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# **GCE AS MARKING SCHEME**

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**SUMMER 2018**

**AS  
GEOLOGY - COMPONENT 1  
GEOLOGICAL INVESTIGATIONS**

**B480U10-1**

## **INTRODUCTION**

This marking scheme was used by WJEC for the 2018 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.

**EDUQAS AS GEOLOGY - COMPONENT 1**  
**GEOLOGICAL INVESTIGATIONS**  
**SUMMER 2018 MARK SCHEME**

**Instructions for examiners of EDUQAS AS 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.

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
1	(a)		<b>Any one x (1) from:</b> <ul style="list-style-type: none"> <li>Discordant</li> <li>Large ( &gt;500m)</li> <li>Has a metamorphic aureole</li> <li>Offshot dyke</li> <li>Shape</li> </ul> <b>Any one x (1) from:</b> <ul style="list-style-type: none"> <li>Coarse grained</li> <li>Crystals &gt;3mm</li> <li>Gabbro</li> </ul>		2		2		1
	(b)		Cleavage (1) Augite (accept Pyroxene) (1)	2			2		2
	(c)		Gabbro (1)  Coarse grained/ crystals >3mm (1)  Mafic in composition/ Does not contain quartz/ Contains augite/pyroxene/ Dark in colour (1)		3		3		3
			<b>Question 1 total</b>	2	5	0	7	0	6

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
2	(a)		Grains represented within range 1-5 mm using the scale provided (1) Poorly sorted (1) Sub-angular grains and at least two grains in contact (1)		3		3	1	3
	(b)		<b>Any three x1 from:</b> <ul style="list-style-type: none"> <li>Sub rounded-sub angular – limited erosion in water/river (1)</li> <li>Poor-moderate sorting – river does not sort well (1)</li> <li>Coarse sand - river carries and deposits particles of this size (1)</li> <li>Presence of feldspar suggests that it is immature (1)</li> </ul>		3		3		3
	(c)		<b>Indicative Content</b> D is discordant to C, D has metamorphosed C, C is older than D C shows evidence of formation after weathering and erosion C is formed from the weathering of a non-mafic rock C contains pink feldspar / D does not C and D both contain white feldspar C is clastic and D is crystalline D does not contain quartz / C is dominated by quartz D contains augite / C does not contain augite C contains rock fragments C is coarser grained than D			6	6		6
			<b>5–6 marks</b> There is a clear response which draws upon analysis of <b>three</b> sources of information (Map 1, specimen C and Specimen D). Most or all of the sources of evidence are analysed coherently. Judgements regarding the mineral content of the specimens and the age relationships shown on the map. All judgements are consistent with the information as analysed. <i>There is a sustained line of reasoning which is coherent, substantiated and logically structured. The information included in the response is relevant.</i>						

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
			<p><b>3–4 marks</b> The response draws upon analysis <b>of two</b> sources of information) and comments with relevance on their mineral content and age relationships. Most judgements are drawn that are consistent with the information as analysed. <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><b>1–2 marks</b> The response makes use of <b>one or two</b> of the sources of information with only rather superficial comment. There may be a lack of relevance in places and judgements drawn concerning the age relationships are rather superficial, with simple comments on mineral content <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><b>0 marks</b> <i>No attempt made or no response worthy of credit.</i></p>						
			<b>Question 2 Totals</b>	0	6	6	12	1	12

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
3	(a)		21.2 / 8 (1)  2.65 g/cm <sup>3</sup> or 2.65 gcm <sup>-3</sup> (1)		2		2	2	2
	(b)		<b>Any two x1 from:</b> <ul style="list-style-type: none"> <li>Ensured that the balance was reading zero before placing the specimen on</li> <li>Recorded the mass of the specimen before immersing it in water</li> <li>Ensured eyes are level with the meniscus in the measuring cylinder</li> <li>Lowered specimen into cylinder gently</li> <li>Use more precise equipment</li> </ul> Credit sensible alternatives			2	2		2
	(c)		Accept a correct description <b>of any one x1</b> of the following tests/observations: <ul style="list-style-type: none"> <li>Scratch with steel pin</li> <li>Look for cleavage planes</li> <li>Look for fracture lines</li> <li>Look at crystal shape</li> </ul> Accept the relevant result (1) <ul style="list-style-type: none"> <li>Not scratched by steel pin</li> <li>No cleavage visible</li> <li>Has conchoidal fracture</li> <li>Has hexagonal prisms</li> </ul> Quartz (1)		3		3		3
			<b>Question 3 Totals</b>	0	5	2	7	2	7



Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4	(a)	(i)	Drawn to correct scale (1)  Shape (1)  Detail (1) e.g. involute, suture lines		3		3	1	3
		(ii)	Correctly labelled suture line	1			1		1
	(b)		Rock Unit A is older than rock unit D (1)  D is discordant to A or D has metamorphosed A (1)  Specimen A is an ammonite/shows ammonitic or complex suture line (1)			3	3		3
			<b>Question 4 Totals</b>	1	3	3	7	1	7

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5	(a)		Locality II facing towards the NW		1		1	1	1
	(b)		<b>Any two x1</b> from: <ul style="list-style-type: none"> <li>Basal conglomerate (included fragments of C in G)</li> <li>Weathered or eroded surface between C and G</li> <li>Fossil evidence (explained)</li> </ul>	2			2		
			<b>Question 5 Totals</b>	2	1	0	3	1	1

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
6	(a)		Sinuuous/Wavy Line (1) Straight Line (1) 90° / Vertical (1) Normal (1) Strike-lip (1)	2	3		5		5
	(b)		Accept between 30° and 50° (1) The offshot dyke is following the fault (1)		2		2	1	1
			<b>Question 6 Totals</b>	2	5	0	7	1	6

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
7			<b>Any 13 x 1 from:</b> Correct plot of pluton D (1)  Metamorphic aureole (1)  Boundaries F-C and C-E dipping SW between pluton and F1 (1)  F1 at correct angle and direction (1)  SW limb of antiform (boundaries F-C and C-E in correct location and dipping correctly) (1)  NE limb of antiform (boundaries F-C and C-E in correct location and dipping correctly) (1)  Antiform vertical and with correct symbol (1)  Dyke vertical (1)  Base of G (1)  Arrows on F1 (1)  Cross cut of fold limbs or fault with projected base of G (1)  Base A at 300m (1)  Hidden syncline limb (1)  Hidden syncline fold axis (1)		9	4		13	13
			<b>Question 7 Totals</b>	0	9	4	13	13	13

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
8			flute cast (1)  Initial high velocity of current erodes part of the underlying bed (1)  Infilling by material deposited by the current as the velocity of the current decreases (1)  Cast gets wider in the direction of flow. This mark can be awarded for a correctly drawn arrow on a diagram (1)  Credit can be given for up to 3 explanation marks if an incorrect sedimentary palaeocurrent structure has been chosen e.g. asymmetrical ripple marks.	4			4		
			<b>Question 8 Totals</b>	4	0	0	4	0	0
			<b>Paper Totals</b>	<b>9</b>	<b>34</b>	<b>15</b>	<b>60</b>	<b>19</b>	<b>52</b>