



Mark Scheme (Results)

Summer 2019

Pearson Edexcel International GCSE
In Geography (4GE1) Paper 01R

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number	Answer	Mark
1(a)	AO1 (1 mark) B Narrow river channel with steep sides A is not the correct response as this describes as rivers in the upper course have steep sides C is not the correct response as this describes the river further down its course D is not the correct response as it describes the river in the lower course	(1)

Question number	Answer	Mark
1(b)(i)	AO1 (1 mark) A is the correct answer – Suspension is a process of river transportation B is not the correct response as abrasion is a process of erosion C is not the correct response as attrition is a process of erosion D is not the correct answer as deposition is the process of depositing rather than transporting material	(1)

Question number	Answer	Mark
1(b)(ii)	AO1 (1 mark) Award one mark for any of the following: • water storage in soil • aquifer • lake / lagoon / pond / puddle / reservoir / dam • glacier / ice sheet / ice cap / ice • groundwater / groundwater storage • surface water • river / river channels / channel storage • vegetation / vegetation storage • interception / interception storage • sea / ocean • clouds / atmosphere Accept any other appropriate response. Reject: underground store, surface storage, water, groundwater flow	(1)
Question number	Answer	Mark
1(b)(iii)	AO1 (1 mark)/AO2 (1 mark) Award 1 mark for the method of transfer and 1 mark available for explanation. Correct responses include evaporation (1) transpiration (1) condensation (1) precipitation (1) run-off (1) percolation (1) Evaporation is a method of water transfer (1) heat energy causes water to change from water to steam this rises and forms clouds (1) Run off is a method of water transfer (1) when water falls as rain it runs across the ground into rivers and streams (1) To be awarded the second mark it must give the idea of water moving. Accept any other appropriate response.	(2)

Question number	Answer	Mark
1(c)	AO2 (2 marks)/AO3 (2 marks) Award 1 mark for identification of a human intervention (AO2) and how it could affect water quality (1) and a second mark for a further development (1) (AO3). • Pesticides get washed into the river off fields (1) affecting fish and the river ecosystem (1). • Cooling water from power stations and returning to source (1) can change the temperature of the water and affect river ecosystems (1). • Domestic treated sewage released into rivers (1) this pollutes the water source as chemical balance of river is affected (1). Allow suggestions that are not on the resource specifically but are relevant to water quality. Accept any other appropriate response.	(4)

Question number	Answer	Mark
1(d)	AO2 (3 marks) Award 1 mark for identification of a way precipitation affects river regimes and 2 marks for development and further explanation, up to a maximum of 3 marks. • High intensity of rainfall (1) doesn't soak into the ground (1) so becomes overland flow and this shortens lag time (1) • Amount of rainfall (1) Heavy rainfall will saturate the ground quickly (1) resulting in higher levels of run off shortening lag time (1) Could develop reverse ideas i.e. limited rainfall Regime is about the whole basin so accept reference to either river regime or storm hydrograph.	(3)

	Award 1 mark for identification of type of people impact. No double credit for mirroring. Accept any other appropriate response.	
Question number	Answer	Mark
1(e)	AO3 (1 mark) • Meander (1)	(1)

Question number	Answer	Mark
1(f)	AO1 (1 mark) AO3 (3 marks) Award 1 mark for the initial point (1) (AO1) and 3 further marks for the extension of the point up to 4 marks. (AO2) • Needs to identify stages in the development of landform. • It's important to note that in this case regarding the formation of the oxbow lake we are making the assumption that the river is already meandering. • Can reward processes below in showing how meander is extended and neck created Marks can be awarded for description of stages: • River flows fastest on the outside bend (1) • River flows slowest on the inside bend (1) • On the inner bend deposition occurs (1) because there is more friction here (1) • Outer bend erosion occurs (1) because hydraulic action occurs here (1) • Bank full flow breakthrough (1)	(4)

	• Cut off, straight main channel, overtime erosion/deposition separates main channel from old meander (1) • River erodes and deposits laterally (1) • During flooding river takes shortest route eventually cutting off river bend altogether (1) Accept any other appropriate response.	
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Question number	Answer indicative content
1(g)	AO3 (4 marks) AO4 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Candidates should use the two resources to identify reasons for the differences in the flood risk in the USA. A range of factors can then be explored from 1d to analyse why there might be an increased flood risk in certain areas. To access level 3, both Figures 1c and 1d need to be used. AO3 • Levels of flood risk are affected by a range of factors both human and physical. • Different levels of precipitation events will impact the level of run off to rivers increasing the opportunity for floods. • Snow melt in the spring will increase the likely flood risk. • Soil types maybe subject to change dependent on the types of vegetation.

	- In rural areas, land use can affect infiltration rates and, therefore, the flood risk on a river. - Areas of little vegetation or deforestation will mean that there is less interception and the rain reaches the ground faster. The ground is likely to become saturated and surface run-off will increase leading to increased flood risk. - Candidates may explore human and natural causes or may refer to storm events. AO4 - Fig 1c shows that some areas are more prone to minor or severe flooding. - Fig 1c coastal areas are more prone to severe flooding but there is also a major threat inland this is likely due to a high density of rivers in this area. - Fig 1c Minor flood areas are more evenly distributed could be related to high levels of farming activity affecting flood plains. - Fig 1d tidal storm surges can affect river flooding. - Fig 1d a wide range of factors affect flood risk. - Fig 1d catchment vegetation can have an impact on river discharge. - Fig 1d waterway size can affect flood risk.	
Question number	Answer	
Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	- Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) - Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	- Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) - Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)

Level 3	7-8	• Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)
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Question 2

Question number	Answer	Mark
2(a)	AO1 (1 mark) A is the correct response long wavelength and weak backwash B is not correct as it describes a destructive wave. C is not the correct answer as it describes elements of a destructive wave. D is not the correct answer as it describes elements of a destructive wave.	(1)

Question number	Answer	Mark
2(b)(i)	AO1 (1 mark) B is the correct answer - Spit Options A,C and D are all erosional landforms.	(1)

Question number	Answer	Mark
2(b)(ii)	AO1 (1 mark) Award one mark for: • Biological (1) • Physical / Mechanical (1) • Chemical (1) Also allow named types of weathering that are linked to either physical, chemical or biological weathering, e.g. • Freeze thaw (1) • Plants and plant roots / burrowing animals (1) • Acid rain / solution / dissolving (1) • Onion-skin weathering / exfoliation (1)	

	Accept other appropriate responses.	
	Reject rain or wind.	(1)

Question number	Answer	Mark
2(b)(iii)	AO1 (1 mark)/AO2 (1 mark) Award 1 mark for accurately defining longshore drift (AO1) (1) and a second mark for an appropriate expansion (1) Longshore drift – this is the transportation of sediments along the coastline (1) in a zig zag pattern (1). Accept any other appropriate response.	(2)

Question number	Answer	Mark
2(c)	AO2 (2 marks)/AO3 (2 marks) Award 1 mark (AO2) for identification of how geology could affect the landscape (1) and a second mark for a further development (1) (AO3). • Hard and soft rocks will be eroded at different rates (1) changing the shape of the coastline so that there is a series of headlands and bays (1) • Rock jointing Where there is an increased amount of rock joints (1) there will be increased rates of erosion (1) • Soft rocks are eroded more quickly (1) so the coastline recedes more quickly creating bays (1). • Hard rock erodes more slowly (1) resulting in the formation of Headlands and other erosional features (1). Reward candidates for comments about shape of coastline not necessarily on the resource – e.g. steepness of slope.	

	If candidates make hard and soft rock points as one way this only gains max two marks credit. Accept any other appropriate response.	(4)
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Question number	Answer	Mark
2(d)	AO3 (3 marks) Award 1 mark for identification of a way and 2 marks for development and further explanation, up to a maximum of 3 marks. Temperature, light, water depth, salinity, wind direction, level of shelter. For example: • Coral reefs need a minimum water temperature to develop (1) of around 18 degrees (1) they grow best between 23 and 25 degrees (1). • Coral reefs need a large amount of light (1) so levels of pollution have a negative effect (1) as the coral doesn't have the correct nutrients to grow (1). • Coral reefs are sensitive to PH (1) they require a PH of 8 – 8.5 (1) to grow sufficiently, maintain health (1). Accept any other appropriate response.	(3)

Question number	Answer	Mark
2(e)	AO3 (1 mark) Award 1 mark for the following: Stack (1)	(1)

Question number	Answer	Mark
2(f)	AO1 (1 mark)/AO2 (3 marks) Award 1 mark for the initial point (AO1) and 3 further marks (AO2) for the extension of the point up to 4 marks. • Cliffs tend to be located on a headland due to erosion (1). • Destructive waves erode the base of the cliff due to repeated breaking (1). • Softer rock can erode more quickly than harder rock (1) leading to the formation of a wave cut notch (1). As further undercutting takes place the weight of the rock is too great and falls into the sea (1). • Cliffs are also shaped by surface weathering (1) the breaking down of rocks by subaerial processes (1). This includes mechanical and biological weathering processes (1). accept freeze thaw, biological or chemical weathering • The rock type will affect cliff gradient or steepness (1). Cliffs which are gentle tend to be formed in areas where the geology is unconsolidated (1). • Cliff erosion can be by a number of methods (1) for example hydraulic action (1). Accept any other appropriate response.	(4)

Question number	Answer indicative content
2(g)	AO3 (4 marks) AO4 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Candidates should explore both soft and hard management techniques as outlined in the resource. To access level 3, both Figures 2c and 2d must to be used. AO3 Note: Candidates may refer to soft management techniques in their response this should be credited. • Soft management techniques such as beach replenishment, building bars, fencing hedging and replanting, cliff regrading: • Hard management – groynes, wooden revetment, steel wall, gabion and rip rap. • Managed retreat – abandoning certain areas of coastal defence and allowing nature to take its course. • Candidates should be able to look at costs and benefits – this could be around cost/impact on the environment /local perception. • Coastal defence's create visual pollution in the area. AO4 • Figure 2c shows different techniques have been used in different places. • Figure 2c shows that the techniques used in Photos 2 and 3 have been developed to protect the main headland this could be due to the positioning of a settlement, • Figure 2c shows the offshore breakwater has been positioned to limit the effects of the prevailing wind and dissipate the effect of the prevailing wind. • Figure 2c shows the positioning of groynes these are positioned in beach type areas and are more in keeping with the traditional approach to preventing longshore drift etc. • Figure 2d shows there is a range of costs of coastal management techniques. • Figure 2d shows that there are different maintenance costs.

	Fig 2d suggests a relationship between the coastal management technique used and the type of coastal area.
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Question number	Answer	
Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	- Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) - Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	- Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) - Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	- Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) - Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question 3

Question number	Answer	Mark
3(a)	AO1 (1 mark) D is the correct response - plates push together and one plate is destroyed. A and C are not correct as they describe constructive plate margins B is not correct as it is not an accurate description	(1)

Question number	Answer	Mark
3(b)(i)	AO1 (1 mark) C is the correct response - Volcanic Explosivity index A, B and D are all inaccurate measures of volcanic hazards	(1)

Question number	Answer	Mark
3(b)(ii)	AO1 (1 mark) Award 1 mark for any of the following: • Education / knowledge / awareness (1) • Emergency plan / warning systems / prediction / management (1) • (Level / quality) of infrastructure (1) • Age / quality / strength of buildings (1) • (Level of) development (1) • Population density / population age (1) • Land-use (1) Accept any other appropriate response. Reject population without any context, e.g. age	(1)

Question number	Answer	Mark
3(b)(iii)	AO1 (1 mark)/AO2 (1 mark) Award 1 mark (AO1) for the identification of a physical impact (1) and 1 mark (AO2) for further explanation, up to a maximum of 2 marks. • Ash from the volcano is ejected into the atmosphere (1) the ash causes physical damage to property and agricultural land (1) • Lava flows ejected from the volcano can travel up to 10km (1) destroying buildings and agricultural land (1) • Impact ash from the volcano mixes with mud and water (1) creating a mudflow which destroys building and farmland (1) Accept any other appropriate response	(2)

Question number	Answer	Mark
3(c)	AO2 (2 mark)/AO3 (2 mark) Award 1 mark (AO2) for identification of how a factor could affect the distribution and a further mark (AO3) for further development shown on Figure 3a. Candidates should respond with two different factors. • Sea temperatures – Tropical cyclones tend to develop where temperatures are higher 24-27 degrees (1) this means that convection currents will be high enough to maintain the cyclone vortex (1)/provides energy to feed the cyclone. • Cyclones tend to develop in the tropics (1) as this where the temperature and humidity are highest (1) • Low air pressure pulls wind in and increasing intensity (1) this churns up the water developing the cyclone (1) • Strong winds caused by the Coriolis effect (1) gives a tropical cyclone its rotation anticlockwise in the northern hemisphere (1) Accept any other appropriate response.	(4)

Question number	Answer	Mark
3(d)	AO3 (3 marks) Award 1 mark for identification of a way and 2 marks for development and further explanation, up to a maximum of 3 marks. • Hotspots – this is a point at which material from deep inside the earth's mantle (1) is pushed to the surface by convection currents (1) as this material breaks through the earth's crust it forms volcanoes which can lead to physical and human impacts (1) • Hot spots are plumbs of magma (1) that are pushed through a weakness in the earth's crust (1) to form volcanoes (1)	(3)

Question number	Answer	Mark
3(e)	AO3 (1 mark) Award 1 mark for one of the following. • Cross bracing (1) • Reinforced concrete (1) • Concrete exoskeleton (1) • Strong foundations (1) Accept any other appropriate response.	(1)

Question number	Answer	Mark
3(f)	AO1 (1 mark)/AO2 (3 mark) Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks. Responses could include: • Lack of education (1) so they don't know any better / poor decision-makers (1). • Always lived at the location and don't think it will happen to them (1) so there is and acceptance of risk (1). • Economic reasons meaning they can't afford to move (1) and worry about not being able to find a job elsewhere (1). • Where they live is a highly developed areas (1) may not want to move away tradition / family / they have made and investment of time and money (1). Accept any other appropriate response.	(4)

Question number	Answer indicative content
3(g)	A03 (4 marks) A04 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Use of both resources needed for level 3 A03 • GIS can be used in a variety of ways before during and after a hazardous event. • Candidates should examine how the use of GIS can impact against elements identified in Figure 3c. • Road structures identified through GIS could be used to enable emergency aid to get to an earthquake zone more quickly enabling the relief effort to start. • Coordinated GIS maps shared with all support agencies can enable a more coordinated relief effort ensuring resources are not wasted /deployed in the wrong area. • Using GIS can help plan in the short term where services where before and where they can be built afterwards • Candidates will outline the immediate short term and longer term effects of the disaster event and outline how this affects QOL A04 • Fig 3c shows how quality of life changes in response to a disaster event • Fig 3c shows that initially after the disaster event the quality of life/economic activity and social stability goes down • Fig 3c as relief arrives these begin to increase back to normal levels over time • Fig 3d provides a variety of ways in which GIS can be used to support earthquake response • Fig 3d outlines the stages that can be used to develop an understanding of hazard management

	Fig 3d suggests the correct way planners should use data to support emergency management
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Question number	Answer	
Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	- Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) - Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	- Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) - Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	- Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) - Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question number	Answer	Mark
4(a)(i)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of this environment: • Falling in the river / drowning (1) • Exposure / sunburn / heat exhaustion (1) • Slips / trips / bumps (1) • Fast flowing water (1) • Infection from water / diseases / polluted water (1) • Animals in the water (1) • Steep ground / river banks (1) • Deep water / flash floods (1) Accept any other appropriate response. Reject inaccurate measurements, losing equipment etc as not part of risk assessment.	(1)

Question number	Answer	Mark
4(a)(ii)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of what was identified in (4ai): • Wearing strong shoes / walking boots (1) • Wear lots of layers to keep warm (1) • Check the weather forecast / reports (1) • Checking local requirements / plans etc (1) • Working with care / avoiding slippery places (1) • Working in groups / warning others (1) • Wearing lifejacket / life vest (1) • Avoid drinking contaminated water (1) • Covering exposed cuts on skin (1) • Use a shallower / slower part of river (1) • Stay away from edge of river / not too close to banks (1) • Choose a safer location to work in (1).	(1)

	Accept any other appropriate response. Reject approaches that do not match (4ai).	
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Question number	Answer	Mark
4(a)(iii)	AO4 (2 marks) Award 1 mark for: Correct method of working, showing addition, e.g. 102.3 or $13.1+15.4+16.8+20.0+37.0$ (1) Correct mean, written to one decimal place, 20.5 (1). Reject answer to 2dp, i.e. 20.46	(2)

Question number	Answer	Mark
4(a)(iv)	AO4 (2 marks) Award 1 mark for each correct bar. To be awarded the mark for the first bar, line must be drawn between 13-14. The second bar needs to be right on the line. Site 1=13.1 Site 4=20.0 Note width of bars doesn't matter. There is no need for bars to be shaded.	(2)

Question number	Answer	Mark
4(a)(v)	AO3 (2 mark) Award 1 mark for an initial reason, and a further mark for extension of this point. E.g. • The cork could have got stuck as it flowed down the river (1) this would have slowed the cork down (1). • There could have been a strong wind blowing upstream (1) which would have slowed down the cork / which would have led to unreliable results (1). • Human error with the operation of the stop watch (1) which meant that the timing was inaccurately recorded at this site (1). • The water was too shallow (1) so the float got stuck (1). • Difficulty with accurately measuring the distance of the float-run (1) leading to inaccurate measurements of speed / velocity (1). Accept any other appropriate response	(2)

Question number	Answer	Mark
4(b)	AO4 (4 mark) Award 1 mark for a description of the technique and a further mark for a developed description (1). Quantitative • Description of how to calculate the cross section of the river measure from bank to bank and set intervals (1) transfer data onto graph paper to allow the area to be calculated (1). Qualitative • Field sketches can be used to record the main features of the river profile at different sites (1) this will help the students identify differences (1). • Sediment colour/size/shape/form of Power's scale (1) and changes across or downstream (1). • Ask public questions about the river (1), could by interview or questionnaire regarding flooding/litter/ pollution etc. (1). Credit responses for qualitative which discuss questionnaire. Accept any other appropriate response.	(4)

Question number	Answer indicative content
4(c)	A03 (4 marks) A04 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. A03 • Recognition of the extent to which there were equipment errors, e.g. faulty or uncalibrated equipment, and/or operator errors, e.g. misinterpreting the data being recorded, and how this might have affected that might have affected whether they were able to answer their enquiry questions. • Recognition of whether there were issues with the design of the data collection and/or sampling methodologies, which may be flawed in terms of the location/number of sites (spatial), the time of year (temporal), or the equipment chosen. • Accuracy is about making judgements about how close conclusions are to the actual changes occurring in the river environment where the fieldwork was carried out. A04 • There is evidence of using different skills and techniques to measure changes in a river channel – both design and techniques. • There is evidence of using different skills and techniques to reach conclusions about changes occurring in a river channel. • There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student. If the enquiry question isn't present do not penalise. • In this response there would be an expectation for the students to evaluate a number of different data collection techniques. • This should an evaluation of primary and secondary data as appropriate.

	- Students should look to identify the appropriateness of data collection techniques. - A view should be given on how successful or unsuccessful the data collection techniques were and how they could be improved to help students gather more effective results. - For level 2 responses the student response will need to link to the evaluation to their study directly. - For level 3 response there should be a greater range or depth of techniques evaluated. - Recognition of whether or not the data collection was less successful because of the way it was designed. - Recognition of any faults in equipment or human error. - How far data-collection methods used produced reliable results - An evaluation of how far the outcomes can be trusted (or repeated to obtain the same results).	
Question number	Answer	
Level	Mark	
	0	Descriptor
Level 1	1–3	No rewardable material.
Level 2	4–6	- Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) - Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 3	7–8	- Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) - Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)

Question number	Answer	Mark
5(a)(i)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of this environment: • Falling in the sea / drowning (1) • Exposure / sunburn (1) • Slips / trips / bumps (1) • Fast flowing currents / powerful tides (1) • Infection from water / diseases / polluted water (1) • Animals in the water (1) • Steep ground / cliffs / cliff / rock falls (1) • Deep water (1) • Getting lost (1) Accept any other appropriate response. Reject inaccurate measurements as not part of risk assessment.	(1)

Question number	Answer	Mark
5(a)(ii)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of what was identified in (5ai): • Wearing strong shoes / walking boots (1) • Wear lots of layers to keep warm (1) • Check the weather forecast (1) • Checking local requirements / plans etc (1) • Working with care (1) • Working in groups (1) • Wearing lifejacket / life vest (1) • Use a shallower / slower part of sea (1) • Wearing a helmet / void working too close to the cliffs (1) • Stay away from waves (1) • Choose a safer location to work in (1).	

	Accept any other appropriate response.	
	Reject approaches that do not match (5ai).	(1)
Question number	Answer	Mark
5(a)(iii)	AO4 (2 marks) Award 1 mark for: Correct method of working, showing addition, e.g. 83.7 or $8.1+14.5+16.1+15.0+30.0$ (1) Correct mean, written to one decimal place, 16.7 (1). Reject answer to 2dp, i.e. 16.74	(2)

Question number	Answer	Mark
5(a)(iv)	AO4 (2 marks) Award 1 mark for each correct bar. To be awarded the mark for the first bar, line must be drawn between 8-9. The second bar needs to be right on the line. Site 1=8.4 Site 4=15.0 Note width of bars doesn't matter. There is no need for bars to be shaded.	(2)

Question number	Answer	Mark
5(a)(v)	AO3 (2 mark) Award 1 mark for an initial reason, and a further mark for extension of this point. E.g. • Human error with the equipment used to measure shingle / calculation of the mean / selection of the sample to be measured (1) which meant that the sediment appeared bigger than it really was (1). • The sample could have been taken from an area that is protected from the action of the waves / near groynes (1) which means that a different energy profile would have affected this site (1). • Site 5 may have experienced a recent rockfall (1) which meant that the sample was larger / less eroded than the other sites (1). • A change in the direction of coast (1) causing different sizes of sediment to be deposited created the anomaly (1). • Human activities at the coast, e.g. tourism / beach management / replenishment (1) may have resulted on the sediment being moved from one location to another (1). Accept any other appropriate response.	(2)

Question number	Answer	Mark
5(b)	AO4 (4 mark) Award marks for a description of the technique (1) and a further mark for a developed description (1) Quantitative: - A beach profile would be completed at each site (1) at each site ranging poles are placed at the top and bottom of the beach (1) Qualitative: - Field sketches can be used to record the main features of the beach profile at different sites (1) this will help the students identify differences (1) Accept any other appropriate response.	(4)

Question number	Answer indicative content
5(c)	AO3 (4 marks) AO4 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. AO3 - Recognition of the extent to which there were equipment errors, e.g. faulty or uncalibrated equipment, and/or operator errors, e.g. misinterpreting the data being recorded, and how this might have affected that might have affected whether they were able to answer their enquiry questions. - Recognition of whether there were issues with the design of the data collection and/or sampling methodologies, which may be flawed in terms of

the location/number of sites (spatial), the time of year (temporal), or the equipment chosen.

- Accuracy is about making judgements about how close conclusions are to the actual changes occurring in the river environment where the fieldwork was carried out.

AO4

- There is evidence of using different skills and techniques to measure changes in a coastal environment – both design and techniques.
- There is evidence of using different skills and techniques to reach conclusions about changes occurring in a coastal environment.
- There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student.

If the enquiry question isn't present do not penalise.

- In this response there would be an expectation for the students to evaluate a number of different data collection techniques.
- This should an evaluation of primary and secondary data as appropriate.
- Students should look to identify the appropriateness of data collection techniques.
- A view should be given on how successful or unsuccessful the data collection techniques were and how they could be improved to help students gather more effective results.
- For level 2 responses the student response will need to link to the evaluation to their study directly.
- For level 3 response there should be a greater range or depth of techniques evaluated.
- Recognition of whether or not the data collection was less successful because of the way it was designed.
- Recognition of any faults in equipment or human error.
- How far data-collection methods used produced reliable results
- An evaluation of how far the outcomes can be trusted (or repeated to obtain the same results).

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	- Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3) - Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	- Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3) - Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	- Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) - Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question number	Answer	Mark
6(a)(i)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of this environment: (Falling over in) strong winds (1) - Exposure / sunburn (1) - Slips / trips / bumps (1) - An extreme weather event (1) - Heavy rain / flooding (1)	

	Falling masonry / building collapse (1) Accept any other appropriate response. Reject inaccurate measurements as not part of risk assessment. Also reject earthquake risks.	(1)
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Question number	Answer	Mark
6(a)(ii)	AO3 (1 mark) Award 1 mark for any reasonable risk in the context of what was identified in (5ai): - Avoid exposed locations / out in the open (1) - Collecting data once the storm has died down (1) - Use secondary data (1) - Checking local requirements / plans etc (1) - Waking with care (1) - Working in groups (1) - Wearing sunscreen / suntan lotion (1) - Staying away from a storm (1) - Using a weather forecast (1) - Remote collection of weather data (1) Accept any other appropriate response. Reject approaches that do not match (5ai). Reject to stay indoors as weather data cannot be collected indoors.	(1)
Question number	Answer	Mark
6(a)(iii)	AO4 (2 marks) Award 1 mark for: Correct method of working, showing addition, e.g. 241 or 60.0+46.0+55.0+70.0+10.0 (1)	

	Correct mean, written to one decimal place, 48.2 (1). Reject answer to 2dp, i.e. 48.20	(2)
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Question number	Answer	Mark
6(a)(iv)	AO4 (2 marks) Award 1 mark for each correct bar. For each bar the lines need to be drawn accurately – right on the correct line. Site 1=60 Site 4=70 Note width of bars doesn't matter. There is no need for bars to be shaded.	(2)

Question number	Answer	Mark
6(a)(v)	AO3 (2 mark) Award 1 mark for an initial reason, and a further mark for extension of this point. E.g. • The equipment used to measure wind speed (1) didn't measure accurately (1) so the wind speed was lower than it should have been (1). • The measurement was taken in a sheltered area (1) which meant that the wind speed recording was much lower (1). • Variation in wind speed over time / readings were not all taken at the same time (1) which led to a much lower result for site 5 (1). • Site 5 was in the eye of the storm (1) which meant that the speed was lower (1). • Anemometer / wind speed indicator was incorrectly calibrated (1) leading to an unreliable measurement (1). • It was at the end of the hazardous event / storm (1) therefore we would expect to see a change in the pattern of wind speeds (1).	

	Accept any other appropriate response.	(2)
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Question number	Answer	Mark
6(b)	AO4 (4 mark) Award marks for a description of the technique (1) and a further mark for a developed description (1) Quantitative - Sites could have wind speed measured at different times before (1) to measure the time taken for the storm to build up (1) - Sites could have wind speed measured at different times after the storm (1) to measure time taken for the storm to dissipate (1) Qualitative - Students could observe the wind speed using cameras (1) and assess the damage caused by the storm (1) Accept any other appropriate response	(4)

Question number	Answer indicative content
6(c)	AO3 (4 marks) AO4 (4 marks) Marking instructions Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. Indicative content guidance The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. AO3 • Recognition of the extent to which there were equipment errors, e.g. faulty or uncalibrated equipment, and/or operator errors, e.g. misinterpreting the data being recorded, and how this might have affected that might have affected whether they were able to answer their enquiry questions. • Recognition of whether there were issues with the design of the data collection and/or sampling methodologies, which may be flawed in terms of the location/number of sites (spatial), the time of year (temporal), or the equipment chosen. • Accuracy is about making judgements about how close conclusions are to the actual changes occurring in the environment where the fieldwork was carried out. AO4 • There is evidence of using different skills and techniques to measure weather changes in a location – both design and techniques. • There is evidence of using different skills and techniques to reach conclusions about changes occurring as a result of a weather diary. • There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student. If the enquiry question isn't present do not penalise. • There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student • In this response there would be an expectation for the students to evaluate a number of different data collection techniques.

	• This should be an evaluation of primary and secondary data as appropriate. • Students should look to identify the appropriateness of data collection techniques. • A view should be given on how successful or unsuccessful the data collection techniques were and how they could be improved to help students gather more effective results. • For level 2 responses the student response will need to link to the evaluation to their study directly. • For level 3 response there should be a greater range or depth of techniques evaluated. • AO3 – recognition of whether or not the data collection was less successful because of the way it was designed. • Recognition of any faults in equipment or human error. • How far data-collection methods used produced reliable results • An evaluation of how far the outcomes can be trusted (or repeated to obtain the same results).	
Question number	Answer	
Level	Mark	Descriptor
	0	No rewardable material.
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Level 3	7–8	• Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)
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