the indicative content above.</p> <p>A conclusion regarding the statement 'a student concluded that igneous rock fragment found in Rock Unit D must have been part of Rock Unit G' is drawn that is consistent with the evidence as interpreted.</p> <p><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>			6	6		

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
		<p>3-4 marks There is a clear response which makes at least one valid analytical comment from each of a minimum of two of the bullet points outlined in the indicative content above.</p> <p>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.</p> <p>A conclusion regarding the statement ‘a student concluded that igneous rock fragment found in Rock Unit D must have been part of Rock Unit G’ is drawn that is consistent with the evidence as interpreted.</p> <p><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 response makes use of the interpretation of only one or two of the three pieces of evidence with rather superficial comment. There may be a lack of relevance in places. There is little evidence of evaluation, although there is a conclusion that supports the view that has been argued. <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 4 total	10	5	6	21	2	8

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5	(a)		To scale (1) Detail of glabella (1) Detail of eyes (1)		3			1	3
	(b)	(i)	Calymene (1)		1				1
	(b)	(ii)	Marine/ not a river (1) Trilobites were marine (1) Low energy is correct (1) Because fine grained / well preserved fossil (1)			4			
			Question 5	0	4	4	8	1	4

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
6	(a)	(i)	Both axes at the correct location and angle (1) Correct symbol on both axes (1)		2		2		2
		(ii)	E-W (1)		1		1		1
	(iii)	$\frac{23\text{cm} - 15.5\text{cm}}{23\text{cm}} \times 100$ Or $\frac{115\text{m} - 77.5\text{m}}{115\text{m}} \times 100$ (1) 33% (1) Accept range between 30%-35%		2		2	2		
(b)		Advantages Any one x (1) from: <ul style="list-style-type: none"> • even spread of data along the transect • spacing of systematic is crucial • avoids bias • no areas missed Disadvantages Any one x (1) from: <ul style="list-style-type: none"> • area inaccessible / no outcrop (1) • might miss change of dip (1) 		2		2			
(c)	(i)	→ (1)		1		1			
		(ii)	Cross bedding / cross lamination (1) R Any two x (1) from: <ul style="list-style-type: none"> • deposited by a river/ by wind • unidirectional current • grains deposited on advancing slope of ripple 	3			3		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
		(iii)	Not overturned / the cross bedding is the correct way up (1) Any one x (1) from: <ul style="list-style-type: none"> • concave up • truncated at the top • layers decreases in angle towards the base 			2	2		
			Question 6	3	8	2	13	3	3

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
7	(a)	(i)	11.8g (1)		1		1	1	
		(ii)	Correct plot for all 6 points (2) 4 or 5 points correctly plotted (1) No marks if only 3 or fewer points correctly plotted	2			2		
		(iii)	3.6 - 3.7% (1)		1		1	1	

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
	(b)	<p>Marks only awarded if evaluation is consistent with points raised. Max 3 for any one site</p> <p>Site 1 suitable because: Cooling joints or fractures could allow water to the surface (1) Boundary between dyke and country rock force water to the surface (1)</p> <p>Site 1 less suitable because: Dyke is igneous (1) Not permeable or porous (1)</p> <p>Site 2 suitable because: Spring at unconformity (1) Porous over less porous (1) Permeable over impermeable forces water to the surface (1)</p> <p>Site 2 less suitable because: Relying on supply of groundwater (1) Bed thickness of Rock Unit B thin, limited recharge (1)</p> <p>Site 3 suitable because: On fault line (1) water flows up (1)</p> <p>Site 3 less suitable because: Breccia's lack of porosity (1)</p>			6	6		
		Question 7	2	2	6	10	2	0
		Paper total	26	36	18	80	10	33