



# **2015 Geology**

## **Intermediate 2**

### **Finalised Marking Instructions**

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## **Part One: General Marking Principles for: Geology Intermediate 2**

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

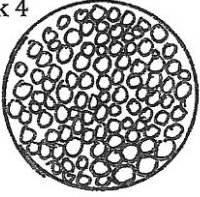

- (a)** Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.
- (b)** Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

### **GENERAL MARKING ADVICE: Geology Intermediate 2**

The marking schemes are written to assist in determining the “minimal acceptable answer” rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates’ evidence, and apply to marking both end of unit assessments and course assessments.

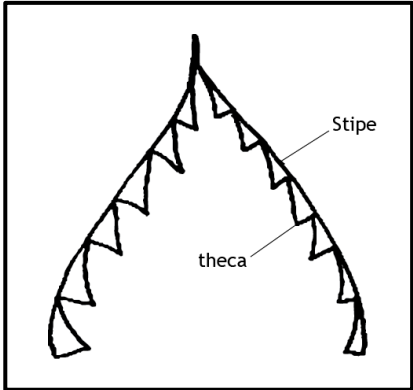
Part Two: Marking Instructions for each Question

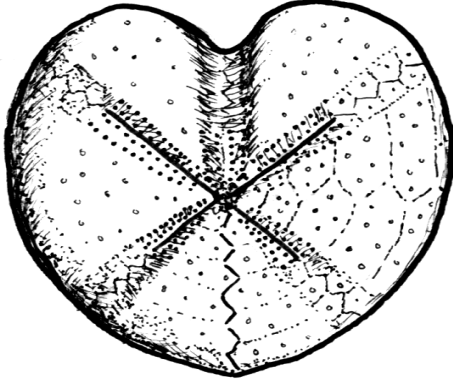
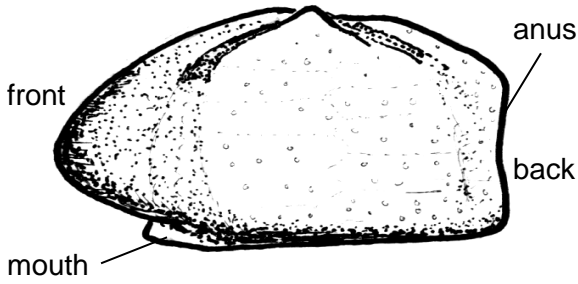
Question		Expected Answer(s)	Max Mark	Additional Guidance
1	(a)		4	
		<b>Properties</b>		
		<b>Usual Colour</b>	<b>Hardness</b>	<b>Cleavages</b>
		<b>Other</b>	<b>Mineral Name</b>	
		clear or white	7	none
		brassy yellow	6-6 ½	none
		white	2	one
		silvery	2 ½-3	one
		clear/white	2-2 ½	three
		black	6	two at 90°
		black	5-6	two at 60°
		clear or purple or blue	4	four
				Red flame test, does not feel heavy
		<p>All 8 correct = 4 marks                      6 or 7 correct = 3 marks                      4 or 5 correct = 2 marks                      2 or 3 correct = 1 mark</p>		

Question		Expected Answer(s)	Max Mark	Additional Guidance
1	(b)	<p>rock 1 Basalt  rock 2 Mylonite  rock 3 Breccia  rock 5 Conglomerate  rock 6 Gneiss  rock 8 Marble</p> <p>Rock 4 </p> <p>Rock 7 </p> <p>All 8 correct = 4 marks  6 or 7 correct = 3 marks  4 of 5 correct = 2 marks  2 or 3 correct = 1 mark</p>	4	
2	(a)	syncline	1	
2	(b)	<p>Side of fault: South</p> <p>Reason: there is a wider exposure of sandstone which indicates that the core of the syncline has been eroded less due to its lower position/the younger sandstone and shale to the South about the older siltstone to the North.</p>	2	
2	(c)	normal	1	
2	(d)	<p>angle of dip at X: 33/34°</p> <p>angel of dip at Y: 80°</p>	1	
2	(e)	clinometer	1	

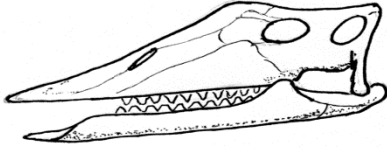
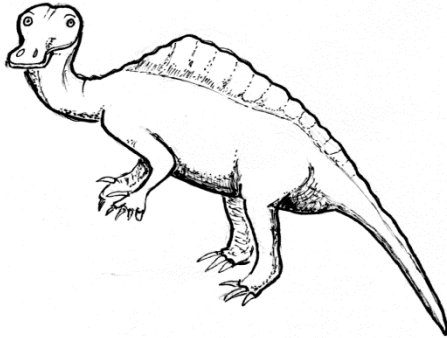

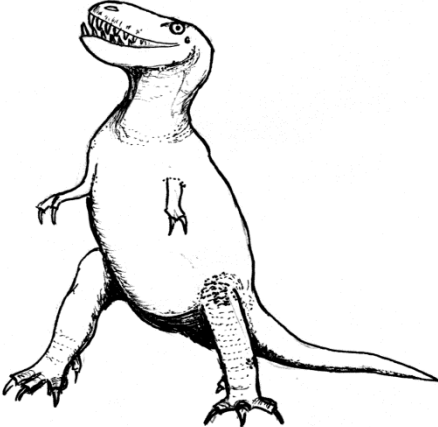
Question		Expected Answer(s)	Max Mark	Additional Guidance
2	(f)		1	
2	(g)	The shale at X dips at a shallower angle.	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance
3	(a)		3	
<p style="text-align: center;">Age (Thousands of years)</p>				
3	(b)	(i) The older basalt the thicker the weathered skin. (1)	2	
3	(b)	(ii) The weathering occurs faster/skin thickens faster to begin with, then the rate of weathering/increase in skin thickness slows down and levels off. (1)		
3	(c)	1. Higher temperatures 2. Higher precipitation	2	
3	(d)	Calculation: $1.6/0.4 \times 100 = 400\%$	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance
4	(a)	Low energy marine environment.	1	
4	(b)	 <p>Labels = 1 mark Drawing = 1 mark</p>	2	
4	(c)	Direction of dip: South East	1	
4	(d)	<p>They evolved rapidly/widespread geographical distribution/they are easily identifiable/durability/they lived in a narrow time period</p> <p><b>Any two of the above.</b></p>	2	
4	(e)	Give only the letter: B	1	
5	(a)	<p><b>Parts of fossils:</b></p> <p><b>Fossil P</b> – Thorax  <b>Fossil Q</b> – Suture line  <b>Fossil R</b> – Pedicle valve  <b>Fossil S</b> – Socket  <b>Fossil T</b> – Root  <b>Fossil U</b> – Aperture</p> <p><b>All 6 correct = 3 marks</b>  <b>4 or 5 correct = 2 marks</b>  <b>2 or 3 correct = 1 mark</b></p>	3	
5	(b)	<p><b>Name of fossil P</b> trilobite  <b>Name of fossil Q</b> ammonite  <b>Name of fossil R</b> brachiopod  <b>Name of fossil S</b> bivalve  <b>Name of fossil T</b> plant/tree  <b>Name of fossil U</b> gastropod</p> <p><b>All 6 correct = 3 marks</b>  <b>4 or 5 correct = 2 marks</b>  <b>2 or 3 correct = 1 mark</b>  <b>1 correct = 0 marks</b></p>	3	

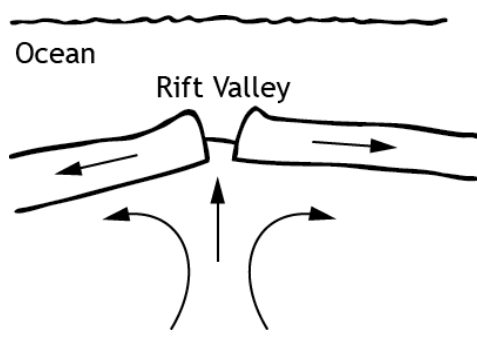
Question	Expected Answer(s)	Max Mark	Additional Guidance
5 (c)	<p style="text-align: center;">Animal</p> <div style="text-align: center;"> <p>front</p>  <p>back</p> </div> <div style="text-align: center;">  </div>	2	<p>How the animal lived with reason</p> <p><b>How animal lived:</b></p> <p>Burrowed in sediment.</p> <p><b>Reason:</b></p> <p>Streamlined shape allowed it to move forward in a burrow (low shovel front, high rear)/mouth at front accessed food supplies, waste excreted from rear.</p> <hr/> <p><b>How animal lived:</b></p> <p>Surface feeder.</p> <p><b>Reason:</b></p> <p>Apple (round) shape not suitable for burrowing/bottom central position of mouth accessed on rocks or sea bed sediments.</p>



Question		Expected Answer(s)	Max Mark	Additional Guidance
5	(c)	(cont)	2	
		Animal		How animal lived with reason
		 		<p><b>How animal lived:</b></p> <p>Herbivore.</p> <p><b>Reason:</b></p> <p>Blunt teeth suitable for crushing vegetation/no pointed teeth for piercing prey/no teeth at front or any other suitable answer.</p>
		 		<p><b>How animal lived:</b></p> <p>Carnivore.</p> <p><b>Reason:</b></p> <p>Sharp pointed teeth for piercing/tearing prey.</p>
		1 mark per animal		

Question			Expected Answer(s)	Max Mark	Additional Guidance
6	(a)		<ul style="list-style-type: none"> <li>• Hard hat for quarry visit</li> <li>• Mobile phone for emergency</li> <li>• First aid kit</li> <li>• Weather check before visit</li> <li>• Appropriate footwear/clothing worn</li> <li>• Route plan for others to follow</li> <li>• Any other suitable answer</li> </ul> <p><b>All 4 correct = 2 marks</b>  <b>2 or 3 correct = 1 mark</b>  <b>1 correct = 0 marks</b></p>	2	
6	(b)	(i)	<p><b>Location 1:</b></p> <p>unconformity</p>	1	
6	(b)	(ii)	<p><b>Location 2:</b></p> <p>it has been thermally metamorphosed.</p>	1	
6	(b)	(iii)	<p><b>Location 3:</b></p> <ul style="list-style-type: none"> <li>• Hard</li> <li>• Brittle/splintery/loss of cleavage/no foliation</li> <li>• Crystalline</li> <li>• Fine grained</li> </ul> <p><b>Any two of the above</b></p>	2	
6	(c)		<p><b>Type of fault:</b> Tear fault</p> <p><b>Reason:</b> if the contact at the granite boundary is vertical then horizontal movement can only displace this contact.</p> <p><b>Or</b></p> <p>Normal fault/reverse fault</p> <p>There will be a narrower exposure of the granite dome on the right if the left side has risen.</p> <p><b>Or any other reasonable answer</b></p>	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance
7	(a)	<p style="text-align: center;"><b>Graph B</b> <b>Change of speed of earthquake waves with depth</b> Speed of P- and S- waces (km per second)</p> <p>Depth inside the earth (km)</p> <p>Centre of Earth</p>	1	
7	(b)	<p>Space for calculation</p> $2900 - 40 = 2860$ <p>Answer 2860km</p>	1	
7	(c)	<b>Give only the letters: C and E</b>	2	
7	(d)	<p>A: P -</p> <p>B: S -</p> <p>C: L -</p>	1	
7	(e)	Rocks snap here as plates slide/collide/ separate from one another.	1	

Question		Expected Answer(s)	Max Mark	Additional Guidance								
8	(a)	The greater viscosity the slower the lava flow speed.	1									
8	(b)	It has started to cool and crystals have formed that slow down the flow.	1									
8	(c)	The high viscosity at D combined with the lack of slope means that lava flow will be slow/halted thus allowing lava to accumulate from above.	1									
8	(d)	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><i>Type of lava</i></th> <th><i>Viscosity</i> 1= most viscous 2=less viscous 3=least viscous</th> </tr> </thead> <tbody> <tr> <td>Andesite</td> <td>2</td> </tr> <tr> <td>Basalt</td> <td>3</td> </tr> <tr> <td>Rhyolite</td> <td>1</td> </tr> </tbody> </table>	<i>Type of lava</i>	<i>Viscosity</i> 1= most viscous 2=less viscous 3=least viscous	Andesite	2	Basalt	3	Rhyolite	1	1	
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Andesite	2											
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Rhyolite	1											
8	(e)	Gas cannot escape easily and accumulates under high pressure. When it does escape the gas expands rapidly exploding lava and ash in all directions	1									
9	(a)	<p>An indication of convection currents and plates separating is needed.</p>  <p>The diagram shows a cross-section of a rift valley. At the top, a wavy line represents the ocean surface. Below it, two tectonic plates are shown moving away from each other, indicated by arrows pointing outwards. The space between the plates is labeled 'Rift Valley'. Below the rift valley, there are two curved arrows pointing upwards, representing convection currents in the mantle that are driving the plates apart.</p>	1									
9	(b)	Transform fault	1									



Question		Expected Answer(s)	Max Mark	Additional Guidance
10	(b)	Warm shallow seawater	1	
11	(a)	Anticline	1	
11	(b)	Dyke	1	
11	(c)	<b>Give only the letter: B</b>	1	
11	(d)	The limestone was folded before the unconformity (surface S) was formed then it was folded again when the conglomerate, andesite and sandstone were folded.	1	
11	(e)	E → A → F → B → D → C oldest youngest  <b>All 6 correct = 3 marks</b> <b>4 or 5 in correct sequence = 2 marks</b> <b>3 in correct sequence = 1 mark</b>	3	
12		C → F → E → A → D → B oldest youngest  <b>All 6 correct = 3 marks</b> <b>4 or 5 in correct sequence = 2 marks</b> <b>3 in correct sequence = 1 mark</b>	3	
13	(a)	Quartzite	1	
13	(b)	1. Large scale cross bedding since desert sand dunes can be large 2. No fossils – this is more likely in a desert 3. The wind, like water, can create cross beds. However, the frequent changes in direction of the cross beds makes a desert more likely since wind changes direction more frequently than water.	2	

Question			Expected Answer(s)	Max Mark	Additional Guidance										
13	(c)	(i)	mudstone 5: sandstone 7: basalt 8	1											
13	(c)	(ii)	1. The mudstone part of the cliff has been undercut most of it is the softest rock 2. Metamorphic rock X is the hardest rock and it stands out more than the basalt above it  <b>(or any other suitable answer)</b>	2											
13	(d)		Flooding of nest sites/dust storms	1											
13	(e)		<ul style="list-style-type: none"> <li>• They are eaten by predators</li> <li>• They are easily crushed/thin shell/soft or liquid interior</li> <li>• Being organic they decompose readily in the open air</li> <li>• Dinosaurs cared for and protected nest sites so most eggs hatched</li> </ul> <b>Any two or other suitable answer</b>	2											
14	(a)		Give only the letter: A	1											
14	(b)		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Feature</i></th> <th style="text-align: left;"><i>What will happen? (use increase or decrease or stay the same)</i></th> </tr> </thead> <tbody> <tr> <td>The volume of mudstone</td> <td>Decrease</td> </tr> <tr> <td>The density of sandstone</td> <td>Increase</td> </tr> <tr> <td>The water content in peat</td> <td>Decrease</td> </tr> <tr> <td>The natural gas content in coal</td> <td>Decrease</td> </tr> </tbody> </table> <p>4 correct = 2 marks 2 or 3 correct = 1 mark 1 correct = 0 marks</p>	<i>Feature</i>	<i>What will happen? (use increase or decrease or stay the same)</i>	The volume of mudstone	Decrease	The density of sandstone	Increase	The water content in peat	Decrease	The natural gas content in coal	Decrease	2	
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The volume of mudstone	Decrease														
The density of sandstone	Increase														
The water content in peat	Decrease														
The natural gas content in coal	Decrease														

Question			Expected Answer(s)	Max Mark	Additional Guidance
14	(c)	(i)	The coal seams have been put under pressure when they were folded and the gasses have been squeezed out to produce a higher carbon content	1	
14	(c)	(ii)	<p><b>Percentage carbon:</b> Above 84%</p> <p><b>Reason:</b> the coal has been heated by being close to the intrusion – gasses would have been driven off</p>	2	

[END OF MARKING INSTRUCTIONS]