

## Hazardous environments- 1

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

Time:

Total Marks Available:

Total Marks Archived:

Level: IGCSE Mathematics A

Subject: Geography

Exam Board: Edexcel IGCSE Geography- it is however suitable for use by mathematics student of other boards

Topic: Hazardous environments -1

Type: Mark Scheme

To be used by all students preparing for Edexcel IGCSE Geography- Students of other Boards may also find this useful



## **Mark Scheme**

Q1.

Question number	Answer	Mark
(i)	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>D (eye in the centre)</p> <p>The answer cannot be A (low pressure in a tropical cyclone), B (high rainfall), C (high wind speeds).</p>	<b>(1)</b>

Question number	Answer	Mark
(ii)	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>Award 1 mark for a suitable factor:</p> <ul style="list-style-type: none"><li>• (Warm sea surface) temperature (1)</li><li>• Coriolis force (1)</li><li>• Wind shear (1)</li><li>• Converging winds (1)</li><li>• Air pressure (1)</li><li>• Latitude (1)</li><li>• Climate / seasonality (1)</li></ul> <p>Accept any other appropriate response.</p>	<b>(1)</b>

Q2.



Question number	Answer	Mark
	<p style="text-align: center;"><b>AO3 (4 marks)</b></p> <p>Award 1 mark for the initial point (1) and a further mark for further development (1).</p> <ul style="list-style-type: none"><li>• Advantage: By using field sketches students can get a quick view of the areas they are working recording key features (1) to support recall later (1).</li><li>• Advantage: By using field sketches students can highlight features (1) that they want to focus on as part of their study (1).</li><li>• Disadvantage: Because students are often making sketches quickly, they may not record key features correctly (1) leading to inaccuracies later on (1).</li><li>• Disadvantage: Because students have different perceptions (1) they may over-exaggerate features (1).</li></ul> <p>Accept any other appropriate response.</p>	<b>(4)</b>

Q3.

Question number	Answer	Mark
<b>(i)</b>	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>B (Satellite technology to track development of storms) (1). The answer cannot be A (related to earthquakes), C (a response to address the impact not to plan for cyclones), or D (related to tectonic hazards).</p>	<b>(1)</b>



Question number	Answer	Mark
(ii)	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>Award 1 mark for any of the following.</p> <ul style="list-style-type: none"><li>• Family ties mean they want to stay (1)</li><li>• Unaware of the risk (1)</li><li>• No ability to move (1)</li><li>• Fertile soils (1)</li><li>• Lack of ability to move (1)</li></ul> <p>Accept any other appropriate response.</p>	<b>(1)</b>

Question number	Answer	Mark
(iii)	<p style="text-align: center;"><b>AO1 (1 mark)/AO2 (1 mark)</b></p> <p>Award 1 mark (AO1) for identification of correct impact and a further mark for explanation (AO2) up to a maximum of two marks.</p> <ul style="list-style-type: none"><li>• Closure of businesses/job loss (1) means loss of income (1).</li><li>• Increased government debt (1) due to funds needed for emergency responses (1).</li><li>• Damage to infrastructure (1) cost money to repair (1).</li><li>• Loss of income from tourism (1) due to closure of airports/hotels (1).</li></ul> <p>Accept any other appropriate response.</p>	<b>(2)</b>

Q4.



Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark) AO2 (3 marks)</b></p> <p>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks. Credit annotated diagrams where provided, but do not double credit ideas if repeated in the written text.</p> <ul style="list-style-type: none"><li>• Oceanic and continental plates move towards each other (1). Oceanic plate melts as it sinks below the continental (1) as the temperature increases with depth in the Earth's crust (1) this creates magma which rises through the continental crust to form a volcano (1).</li><li>• Two tectonic plates move towards each other / meet (1) one is pushed under the other /subducted (1) and melts due to the heat within the Earth's crust (1) and the resulting magma rises to the crust's surface to form volcanoes (1).</li></ul> <p>Accept any other appropriate response.</p> <p>Accept answers that use an annotated diagram.</p>	<b>(4)</b>



Q5.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark)/AO2 (1 mark)</b></p> <p>Award 1 mark (AO1) for identification of correct impact and a further mark for explanation (AO2) up to a maximum of two marks.</p> <ul style="list-style-type: none"><li>• Damage to infrastructure (1) which requires heavy investment from the government (1).</li><li>• Peoples' homes are destroyed (1) so can lead to homelessness and development of makeshift settlements (1).</li><li>• Damage to crops (1) which means farmers risk having no money to buy seeds for next season (1).</li></ul> <p>Accept any other appropriate response.</p>	<b>(2)</b>

Q6.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark)/AO2 (3 marks)</b></p> <p>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.</p> <ul style="list-style-type: none"><li>• Two tectonic plates move/converge together (1). The denser plate is subducted/pushed under and sinks into the mantle (1) where it melts due to the intense friction/pressure/heat (1). Some of this molten material can erupt through the surface as a volcano (1).</li></ul> <p>Accept any other appropriate response.</p>	<b>(4)</b>



Q7.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark)/AO2 (3 mark)</b></p> <p>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.</p> <p>1+1+1+1 2+2 3+1</p> <p>Lack of education (1) meaning people don't know what to do (1). Lack of emergency planning (1) meaning when the event occurs there is little or no response in a short period of time (1)</p> <p>Low level of economic development (1) meaning there is no resource available to respond (1) resulting in chaos and panic when the event occurs (1) and a lack of resource to rebuild (1)</p> <p>Some countries experience a high frequency of natural hazards (1) which means that they do not have enough time / money to respond sufficiently (1) so additional money needs to be spent on</p>	
	<p>recovery (1) which limits opportunity for increasing the level of development (1)</p> <p>Accept any other appropriate response.</p>	<b>(4)</b>





Q8.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark) AO2 (3 marks)</b></p> <p>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.</p> <ul style="list-style-type: none"><li>• Volcanoes usually form on a destructive or constructive plate boundaries (1). However, where there are plumes of molten rock (1) which rise through the mantle and cause the crust to melt (1) this creates hotspots (1).</li><li>• Hotspots (1) such as the Hawaii (1) are formed where the earth's crust is thinner (1) allowing molten material rise to the surface more easily (1)</li><li>• Hotspots (1) form where the earth's crust is thinner (1) allowing molten material to rise more easily (1) due to convection currents (1)</li></ul> <p>Accept any other appropriate response.</p>	<b>(4)</b>

Q9.





Question number	Answer	Mark
(i)	<p style="text-align: center;"><b>A03 (1 mark)</b></p> <p>Students could use data from a previous study in the same area (1).</p> <p>Alternatives may include:</p> <ul style="list-style-type: none"><li>• (Geology) maps</li><li>• (GIS) maps</li><li>• Archive photographs/sketches</li><li>• Old maps</li><li>• Historical records</li><li>• Photos taken by others</li><li>• Collecting data from the internet</li></ul> <p>Accept any other appropriate response.</p>	<p style="text-align: right;"><b>(1)</b></p>



Question number	Answer	Mark
(ii)	<p style="text-align: center;"><b>A03 (1 mark)</b></p> <p>Award one mark for a suitable disadvantage.</p> <ul style="list-style-type: none"><li>• The data could be inaccurate/bias (1).</li><li>• The data could be from a different location (1).</li><li>• They may not have collected the data over the same time period (1).</li></ul> <p>In this response candidates must relate the answer for 5aii to the response given in 5ai.</p> <p>If candidates do not put in a response for 5ai and then state a generic disadvantage allow mark.</p> <p>Accept any other appropriate response.</p>	<b>(1)</b>



Question number	Answer	Mark
(iii)	<p style="text-align: center;"><b>AO4 (2 marks)</b></p> <p>Award 1 mark for each correct value to 1 decimal place</p> <p>Award 1 mark for correct method</p> $0+44+40+51 = 135/4 = 33.75 \text{ cm}$ <p>Correct to 1 decimal place 33.8cm</p>	(2)

Question number	Answer	Mark
(iv)	<p style="text-align: center;"><b>AO4 (2 marks)</b></p> <p>Candidates will need to plot bars correctly.</p> <p>1 mark for each correctly plotted bar.</p> <p>There is no requirement for width or shading.</p> <p>Plot points are 81.5 and 30.3</p>	



(iv) Use the data in Figure 5a to plot the data for Groyne 2 (both North and South) on Figure 5b. (2)

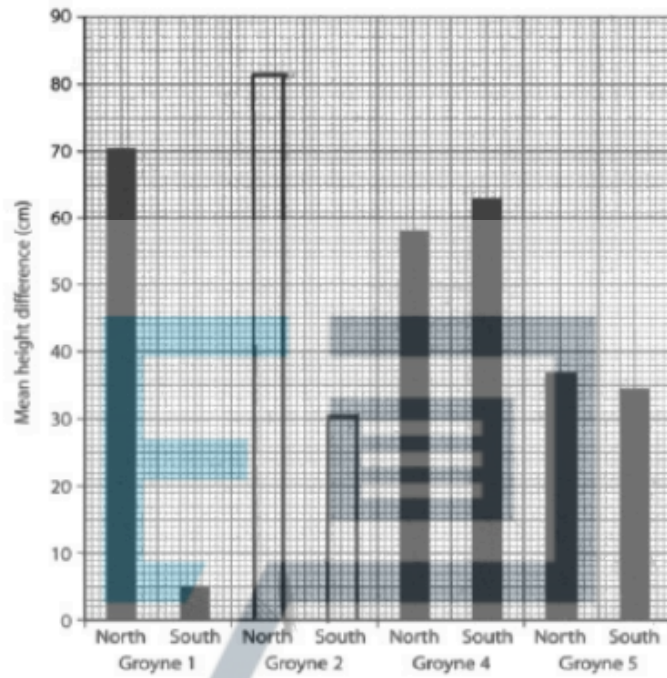


Figure 5b

Mean height difference between the top of selected groynes and the surface of the sand (cm)

(2)



Question number	Answer	Mark
(v)	<p style="text-align: center;"><b>AO3 (2 marks)</b></p> <p>Award 1 mark for describing an alternative sampling method (1) and 1 mark for further development (1).</p> <ul style="list-style-type: none"><li>• Stratified – students could use a stratified sampling technique where a proportionate number of observations are taken from each part of an area (1) to reduce the amount of samples needed (1) more likely reflective of the total population (1).</li><li>• Systematic - students could pick the first site at random then pick subsequent sites at a set defined distance (1) this would help ensure that the sampling covered a whole range of sediment changes along coast (1).</li></ul> <p>Accept any other appropriate response.</p>	(2)

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Q10.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>B (Constructive)</p> <p>The answer cannot be A (not a plate boundary), C (not found at a plate boundary) or D (part of the earth's crust).</p>	(1)



Q11.

Question number	Answer	Mark
	<b>AO1 (1 mark)</b>	
	B There is a plume of magma below the surface (1)	<b>(1)</b>

Q12.

Question number	Answer	Mark
	<b>AO3 (1 mark)</b>	
	Award 1 mark for the following.	
	The building is on stilts (1)	
	The building is off the ground (1)	
	Idea of strong / reinforced base (1)	
	Shatterproof windows (1)	
	Accept any other appropriate response.	
		<b>(1)</b>



Q13.

Question number	Answer	Mark
	<p style="text-align: center;"><b>A03 (1 mark)</b></p> <p>Award 1 mark for the following:</p> <ul style="list-style-type: none"><li>• Lava flow (1).</li><li>• Pyroclastic flow (1).</li><li>• Ash (1).</li></ul>	<b>(1)</b>

Q14.

Question number	Answer	Mark
	<p style="text-align: center;"><b>A01 (1 mark)</b></p> <p>D Earthquake (1)</p>	<b>(1)</b>

Q15.

Question number	Answer	Mark
	<p style="text-align: center;"><b>A01 (1 mark)</b></p> <p>A low pressure and low wind speed (1)</p>	<b>(1)</b>





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Q16.

Question number	Answer	Mark
	<p style="text-align: center;"><b>AO1 (1 mark)</b></p> <p>C (Tectonic plate movement) (1).</p> <p>The answer cannot be A (incorrect), B (impact of an earthquake not an influence or D (incorrect).</p>	<b>(1)</b>

Q17.



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Question number	Answer	Mark
(i)	<b>AO1 (1 mark)</b> B Saffir Simpson Scale (1)	(1)

Question number	Answer	Mark
(ii)	<b>AO1 (1 mark)</b> Award 1 mark for the following:  When wind speed and direction are different from normal over a short period of time (1)  Accept any other appropriate response	(1)

Question number	Answer	Mark
(iii)	<b>AO1 (1 mark)/AO2 (1 mark)</b> Award 1 mark for the identification of the factor (AO1) and a further mark for further development (AO2) up to a maximum of 2 marks:  Tropical cyclones form in the tropics because of:  a source of warm, moist air from tropical oceans (1) with sea surface temperatures normally in the region of, or in excess, of 27 °C (1)  winds near the ocean surface blowing from different directions (1) converging and causing air to rise and storm clouds to form (1)  Accept any other appropriate response	(2)

Q18.



Question number	Answer	Mark
	<p style="text-align: center;"><b>AO2 (2 marks)/AO3 (2 marks)</b></p> <p>Award 1 mark (AO2) for a factor that could affect the rate of retreat and a further mark (AO3) for its impact on the coastline shown on Figure 2a, up to a maximum of 2 marks each.</p> <ul style="list-style-type: none"><li>• The largest number of tropical storms is normally between August and October as this is usually the warmest time of year (1), which means that the ocean waters will be at least 26 °C/80 °F (1).</li><li>• Most storms occur during the summer months because the atmosphere will be warmer at this time of year (1), which means that convection (leading to thunderstorms) is more likely to take place (1).</li><li>• During the summer, there might be winds that do not vary greatly with high/low wind shear (1), which therefore allows the storm clouds to rise vertically to high levels (1).</li></ul> <p>Accept any other appropriate response.</p>	<b>(4)</b>