# Mark Scheme (Results)

# Summer 2019

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

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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)**<br><br>B the correct answer is wide and deep river channel<br><br>A, C and D all describe the river channel at different parts of its course | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(b)(i) | **AO1 (1 mark)**<br><br>B the correct answer is abrasion as this is the only erosional process.<br><br>A is not correct as it is a depositional landform<br><br>C is not correct as it is a process of transportation<br><br>D is not correct as it is to do with the amount of water past a given point at a given time | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(b)(ii) | **AO1 (1 mark)**<br>Award 1 mark for any of the following.<br><br>• saltation<br><br>• suspension<br><br>• traction<br><br>• solution<br><br>Accept any other appropriate response. | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(b)(iii) | **AO1 (1 mark)/AO2 (1 mark)**<br><br>Award 1mark (AO1) for a point about how the water is stored and 1 mark (AO2) for further explanation<br><br>**Ideas from glaciers, oceans, clouds, aquifer, groundwater, surface store, vegetation, ponds**<br><br>Water is stored in a pond (1) because the water doesn't drain away because of the underlying non-porous rock (1)<br><br>Water is stored in the soil (1) because it cannot not percolate through the bedrock (1)<br><br>Do not accept 'ice' or 'water vapour', unless reference to a store e.g. 'cloud' or 'glacier'.<br><br>Accept any other appropriate response. | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(c) | **AO2 (2 marks)/AO3 (2 marks)**<br><br>Award 1 mark (AO2) for a way in which people manage water and a further 1 mark (AO3) for how this helps respond to different levels of water needed/supply, up to a maximum of 2 marks each.<br><br>• Humans build reservoirs/dam to store water (1) the water is fed into the water supply as and when it is need through careful management (1)<br><br>• Dirty or used water is taken into the treatment plant either through water collection or directly from sewage (1) where it is treated and cleaned before being ready for use again (1)<br><br>• Desalination plants take water from the ocean (1) where it is treated and salt removed (1)<br><br>Accept any other appropriate response. | **(4)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(d) | **AO2 (3 marks)**<br><br>Award 1 mark for identification of a way vegetation affects discharge, a second mark explaining 'why' this has an effect, and a third mark for a link to the overall impact of discharge / lag time.<br><br><ul><li>A lack of vegetation exposes bare rock and soil (1) reducing the time taken for water to be soaked up/ overland flow (1) resulting in a shortening of the lag time / increase in discharge (1)</li><br><li>Trees and other plants intercept rainfall (1) this delays the rain water reaching the ground (1) resulting in a lengthening of lag time / reducing discharge (1)</li></ul>Accept any other appropriate response. | |
| | | (3) |

| Question number | Answer | Mark |
|---|---|---|
| 1(e) | **AO3 (1 mark)**<br><br>Award 1 mark for the following.<br><br><br>**Waterfall (1)** | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 1(f) | **AO1 (1 mark) AO2 (3 mark)**<br><br>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.<br><br>Needs to identify stages in the development of landform<br><br>Marks can be awarded for description of stages<br><br>River flows fastest on the outside bend (1)<br><br>River flows slowest on the inside bend (1)<br><br>On the inner bend deposition occurs (1) because there is more friction here (1)<br><br>Outer bend erosion occurs (1) because hydraulic action occurs here (1)<br><br>River erodes and deposits laterally (1)<br><br>Accept any other appropriate response. | **(4)** |

| Question number | Answer indicative content |
|---|---|
| 1(g) | **AO3 (4 marks) AO4 (4 marks)**<br><br>**Marking instructions**<br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below.<br><br>**Indicative content guidance**<br>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.<br><br>This question is about investigating the issue of human impact on water quality, candidates should break down the response into components – in this case the factors identified in Fig. 1c and how they might impact on water quality across Europe. Candidates should relate the factors to the map.<br><br>To access level 3, both Figures 1c and 1d need to be used.<br><br>**AO3**<br>Human intervention can have a negative effect on water quality for example:<br><br>Agricultural waste products caused by surface run off be washed into streams and rivers causing pollution of the river ecosystem – this can damage plant and animal life<br><br>Pesticides and fertilizers from farms can get into the ecosystem this can progress through the food chain and damage fish and plant life deformed fish etc.<br><br>Industrial spillage can pollute beaches and harm wildlife<br><br>Warm water from power stations can upset the natural balance of the water causing algae etc.<br><br>Sewage from domestic use can block beaches<br><br>Humans can also affect water quality in a positive way through treatment plants/clean-up operations or conservation and local pressure groups<br><br>**AO4**<br>Fig 1c shows that there are a number of factors that can affect water<br><br>quality both in a positive way and a negative way<br><br>Fig 1c shows that there are a variety of pollution sources<br><br>Fig 1c shows water quality can impact on health<br><br>Fig 1d shows that water quality varies across geographies<br><br>Fig 1d shows that water quality over much of Europe is variable |

| | | Fig 1d shows that there is wide variation in water quality across the globe |
| --- | --- | --- |
| | | Fig 1d shows that countries in Africa have poorer water quality generally |

| 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)<br><br>• 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)<br><br>• 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)<br><br>• Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4) |

**Question 2**

| Question number | Answer | Mark |
|---|---|---|
| 2(a) | **AO1 (1 mark)**<br><br>B is the correct response short wavelength and strong backwash<br><br>A is not correct as it describes a constructive wave<br><br>C is not the correct answer as it describes only some elements of a destructive wave correctly<br><br>D is not the correct answer as it describes only some elements of a destructive wave correctly | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(b)(i) | **AO1 (1 mark)**<br><br>B is the correct answer - cave<br><br>A,C and D are all depositional landforms | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(b)(ii) | **AO1 (1 mark)**<br><br>Award 1 mark for any of the following.<br><br>• landslides (1)<br><br>• slumping (1)<br><br>• rock fall (1)<br><br>• rotational slip (1)<br><br>• sliding (1)<br><br>• mud slides (1)<br><br>Accept any other appropriate response | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(b)(iii) | **AO1 (1 mark)/AO2 (1 mark)**<br><br>Award 1 mark (AO1) for a point about physical weathering and 1 mark (AO2) for further explanation, up to a maximum of 2 marks.<br><br>• Freeze thaw (1) moisture in rock surfaces freezes and expands causing rock to break off (1)<br><br>• Onion-skin weathering / exfoliation (1)<br><br>• Wetting and drying (1)<br><br><br><br>Accept any other appropriate response | |
| | | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(c) | **AO2 (2 mark)/AO3 (2 mark)**<br><br>Award 1 mark (AO2) for a way changes in sea level could have created a coastal landform and a further mark (AO3) for further development, shown on Figure 2a, up to a maximum of 2 marks each.<br><br>Through the reduction in sea level (1) a raised beach has been created (1).<br><br>Changes in sea level have left behind raised beaches (1) and over time this new beach feature becomes vegetated. (1)<br><br>Creation of wave cut notch (1) by marine erosion due to a reduction in sea level there is an<br><br>Due to a fall in sea level (1) old sea caves caves have been created (1)<br><br>Changes in sea level have left behind old sea caves (1) with fossilised remains of sea creatures (1)<br><br>wave action from previous sea level has eroded cliff (1) to expose fossilised remains / left behind old relic wave cut notches (1)<br><br>Due to an increase in sea level (1) landforms such as rias / fjords have been created (1)<br><br>Accept any other appropriate response | **(4)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(d) | **AO2 (3 marks)**<br><br>Award 1 mark for identification of a way and 2 marks for development and further explanation, up to a maximum of 3 marks.<br><br>Temperature, light, water depth, salinity, wind direction, level of shelter.<br><br>For example: Coastal mangroves need a high level of rainfall (1) of between 1500 and 3000 mm per annum (1) this can be obtained from rainfall or moisture in the air making tropical climates ideal (1)<br><br>Mangroves need a high temperature (1) around 27 degrees (1) otherwise they will not grow (1)<br><br>Mangroves need a shallow water (1) between 0.5 to 2.5 meters depth (1) but can survive where tidal ranges go slightly above or below this level (1)<br><br>Mangroves need high levels of humidity (1) between 75 and 80% (1) to enable them to grow (1)<br><br>Accept any other appropriate response | **(3)** |

| Question number | Answer | Mark |
|---|---|---|
| 2(e) | **AO3 (1 mark)**<br><br>Award 1 mark for the following.<br><br>• arch (1) | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| **2(f)** | **AO1 (1 mark)/AO2 (3 mark)**<br><br>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.<br><br>Headlands are formed along discordant coastlines (1) where there are bands of hard and soft rock at right angles to the coastline (1) which means that the soft rock gets eroded faster than hard rock (1) due to hydraulic action / creating a bay and a protruding headland (1)<br><br>A Headland forms when waves attach a section of coastline (1) During the wave action soft rock erodes (1) more quickly than hard rock (1) over time this means that sections of hard rock are left protruding further out to see as the rest of the coastline retreats (1)<br><br>Accept any other appropriate response | |
| | | **(4)** |

| Question number | Answer indicative content |
|---|---|
| 2(g) | **AO3 (4 marks) AO4 (4 marks)**<br><br>**Marking instructions**<br><br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below.<br><br>**Indicative content guidance**<br><br>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.<br><br>This question is about investigating the issue of why different soft engineering techniques have been used. Candidates should be exploring cost, maintenance and suitability based on the map/resource evidence and their own knowledge.<br><br>To access level 3, both Figures 2c and 2d need to be used.<br><br>**AO3**<br><br>• Soft management techniques such as beach replenishment, building bars, cliff regrading<br><br>• Managed retreat – abandoning certain areas of coastal defence and allowing nature to take its course<br><br>• Candidates should be able to look at costs and benefits – this could be around cost/impact on the environment/local perception<br><br>• Coastal defences create visual pollution in the area<br><br>• Candidates may relate the type of technique used with the land use at the cost, they may also relate this to overall cost.<br><br>**AO4**<br><br>• Fig 2C shows different techniques have been used in different places<br><br>• Fig 2C shows the offshore breakwater has been positioned to limit the effects of the prevailing wind and dissipate the effect of the prevailing wind<br><br>• Fig 2C shows the positioning beach nourishment to help lessen the effects of erosion<br><br>• Fig 2D shows the type of soft engineering methods<br><br>• Fig 2D demonstrates that cost/maintenance of the method of soft engineering methods<br><br>• Fig 2D shows the relationship between soft engineering techniques and different land use types on the coast |

| 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)<br><br>• 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)<br><br>• 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)<br><br>• 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)**<br><br>B the point on the earth's surface directly above the focus<br><br>A, C, D are incorrect because they are not directly above the focus | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| **3(b)(i)** | **AO1 (1 mark)**<br>Award 1 mark for any of the following:<br><br>• Mercalli scale (1)<br><br>Also accept:<br><br>• Moment Magnitude scale / MM / MMI / MMS (1)<br><br>• Richter scale (1)<br><br>Do not accept:<br><br>• seismograph / seismometer<br>• impacts of earthquakes e.g. damage to buildings, deaths etc. | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(b)(ii) | **AO1 (1 mark)**<br><br>Award 1 mark for any of the following:<br><br>• lava (1)<br><br>• ash clouds (1)<br><br>• gas emissions (1)<br><br>• lava bombs (1)<br><br>• earthquakes / tremors (1)<br><br>• pyroclastic flow (1)<br><br>• mudslide / mass movement (1)<br><br>Accept any other appropriate response. | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(b)(iii) | **AO1 (1 mark)/AO2 (1 mark)**<br><br>Award 1 mark (AO1) for a point about a cause of an earthquake and 1 mark (AO2) for further explanation, up to a maximum of 2 marks.<br><br>A sudden tremor of the earth's crust (1) caused by tectonic activity at plate margins and faults (1)<br><br>Earthquakes are caused by built up pressure inside the earths' crust (1) which is released when tectonic plates move (1)<br><br>Accept any other appropriate response, including those referring to fracking, nuclear testing and volcanic eruptions. | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(c) | **AO2 (2 mark)/AO3 (2 mark)**<br><br>Award 1 mark (AO2) for the identification of an idea from the map in fig 3a and a further mark (AO3) for further development, shown on Figure 3a, Candidates should respond with one cause and one direction.<br><br>Cause<br><br>Warm sea temperatures (1) Tropical cyclones tend to develop where temperatures are above 27 degrees (1)<br><br>Low air pressure (1) which pulls water high as the cyclone gathers speed (1)<br><br>Direction<br><br>Tropical cyclones move in the direction of the prevailing wind (1) these are common wind directions caused by convection currents / earth's rotation / Coriolis Effect / Trade Winds (1)<br><br>Accept any other appropriate response. | **(4)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(d) | **AO2 (3 marks)**<br><br>Award 1 mark for identification of a way and 2 marks for development and further explanation, up to a maximum of 3 marks.<br><br>Earthquakes under the sea bed form shock waves (1) this forms a wave which splits (1). The wave then gets bigger (amplifying) and hits the shore (1)<br><br>Tectonic plate movement can trigger an underwater earthquake (1) which causes tremors under water causing waves (1) the waves can increase in height over a large distance (1)<br><br>Accept any other appropriate response | **(3)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(e) | **AO3 (1 mark)**<br><br>Award 1 mark for the following.<br><br>The building is on stilts (1)<br><br>The building is off the ground (1)<br><br>Idea of strong / reinforced base (1)<br><br>Shatterproof windows (1)<br><br>Accept any other appropriate response. | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 3(f) | **AO1 (1 mark)/AO2 (3 mark)**<br><br>Award 1 mark for initial point (AO1), and 3 further marks (AO2) for the extension of this point up to maximum of 4 marks.<br><br>1+1+1+1<br>2+2<br>3+1<br><br>Lack of education (1) meaning people don't know what to do (1).<br>Lack of emergency planning (1) meaning when the event occurs there is little or no response in a short period of time (1)<br><br>Low level of economic development (1) meaning there is no re-source available to respond (1) resulting in chaos and panic when the event occurs (1) and a lack of resource to rebuild (1)<br><br>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 | |

| | recovery (1) which limits opportunity for increasing the level of development (1)<br><br><br>Accept any other appropriate response. | |
|---|---|---|
| | | **(4)** |

| Question number | Answer indicative content |
|---|---|
| **3(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. |
| | This question is about investigating the issue of why hazard mapping can be useful in managing earthquake risk. Candidates could explore the use of hazard mapping before, during and after an earthquake event. |
| | Use of both resources needed for level 3 |
| | **AO3** |
| | • Hazard/vulnerability/risk maps can be used in a variety of ways before, during and after a hazardous event. |
| | • Candidates should examine how the use of Hazard maps can impact against impacts |
| | • Road structures identified through hazard maps could be used to enable emergency aid to get to an earthquake zone more quickly enabling the relief effort to start. |
| | • Hazard maps shared with all support agencies can enable a more coordinated relief effort ensuring resources are not wasted /deployed in the wrong area. |
| | • Using hazard maps can help plan in the short term where services where before and where they can be built afterwards |
| | **AO4** |
| | • Fig 3c shows stages in the process of hazard mapping |
| | • Fig 3c data can be collected on hazard events to help develop strategies to reduce the impact of earthquakes, for example understanding areas where they happen frequently |
| | • Fig 3c data can be presented and shared across a wide variety of organisations to help them plan better for hazard events |
| | • Fig 3c assessments can be made to identify trends and patterns in hazard data and present in the form of vulnerability and risk maps |
| | • Fig 3c data can be used to inform land zoning |
| | • Fig 3d shows Hazard, vulnerability and risk |
| | • Fig 3d shows there is a positive correlation between the three maps |
| | • Fig 3d shows that as the hazard risk rises so does vulnerability generally |
| | • Fig 3d shows that in some cases even though risk is high vulnerability is only moderate |

| Question number | Answer | |
|---|---|---|
| | **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)<br><br>• 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)<br><br>• 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)<br><br>• Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4) |

| Question number | Answer | Mark |
|---|---|---|
| **4(a)(i)** | <div align="center">**AO3 (1 mark)**</div>A systematic (1)<br><br>B,C and D are all incorrect | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 4(a)(ii) | **AO3 (1 mark)**<br><br>Poor representation of overall investigation (1)<br><br>Time constraints (1)<br><br>Can be biased (1)<br><br>Can be under representative (1)<br><br>Unreliable (1)<br><br>Inaccurate (1)<br><br>Accept any other appropriate response | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 4(a)(iii) | **AO4 (2 mark)**<br><br>Correct method of working, showing addition, and then division by 5 (1) and one mark for the correct mean, written to one decimal place, 20.2 (1) | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| **4(a)(iv)** | **AO4 (2 mark)**<br><br>Award 1 mark for each correct bar.<br><br>To be awarded the mark for the first bar, line must be drawn between 21-22. The second bar needs to be right on the line.<br><br>Shading is not required. | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| **4(a)(v)** | **AO4 (1 mark)**<br><br>One mark for an 'x' in box 5 | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| **4(a)(vi)** | **AO3 (2 mark)**<br><br>Award 1 mark for an initial reason, and a further mark for extension of this point.<br><br>E.g.<br><br>the cork could have got stuck as it flowed down the river (1) this would have slowed the cork down (1)<br><br>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)<br><br>Human error with the operation of the stop watch (1) which meant that the timing was inaccurately recorded at this site (1)<br><br>Accept any other appropriate response | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 4(b) | **AO3 (3 mark)** Award 1 mark for identification of primary data method and award 2 further marks for development of explanation Candidates could identify a number of sources of primary data to help them extend their study including: (Annotated) field sketches (1) to show features of the river valley / channel (1) to help establish landforms and features on the river profile (1) River depth – tape measure is stretched across the river (1) measure the depth of the water at 25 cm intervals (1) using a meter rule and then record the results. (1) All of the ideas below are relevant: <ul><li>Use of hydroprop i.e. other methods to measure velocity (other than cork float)</li><li>Width</li><li>Sediment shape and shape</li><li>Gradient</li><li>Wetted perimeter</li></ul> Accept any other appropriate response | |
| | | **(3)** |

| Question number | Answer indicative content |
|---|---|
| 4(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. Relevant points may include the following. **AO3** <ul><li>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.</li></ul> |

- 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.

**AO4**

- There is evidence of using different skills and techniques to measure changes in a river channel.

- There is evidence of using different skills and techniques to reach conclusions about changes occurring in a river channel.

- There is evidence of using different skills and techniques to evaluate 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 he enquiry question isn't present do not penalise

This question is about the candidates making a judgement of the success of their data analysis techniques. Candidates are expected to make a judgement. Candidates should identify strengths, weaknesses, alternative ways of analysing the data

In this response there would be an expectation for the candidates to evaluate a number of different data analysis techniques.

Candidates should look to identify the appropriateness of data analysis techniques.

A view should be given on how successful or unsuccessful the data analysis techniques were and how they could be improved to help candidates understand the data collected more effectively

For level 2 responses the candidate response will need to link to the evaluation to their study directly.

For level 3 response there should be a greater depth of evaluation.

Recognition of whether or not the data analysis was less successful because of the way it was designed/technique used.

| | | How far data analysis helped draw a significant conclusion for the study |
| --- | --- | --- |
| | | 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. |
| **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)<br><br>• 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)<br><br>• 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)<br><br>• Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4) |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(i) | **AO3 (1 mark)**<br><br>A systematic (1)<br><br>B,C and D are all incorrect | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(ii) | **AO3 (1 mark)**<br>This will depend on the sampling method identified e.g. systematic<br>Poor representation of overall investigation (1)<br>Time constraints (1)<br>Can be biased (1)<br>Can be under representative (1)<br>Unreliable (1)<br>Inaccurate (1)<br>Accept any other appropriate response | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(iii) | **AO4 (2 mark)**<br><br>Correct method of working, showing addition, and then division by 5 (1) and one mark for the correct mean, written to one decimal place, 18.3 (1) | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(iv) | **AO4 (2 mark)**<br><br>Award 1 mark for each correct bar.<br><br>To be awarded the mark for the first bar, line must be drawn between 21-22. The second bar needs to be right on the line.<br><br>Shading is not required. | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(v) | **AO4 (1 mark)**<br><br>One mark for an 'x' in box 5 | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(a)(vi) | **AO3 (2 mark)**<br><br>Award 1 mark for an initial reason, and a further mark for extension of this point.<br><br>E.g.<br><br>Human error with the equipment used to measure sediment /calculation of the mean / selection of the sample to be measured (1) which meant that the sediment appeared bigger than it really was (1)<br><br>The sample could have been taken from an area that is protected from the action of the waves / near groynes (1) which means that less would have taken place at this site (1)<br><br>Site 5 may have experienced a recent rockfall (1) which meant that the sample was larger / less eroded than the other sites (1)<br><br>Accept any other appropriate response | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 5(b) | **AO3 (3 mark)** <br><br> Award 1 mark for identification of primary data method and award 2 further marks for development of explanation <br><br> Candidates could identify a number of sources of primary data to help them extend their study including: <br><br> Annotated field sketches (1) candidates can draw and annotate field sketches (1) to help establish landforms and features on the coast (1) <br><br> Beach profile (1) candidates can use a ranging pole and a clinometer (1) to measure the changes in gradient of the beach (1) <br><br> Sediment shape at each sample point candidates could take a random sample (1) and measure the longest axis of the pebble (1) they could use a roundness index or chart to categorise their findings <br><br><br> Accept any other appropriate response | (3) |

| Question number | Answer indicative content |
|---|---|
| **5(c)** | <div align="center">**AO3 (4 marks) AO4 (4 marks)**</div><br>**Marking instructions**<br><br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below.<br><br>**AO3**<br><br>• Accuracy is about making judgements about how close conclusions are to the actual changes occurring in the coastal environment where the fieldwork was carried out.<br><br>• 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.<br><br>• 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.<br><br><br><br>**AO4**<br><br>• There is evidence of using different skills and techniques to measure changes in coastal environments.<br><br>• There is evidence of using different skills and techniques to reach conclusions about changes occurring in coastal environment.<br><br>• There is evidence of using different skills and techniques to evaluate conclusions about changes occurring in a coastal environment.<br><br>• There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student.<br><br><br>This question is about the candidates making a judgement of the success of their data analysis techniques. Candidates are expected to make a judgement. Candidates should identify strengths, weaknesses, alternatives ways of analysing the data<br><br><br>In this response there would be an expectation for the candidates to evaluate a number of different data analysis techniques.<br><br><br>Candidates should look to identify the appropriateness of data analysis techniques. |

A view should be given on how successful or unsuccessful the data analysis techniques were and how they could be improved to help candidates understand the data collected more effectively

For level 2 responses the candidate response will need to link to the evaluation to their study directly.

For level 3 response there should be a greater depth of evaluation.

Recognition of whether or not the data analysis was less successful because of the way it was designed/technique used.

How far data analysis helped draw a significant conclusion for the study

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. |
| **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)<br><br>• 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)<br><br>• 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)<br><br>• 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)**<br><br>A systematic (1) | **(1)** |
| | B, C and D are all incorrect | |

| Question number | Answer | Mark |
|---|---|---|
| 6(a)(ii) | **AO3 (1 mark)**<br><br>This will depend on the sampling method identified e.g. systematic<br><br>Poor representation of overall investigation (1)<br>Time constraints (1)<br>Can be biased (1)<br>Can be under representative / gaps in data collection (1)<br>Unreliable (1)<br>Inaccurate (1)<br>Accept any other appropriate response | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 6(a)(iii) | **AO4 (2 mark)**<br><br>Correct method of working, showing addition, and then division by 5 (1) and one mark for the correct mean, written to one decimal place, 36.1 (1) | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 6(a)(iv) | **AO4 (2 mark)**<br><br>Award 1 mark for each correct bar.<br><br>To be awarded the mark for the first bar, line must be drawn between 50-51. The second bar needs to be right on the line.<br><br>Shading is not required. | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 6(a)(v) | **AO4 (1 mark)**<br><br>One mark for an 'x' in box 5 | **(1)** |

| Question number | Answer | Mark |
|---|---|---|
| 6(a)(vi) | **AO3 (2 mark)**<br><br>Award 1 mark for an initial reason, and a further mark for extension of this point.<br><br>E.g.<br><br>Human error with the equipment used to measure wind speed (1) which meant that the sediment appeared bigger than it really was (1)<br><br>measurement was taken in a sheltered area (1) which meant that the wind speed recording was much lower (1)<br><br>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)<br><br>Accept any other appropriate response | **(2)** |

| Question number | Answer | Mark |
|---|---|---|
| 6(b) | **AO3 (3 mark)**<br><br>Award 1 mark for identification of primary data method and award 2 further marks for development of explanation<br><br>Candidates could identify a number of sources of primary data to help them extend their study including:<br><br>Rain – the use of a rain gauge (1) to collect data on mm of rainfall over a period of time (1) data can be plotted to explore patterns (1)<br><br>Temperature – the use of a thermometer (1) to measure temperature (1) plotted data against wind speed to explore patterns over a period of time (1)<br><br>Air pressure – the use of a barometer (1) to measure air pressure (1) plotted against wind speed to explore patterns over a period of time (1)<br><br>Accept any other appropriate response | **(3)** |

| Question number | Answer indicative content |
|---|---|
| **6(c)** | <div align="center">**AO3 (4 marks) AO4 (4 marks)**</div><br>**Marking instructions**<br><br>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below.<br><br>**AO3**<br><br>- Accuracy is about making judgements about how close conclusions are to the actual changes occurring in the hazardous environment where the fieldwork was carried out.<br><br>- 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.<br><br>- 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.<br><br>**AO4**<br><br>- There is evidence of using different skills and techniques to measure changes in a hazardous environment.<br><br>- There is evidence of using different skills and techniques to reach conclusions about changes occurring in a hazardous environment.<br><br>- There is evidence of using different skills and techniques to evaluate conclusions about changes occurring in a hazardous environment.<br><br>- There is evidence of own fieldwork conclusions, i.e. reference to field data collected by the student.<br><br>This question is about the candidates making a judgement of the success of their data analysis techniques. Candidates are expected to make a judgement. Candidates should identify strengths, weaknesses, alternatives ways of analysing the data<br><br>In this response there would be an expectation for the candidates to evaluate a number of different data analysis techniques.<br><br>Candidates should look to identify the appropriateness of data analysis techniques. |

A view should be given on how successful or unsuccessful the data analysis techniques were and how they could be improved to help candidates understand the data collected more effectively

For level 2 responses the candidate response will need to link to the evaluation to their study directly.

For level 3 response there should be a greater depth of evaluation.

Recognition of whether or not the data analysis was less successful because of the way it was designed/technique used.

How far data-analysis helped draw a significant conclusion for the study

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. |
| **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)<br><br>• 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)<br><br>• 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)<br><br>• Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4) |