



GCSE MARKING SCHEME

AUTUMN 2020

**GEOLOGY - COMPONENT 1
C480UA0-1**

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 1 - 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 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)	(i)	Igneous, Metamorphic, Sedimentary from left to right on Figure 1 1 or 2 correct (1) All 3 correct (2)			2			2		
		(ii)	Cementation Weathering Recrystallisation Erosion 2 or 3 correct (1) All 4 correct (2)			2			2		
	(b)		Ocean basin Gr Meteorite Ca Mountains Gr Earthquake Ca Tsunami Ca River delta Gr	2 or 3 correct (1) 4 or 5 correct (2) All 6 correct (3)	3			3			
			Question 1 total			7	0	0	7	0	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
2	(a)	(i)	Divergent (1)	1			1		
		(ii)	The oldest magnetic stripes are closest to the ocean ridge (1)	1			1		
		(iii)	Location D (1) Any one x (1) from: <ul style="list-style-type: none"> • symmetrical from this location • location of current normal polarity 		2		2		
	(b)	(i)	0.6 to 0.8 million years/ 600,000 to 800,000 years (1)	1			1	1	1
		(ii)	5 reversals (1)		1		1	1	
		(iii)	400,000 years (1)		1		1	1	
		(iv)	Reversals may have been displaced by transform faults (1) The rate of sea floor spreading varies along the Juan de Fuca Ridge (1)		2		2		
	(c)	(i)	Correct calculation e.g. 160km/4 million yrs, 80km/2million yrs (1) Correct answer 0.04 m yr ⁻¹ (1) Credit correct answer from a wrong calculation (1)		2		2	2	
		(ii)	No credit for Atlantic or Pacific Any one x (1) from: <ul style="list-style-type: none"> • Pacific spreads twice as far over the same time (1) • Pacific curve is steeper/Atlantic curve is less steep (1) 		1		1	1	

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
		(iii)	<p>Any one x (1) correctly named source of evidence from:</p> <ul style="list-style-type: none"> • jigsaw fit of opposing coastlines • tectonic fit-mountain belts • geological fit of rock outcrops • lithologies and climate • fossil evidence • glacial deposits from southern hemisphere • hot spots • ocean sediment data <p>Explanation of one of the above (up to 2 marks)</p>	3			3		
			Question 2 total	6	9	0	15	6	1

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
3	(a)	(i)	Asthenosphere (1)	1			1		
		(ii)	Composed of crust and upper mantle (1) Cool, rigid and solid (1)	2			2		
	(b)		Oceanic crust – basalt (1) Mantle – peridotite (1) Core – Iron meteorite (1)	3			3		
			Question 3 total	6	0	0	6	0	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
4	(a)	(i)	Measurements and calculation showing that J-K is 4 x the length of the scale bar (1) 4,000 km (1)	2			2	2	2
		(ii)		1			1		
		(iii)	Rift valley (1) Formed by crustal tension (1)		2		2		
	(b)	(i)	Strike-slip fault with displacement to the left (1) Formed by shear stress (1)	2			2		
		(ii)	B- Displacement of meteorite crater youngest A- Formation of meteorite crater D- Formation of Valles Marineris C- Formation of Martian crustal rocks oldest 2 correct = 1 3 correct = 2 4 correct = 3		3		3		3
			Question 4 total	5	5	0	10	2	5

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
5	(a)	(i)	Convergent oceanic-continental boundary (1)	1			1		
		(ii)	25 or 26/79 or 80 = 1 Accept answer in range 3.0 to 3.2 (1) Credit correct answer from wrong numbers in sum		2		2	2	
		(iii)	6 years since last quake twice average recurrence interval (1) or Expect it before 1982 as end of 3 year recurrence interval (1)		1		1		
		(iv)	Seismic gap spatially on Figure 5a (1)		1		1		
	(b)	(i)	As clay thickness increases there is damage to more buildings (1)		1		1	1	
		(ii)	Any one x (1) from: <ul style="list-style-type: none"> • clay ground amplified shaking • foundations do not reach deeper rock • clay soft/low rigidity/strength • liquefaction credited 		1		1		
	(c)	(i)	10 (accept 9) to 20 (accept 21) (1)	1			1	1	
		(ii)	Any one x (1) from: <ul style="list-style-type: none"> • buildings < 10 storeys-low centre of gravity and sway less • buildings > 20 storeys newer with earthquake proof design Accept reference to resonance		1		1		

Question		Marking details	Marks Available					
			AO1	AO2	AO3	Total	Maths	Prac
	(d)	<p>Indicative content Magnitude – 8.0 very powerful 31,6 x more than 7.0 Depth of Focus 20 km – shallow waves reach surface fastest Ground conditions-clay prone to liquefaction Densely populated urban conurbation Level of development-poor quality of buildings/planning regulations not enforced Domino effect/pancaking of some buildings Lack of earthquake proof design in buildings Poor/weak infrastructure-hindered rescue attempts Limited Governmental resources-lack of equipment/medics/contingency plan/warning systems/drills</p> <p>5-6 marks The answer explains a minimum of three points with at least one of each referring to magnitude, shallow depth of focus, high population density, LEDC status of Mexico City.</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> <p>3-4 marks The answer explains a minimum of two points with at least one of each referring to magnitude, shallow depth of focus, high population density, LEDC status of Mexico City.</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 answer explains a minimum of one point with reference to one of either magnitude, shallow depth of focus, high population density, LEDC status of Mexico City.</p> <p><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>			6	6		
		Question 5 total	2	7	6	15	4	0

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
6	(a)	(i)	4 (1)	1			1	1	1
		(ii)	CO ₂ levels were generally higher in the Cenozoic compared to the Mesozoic. (1)		1		1		
		(iii)	7000/409 (1) 17.11, 17.1 or 17 (1)		2		2	2	
		(iv)	Antarctic and Greenland ice cores (1) Deep sea sediment cores (1)	2			2		
	(b)	(i)	Any two x (1) from: <ul style="list-style-type: none"> positive correlation as carbon dioxide levels increase there is a corresponding increase/rise in sea level both fluctuate credit reference to numbers from graphs 	2			2		
		(ii)	Drowned forests (1)	1			1		
	(c)		Indicative content As carbon dioxide levels rise greenhouse effect occurs Global warming but different parts of the Earth respond differently Poles have greater warming than other areas-location of ice Greenland and Antarctic ice reduce in size Ice melts water returns to oceans and sea level rise Melting of sea ice alone will not cause sea level rise Less ice mass leads to reduction in albedo Less of the energy from sun is reflected back into space Greater warming, more melting and so on			6	6		

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
			<p>5-6 marks The answer explains the relationships between each of carbon dioxide levels, changes in the size of continental ice sheets/glaciers and global sea levels.</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> <p>3-4 marks The answer explains the relationships between at least two carbon dioxide levels, changes in the size of continental ice sheets/glaciers and global sea levels.</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 answer explains the relationships between at least one carbon dioxide level, changes in the size of continental ice sheets/glaciers and global sea levels.</p> <p><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>						
			Question 6 total	6	3	6	15	3	1

Question			Marking details	Marks Available					
				AO1	AO2	AO3	Total	Maths	Prac
7	(a)	(i)	Age in years (1)	1			1		
		(ii)	Younger than Precambrian slate and Lower Palaeozoic rocks (1) Older than the Mesozoic rocks (1)		2		2		
	(b)	(i)	<ul style="list-style-type: none"> 87.5% 93.75% (1) 		1		1	1	
		(ii)	6.25% = 4 half-lives (1) 4 x 703.8 = 2,815.2 million years (1) accept 2815 Ma		2		2	2	
	(c)	(i)	Figure 7b graptolite (1) Figure 7c ceratite (accept cephalopod) (1)	2			2		
		(ii)	Figure 7c W (1) Any three x (1) from: <ul style="list-style-type: none"> not V as in granite/igneous destroyed by heat not Z as in metamorphic aureole-destroyed by recrystallisation not Y as in slate-metamorphic and too old as Precambrian not X as Palaeozoic so had not evolved yet ceratites are Mesozoic fossils/ ceratitic suture line therefore Mesozoic 			4	4		
			Question 7 total	3	5	4	12	3	0
			Component Total	35	29	16	80	18	7