GradeMax



Mark Scheme (Results)

June 2025

Pearson Edexcel International GCSE In Geography (4GE1) Paper 1: Physical Geography

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General marking guidance

- All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do, rather than be penalised for omissions.
- Examiners should mark according to the mark scheme – not according to their perception of where the grade boundaries may lie.
- 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 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/indicative content will not be exhaustive.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, a senior examiner must be consulted before a mark is given.
- Crossed-out work should be marked **unless** the candidate has replaced it with an alternative response.

Marking guidance for levels-based mark schemes

How to award marks
The indicative content provides examples of how students will meet each skill assessed in the question. The levels descriptors and indicative content reflect the relative weighting of each skill within each mark band.

Finding the right level
The first stage is to decide which level the answer should be placed in. To do this, use a 'best-fit' approach, deciding which level most closely describes the quality of the answer. Answers can display characteristics from more than one level, and where this happens, markers must use the guidance below and their professional judgement to decide which level is most appropriate.

Placing a mark within a level
After a level has been decided on, the next stage is to decide on the mark within the level. The instructions below tell you how to reward responses within a level. However, where a level has specific guidance about how to place an answer within a level, always follow that guidance. Statements relating to the treatment of students who do not fully meet the requirements of the question are also shown in the indicative content section of each levels-based mark scheme. These statements should be considered alongside the levels descriptors.

Markers should be prepared to use the full range of marks available in a level and not restrict marks to the middle. Markers should start at the middle of the level (or the upper-middle mark if there is an even number of marks) and then move the mark up or down to find the best mark. To do this, they should take into account how far the answer meets the requirements of the level:

- if it meets the requirements fully, markers should be prepared to award full marks within the level. The top mark in the level is used for answers that are as good as can realistically be expected within that level
- if it only barely meets the requirements of the level, markers should consider awarding marks at the bottom of the level. The bottom mark in the level is used for answers that are the weakest that can be expected within that level
- the middle marks of the level are used for answers that have a reasonable match to the descriptor. This might represent a balance between some characteristics of the level that are fully met and others that are only barely met.

QUESTION 1

Question number	Answer	Mark
1(a)	**AO1 (1 mark)** **D** (height above sea level) The answer cannot be A (slope), B (climate) OR C (aspect).	**(1)**

Question number	Answer	Mark
1(b)(i)	**AO1 (1 mark)** **D** (monsoon) The answer cannot be A, B or C as all causes of water shortage	**(1)**

Question number	Answer	Mark
1(b)(ii)	**AO1 (1 mark)** Award one mark for any of the following: • Traction (1) • Suspension (1) • Saltation (1) • Solution (1) Accept any other appropriate response	**(1)**

Question number	Answer	Mark
1(c)	**AO2 (2 marks)** Award 1 mark for identification of a flood prevention method and a further mark for explanation up to a maximum of two marks. • Levees (1) (increase the height of the banks) meaning the river can hold move water before flooding (1). • Afforestation (1) to reduce surface runoff/increase infiltration/interception (1). • River straightening (1) (can increase the velocity of the river) ensuring water is carried away quickly to (reduce flood risk) (1). • Dams (1) (can hold back water) which can delay increases in discharge (until the level decreases) (1).	

	• Flood walls (1) (can be built along river banks which confine the water to the channel) which prevents it spilling onto vulnerable areas (1). Accept any other appropriate response	**(2)**

Question number	Answer	Mark
1(d)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a human factor affecting water quality and a further mark for explanation (AO2) up to a maximum of two marks each. • Fertilisers sprayed on crops (1) can be washed into the river creating algal blooms (1). • Water from sewage treatment works is released into the river (1) which can include human waste which can kill animals/plants in the river (1). • Factories dump water into the river (1) this can often contain oil/dye which will reduce the clarity of the river water (1). • Urban runoff can include high levels of salt (if the weather has been very cold) (1) and this increases the salinity levels of the river water (1). Accept any other appropriate response	**(4)**

Question number	Answer	Mark
1(e)	**AO3 (1 mark)** Award one mark for the following: • Precipitation (1) • Evaporation (1) • Condensation (1) • Infiltration (1) • Percolation (1) • Throughflow (1) • Groundwater flow (1) • Overland flow / surface runoff (1) • Evapotranspiration (1)	**(1)**

Question number	Answer	Mark
1(f)	**AO1 (2 mark)/AO2 (2 mark)** Award 1 mark (AO1) for the identification of a lower course landform and a further mark for explanation (AO2) up to a maximum of two marks each. • Floodplains (1) formed when alluvium is deposited during floods (1). • Levees (1) are formed when heavy sediment is deposited nearest the river bank during a flood (1). • Meanders (1) form when the velocity increases on the outside bend causing erosion (1). • Oxbow lakes (1) are created when two outside meander bends erode towards each other (1). • Deltas (1) as river drops sediment at mouth as energy is dissipated (by the sea) (1). • Estuary (1) form where sea water flows into the river and mixes with freshwater (1). Accept any other appropriate response. **No credit for river mouth.**	**(4)**

Question number	Answer	Mark
1(g)	**AO2 (3 mark)** Award 1 mark for the initial cause and 2 marks for further explanation up to a maximum of 3 marks. • The global population is increasing (1) this means more water is required for drinking (1) to maintain public health (1). • Increasing affluence (1) means people can afford more white goods (1) can be used multiple times a day/frequently (1). • Increasing affluence (1) means more people desire a meat based diet (1) which means more crops need to be grown (to feed livestock) (1). • A warming climate (1) can mean more demand for domestic gardens (1) in order to keep plants alive (1). Accept any other appropriate response	**(3)**

Question number	Answer	Mark
1(h)	**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 analysing the significance of climate and drainage basin characteristics in determining how river discharge varies annually. Candidates should discuss the role of each factor and make some judgement regarding which factor is dominant. **AO3** • A river regime is the annual variation in discharge of a river. • Climate is a significant factor influencing the river regime as this determines the input into the river system. • Physical factors play a key role in influencing the river regime. • Human factors can also influence a river regime. • Drainage basins in areas with high average temperatures will likely have more evaporation and therefore see lower discharge. • Drainage basins with high snowmelt input will often receive all their water at a similar time of year. • Drainage basins with large catchment areas often have lots of tributaries increasing discharge. **AO4** • Figure 1c shows a very big peak discharge in the savanna climate zone. • Figure 1c shows the savanna climate have very low discharge for more of the year. • Figure 1c shows the alpine climate has its peak discharge in May and June. • Figure 1c shows the River Volta has the highest average rainfall and temperature. • Figure 1c shows the alpine regime has the lowest average rainfall and temperature.	(8)

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 2

Question number	Answer	Mark
2(a)	**AO1 (1 mark)** **D** (sand bags) The answer cannot be A, C or C as all reduce impact but do not prevent flooding of a building.	**(1)**

Question number	Answer	Mark
2(b)(i)	**AO1 (1 mark)** **B** (an alteration in water height of the ocean The answer cannot be A (prevailing wind), C (weather forecast), D (coast).	**(1)**

Question number	Answer	Mark
2(b)(ii)	**AO1 (1 mark)** Award one mark for any of the following: • Tsunami (1) • Storm surge (1) • Climate change (1) • Lack of coastal management / no hard/soft engineering (1) Accept any other appropriate response.	**(1)**

Question number	Answer	Mark
2(b)(iii)	**AO2 (2 marks)** Award 1 mark for identification of a hard engineering strategy and a further mark for development up to a maximum of two marks. • Groynes (1) (are barriers that stick out into the sea) they prevent longshore drift (building up the beach) (1). • Sea walls (1) (are built at the back of the beach) and prevent waves from reaching the land (1). • Rip rap/rock armour (1) (are large boulders placed at the base of a cliff) and dissipate the waves energy to (reduce erosion) (1).	

	• Revetments (1) (act as a fence at the base of the cliff) and allows material to build up (between the gaps in the wooden slates) (1). Accept any other appropriate response.	**(2)**

Question number	Answer	Mark
2(c)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a reason based on evidence from resource and a further mark for explanation (AO2) up to a maximum of two marks each. • The beach in the centre is much wider in 2013 (1) which has led to a car park being lost to the sea/making the area more difficult to access (1). • The road has been destroyed (1) making the area less attractive to businesses (1). • The road being destroyed (1) making it more difficult for companies to transport goods/make deliveries (1). • This scheme has only been in place for 3 years (1) making the large car park behind vulnerable to erosion and flooding putting off new investment (1). • The expanded beach (1) may appeal to tourists but residents will not be in favour as it increases noise pollution (1). Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
2(d)	**AO2 (3 marks)** Award 1 mark for the initial explanation and 2 marks for further explanation up to a maximum of 3 marks. • Coral reefs only survive in shallow water depths (usually below 25 m) (1) this is because the algae need access to sunlight (1) to photosynthesise (1). • Coral reefs only live within the tropics (1) as they require water between 20-27° (1) to prevent algae/Zooxanthellae being expelled (1). • Coral reefs require salty water (salinity levels of 32-42 parts per thousand) (1) as this helps coral to absorb some nutrients (1) required for cell functions (1). Accept any other appropriate response.	**(3)**

Question number	Answer	Mark
2(e)	**AO3 (1 mark)** Award one mark for the following: • Sunlight (1) • Water (1) • Sand (1)	**(1)**

Question number	Answer	Mark
2(f)	**AO1 (2 marks)/AO2 (2 marks)** Award 1 mark (AO1) for the identification of a reason and a further mark for explanation (AO2) up to a maximum of two marks each. Industrial: • Factories release heavy metals (1) which are toxic to wildlife (1). • Docks and ports (near river estuaries) cause oil leaks (1) preventing sunlight from penetrating the water (1). Agricultural: • Fertilisers used on fields wash off into water (1) causing eutrophication (1). • Grazing can trample species (1) and alter species diversity (1). Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
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. This question is about analysing the role physical processes have on the coastline and requires some judgement about which processes will be more influential. **AO3** • Rocky/cliff coastlines are often high energy coastlines exposed to destructive waves. • Cliff coastlines often have resistant geology. • Resistant coastlines often have erosional landforms. • Cliff coastlines often have higher relief. • Erosion is often dominant along hard rock coastlines. • Deposition is less influential in the creation of landforms. • Coastlines in mid latitudes are unlikely to experience freeze-thaw/exfoliation weathering. • Hard rock coastlines are more prone to rock falls and less prone to slumping. **AO4** • Figure 2c shows this stretch of coastline is 10 m above sea level. • Figure 2c shows the coastline is made from chalk. • Figure 2c shows an arch. • Figure 2c shows a stack. • Figure 2c shows the contour lines are close together meaning the cliff is steep. • Figure 2c shows the average temperature is 12.9°C. • Figure 2c shows there is a short fetch	
		(8)

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)** **B** (tectonic plates moving towards each other) Answer cannot be A (divergent), C (transform), D (incorrect)	**(1)**

Question number	Answer	Mark
3(b)(i)	**AO1 (1 mark)** **D** (vent) Answer cannot be A (earthquake feature), B (cyclone feature), C (earthquake feature).	**(1)**

Question number	Answer	Mark
3(b)(ii)	**AO1 (1 mark)** Award one mark for any of the following: • Lava flow (1) • Pyroclastic flow (1) • Lahar (1) • Ash (cloud) (1) • Volcanic/lava bomb (1) • Earthquake (1) • Tsunami (1) Accept any other appropriate response.	**(1)**

Question number	Answer	Mark
3(b)(iii)	**AO2 (2 marks)** Award 1 mark for initial point and a further mark for development up to a maximum of two marks. • Plumes (of very hot) magma rise (1) and melt area of thin oceanic crust (1). • Magma plumes are stationary (1) melting weak areas of (oceanic) crust (as they move over it) (1). • The magma plume (1) causes thinning of the crust (1).	

	Accept any other appropriate response.	**(2)**

Question number	Answer	Mark
3(c)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a impact based on evidence from resources and a further mark for explanation (AO2) up to a maximum of two marks each. • The capital city Plymouth was abandoned (1) resulting in lots of jobs being lost (1). • Two thirds/most/over half/large area of the island was made an exclusion zone (1) permanently displacing the population (1). • The north of the islands become more densely populated (1) increasing pressure on services (1). • The airport was abandoned (1) making it hard for people to migrate/unable to visit family (1). Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
3(d)	**AO3 (1 mark)** Award one mark for the following: • USA / US / America (1) • Cuba (1)	**(1)**

Question number	Answer	Mark
3(e)	**AO1 (2 marks)/AO2 (2 marks)** Award 1 mark (AO1) for the initial reason and a further mark explanation (AO2) up to a maximum of two marks each. • Wind shear needs to be low (1) to allow storm clouds to rise vertically to high levels (1). • A Coriolis force is required (1) to deflect the air to create the rotation (1). • Low air pressure (1) which causes the air to rise to form clouds (1). • High sea temperatures (of at least 27°C) (1) to drive energy into the storm (1). Accept any other appropriate response. **No credit for 'high temperatures' on its own, must have reference to water/sea/ocean for credit.**	**(4)**

Question number	Answer	Mark
3(f)	**AO2 (3 marks)** Award 1 mark for the initial explanation and 2 marks for further explanation up to a maximum of 3 marks. • They may be close to family/friends (1) who provide emotional support (1) moving away would increase isolation (1). • High levels of education (1) so people know what to do (1) which reduces their perception of risk (1). • Low levels of education (1) meaning people are unaware of the dangers (1) and see no reason to move (1). • Government investment in early warning systems (1) ensures people have enough time to evacuate (1) making them feel safer (1). • Poverty (1) which means people are forced to stay in the area (1) despite the risk they face (1). Accept any other appropriate response. **No credit for stating 'advantages outweigh disadvantages'**	**(3)**

Question number	Answer	Mark
3(g)	**AO3 (4 mark)/AO4 (4 mark)** **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 analysing the influence of physical causes of vulnerability and make judgements regarding to which physical factor is most significant increasing risk. **AO3** • Vulnerability is the potential to be harmed. • Physical, social and economic factors can increase/decrease a locations level of vulnerability. • The characteristics of the earthquake can increase vulnerability if the magnitude is high and the depth of focus is shallow. • The proximity of the epicentre to built up areas can influence a locations vulnerability. • The hazards caused by the earthquake can increase vulnerability if secondary hazards like tsunamis and landslides occur. • The time of day and season can influence vulnerability if its very hot or very cold people displaced are likely to become ill if they are living outside. • Physical vulnerability factors are not controlled by people. • People can adapt to reduce social and economic vulnerabilities to a greater extent. • The evidence suggest physical vulnerability factors are not the greatest influence on impacts. **AO4** • Figure 3c shows the physical factors for the Japan earthquake are all worse than Morocco. • Figure 3c shows the social impacts are less severe in Japan. • Figure 3c shows that the economic impacts are greatest in Japan. • Figure 3c shows that Morocco had the more severe social impacts • Figure 3c shows that Morocco had the smallest economic impacts • Figure 3c shows Japan experienced a tsunami as a result of the earthquake.	
		(8)

Question	Answer

number		
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 4

Question number	Answer	Mark
4(a)	**AO4 (2 marks)** Award 1 mark for identifying a relevant sampling technique and a further mark for development up to a maximum of two marks. • Random sampling (1) using a random number generator to select our sites (1). • Systematic sampling (1) to measure every 20 m (1). • To measure at equal intervals (1) by measuring the width and dividing by 10 (1) • Opportunistic sampling (1) to pick sites which can be accessed (1). • Stratified sampling (1) to choose sites at different courses of the river (1). Accept any other acceptable response.	**(2)**

Question number	Answer	Mark
4(b)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial variable identified and 2 marks for further explanation up to a maximum of 3 marks. • I measured the river depth (1) at three intervals across the channel (1) to get an average depth from bank to bank (1). • I measured the gradient of the channel (1) at three sites along the river (1) to determine if the river became more gently sloping (1). • I completed sediment shape analysis (1) using the Power's index scale (1) to identify where the rounded pebbles were found (1). Accept any other acceptable response.	**(3)**

Question number	Answer	Mark
4(c)	**AO3 (2 marks) / AO4 (2 marks)** Award 1 mark for the identification of a variable used to present data and a further mark for explanation up to a maximum of two marks each. • Presented gradient data (as a line graph) (1) as this is continuous data (1).	

	• Presented pebble shape (as pie charts) (1) this made it easy to compare differences at different sites (1). • Presented pebble size (as stacked/compound/divided bar graph) (1) to present both total number of pebbles measured and number each size for each site (1). • Cross section graph to show both depth and width (1) which made it easy to visualise the changes at each site (1).	**(4)**

Question number	Answer	Mark
4(d)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial explanation and 2 marks for further explanation up to a maximum of 3 marks. • The bigger your data sample the more representative it will be (1) this means you are more likely to get the same results (1) if you repeat the investigation (1). • More data means you reduce the influence of outliers (1) but working out interquartile range (1) giving a more reliable dispersion of data (1). • Having more data means you are less likely to miss a key characteristic of the environment (1) as your samples are collected close enough together (1) to ensure small changes are recorded (1). • Have more pebbles sampled will avoid anomalies (1) from pebbles thrown/moved by animals/people (1) affecting your central tendency values (1).	**(3)**

Question number	Answer	Mark
4(e)	**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 evaluating the validity of the hypothesis proposed. The candidate needs to evaluate the strengths and weaknesses of the information shown in the secondary data source and make a judgement about feasibility of the hypothesis proposed. **AO3** • Topographical maps show relief of the landscape.	**(8)**

	• Secondary sources can be out of date making information less reliable. • Secondary sources will not show the exact sites the primary data is collected from. • Time of year can affect the environment making primary and secondary sources very different. • It is difficult to determine if secondary data was collected accurately. • Tributaries joining the river will increase the discharge and velocity. • Rivers flowing through urban areas may experience withdrawals affecting discharge. • Rivers flowing through urban areas may be managed using hard engineering which alters natural processes. • The hypothesis mentions velocity but this is not shown on the secondary source at all making it less valid. • Small changes in gradient would suggest very little change along the river in depth, width, velocity and discharge. • The secondary data does show a change in width and depth suggesting this part of the hypothesis is valid. • The hypothesis is less suitable as the river appears widest on the upper site on the map. **AO4** • Figure 4 shows that the river from source to mouth. • Figure 4 shows the depth increases by 0.4 m. • Figure 4 shows the width increases by 14.1 m. • Figure 4 shows a tributary joins the river before it reaches the mouth. • Figure 4 shows the relief decreases by 9 m from source to mouth. • Figure 4 shows the river flows through a built up area. • Figure 4 shows the river on the map appears wider at the source than the river downstream river.	

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 5

Question number	Answer	Mark
5(a)	**AO4 (2 marks)** Award 1 mark for identifying a relevant sampling technique and a further mark for development up to a maximum of two marks. • Random sampling (1) using a random number generator to select our sites (1). • Systematic sampling (1) to measure every 20 m (1). • To measure at equal intervals (1) by measuring the beach and dividing by 10 (1). • Opportunistic sampling (1) to pick sites which can be accessed (1). • Stratified sampling (1) to choose sites at different ends of the beach (1). Accept any other acceptable response.	**(2)**

Question number	Answer	Mark
5(b)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial variable identified and 2 marks for further explanation up to a maximum of 3 marks. • I measured sediment size (1) of beach material by measuring 10 pebbles at each site (1) to work out the average pebble size (1). • I measured the gradient of the beach (1) at three sites along the beach (1) to determine if the beach became more gently sloping at one end (1). • I completed sediment shape analysis (1) using the Power's index scale (1) to identify where the rounded pebbles were found along the beach (1). Accept any other acceptable response.	**(3)**

Question number	Answer	Mark
5(c)	**AO3 (2 marks) / AO4 (2 marks)** Award 1 mark for the identification of a variable used to present data and a further mark for explanation up to a maximum of two marks each. • Presented gradient data (as a line graph) (1) as this is continuous data (1).	

	• Presented pebble shape (as pie charts) (1) this made it easy to compare differences at different sites (1). • Presented pebble size (as a stacked/compound/divided bar graph) (1) to present both total number of pebbles measured and number each size for each site (1). • Presented pebble size (as a bar graph) (1) as sites could be plotted along the x axis as they are discrete data (1).	**(4)**

Question number	Answer	Mark
5(d)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial explanation and 2 marks for further explanation up to a maximum of 3 marks. • The bigger your data sample the more representative it will be (1) this means you are more likely to get the same results (1) if you repeat the investigation (1). • More data means you reduce the influence of outliers (1) but working out interquartile range (1) giving a more reliable dispersion of data (1). • Having more data means you are less likely to miss a key characteristic of the environment (1) as your samples are collected close enough together (1) to ensure small changes are recorded (1). • Have more pebbles sampled will avoid anomalies (1) from pebbles thrown/moved by animals/people (1) affecting your central tendency values (1).	**(3)**

Question number	Answer	Mark
5(e)	**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 evaluating the validity of the hypothesis proposed. The candidate needs to evaluate the strengths and weaknesses of the information shown in the secondary data source and make a judgement about feasibility of the hypothesis proposed. **AO3** • Geology maps show rock types of the landscape.	**(8)**

	• Secondary sources can be out of date making information less reliable. • Secondary sources will not show the exact sites the primary data is collected from. • Time of year can affect the environment making primary and secondary sources very different. • It is difficult to determine if secondary data was collected accurately. • Hard rock coastlines are likely to show cliffs, headlands, arches. • Soft rock coastlines are likely to show beaches, spits and lower lying coastlines. • Urbanised coastlines are likely to be managed by hard engineering which alters natural processes. • The hypothesis mentions how sediment size will change but this is not evidenced in the secondary data meaning the hypothesis is less valid. • The bay is 167 km wide which is long enough to see a change in sediment size suggesting the hypothesis could be valid. • The secondary data doesn't show the direction of longshore drift which is required to determine the direction the sediment will move making the hypothesis very unreliable. • The hypothesis is less suitable as the prevailing wind is from the south. **AO4** • Figure 5 shows an area of discordant coastline. • Figure 5 shows the headland to the north of the coastline. • Figure 5 shows the beach width decreases by 45 m in the south. • Figure 5 shows the wider beach in the north suggesting longshore drift travels south to north. • Figure 5 shows the bay is made from alluvium. • Figure 5 shows the headland is made from igneous rock. • Figure 5 shows the prevailing wind direction is from the south.	

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 6

Question number	Answer	Mark
6(a)	**AO4 (2 marks)** Award 1 mark for identifying a relevant sampling technique and a further mark for development up to a maximum of two marks. • Random sampling (1) using a random number generator to select our sites (1). • Systematic sampling (1) to measure every 20 m (1). • To measure at equal intervals (1) by measuring the wind speed every 6 hours (1). • Opportunistic sampling (1) to ask people (my questionnaire) walking past (1). • Stratified sampling (1) to choose sites in sheltered and exposed areas (1). Accept any other acceptable response.	**(2)**

Question number	Answer	Mark
6(b)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial variable identified and 2 marks for further explanation up to a maximum of 3 marks. • I measured the temperature (1) every three hours using a thermometer (1) to get an average temperature for the weather event (1). • I measured the wind speed (1) at three sites exposed and sheltered (1) to determine the influence of buildings on wind speeds (1). • I measured the amount of precipitation (1) in the morning and evening using a rain gauge (1) to identify any relationship between precipitation and wind speed/temperature (1). Accept any other acceptable response.	**(3)**

Question number	Answer	Mark
6(c)	**AO3 (2 marks) / AO4 (2 marks)** Award 1 mark for the identification of a variable used to present data and a further mark for explanation up to a maximum of two marks each.	

	• Presented temperature data (as a line graph) (1) as this is continuous data (1). • Presented closed questionnaire questions (as pie charts) (1) this made it easy to compare differences at different sites (1). • Presented precipitation data (as a bar graph) (1) as the site could be presented on the x axis as it is discrete (1). • Presented wind direction and strength (as a proportional symbol) (1) so the data could be located on a map to make it more useful (1).	**(4)**

Question number	Answer	Mark
6(d)	**AO3 (2 marks) / AO4 (1 mark)** Award 1 mark for the initial explanation and 2 marks for further explanation up to a maximum of 3 marks. • The bigger your data sample the more representative it will be (1) this means you are more likely to get the same results (1) if you repeat the investigation (1). • More data means you reduce the influence of outliers (1) but working out interquartile range (1) giving a more reliable dispersion of data (1). • Having more data means you are less likely to miss a key characteristic of the environment (1) as your samples are collected close enough together (1) to ensure small changes are recorded (1). • Have more wind data will avoid anomalies (1) from gusts / heavy goods vehicles driving past (1) affecting your central tendency values (1).	**(3)**

Question number	Answer	Mark
6(e)	**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 evaluating the validity of the hypothesis proposed. The candidate needs to evaluate the strengths and weaknesses of the information shown in the	**(8)**

	secondary data source and make a judgement about feasibility of the hypothesis proposed. **AO3** • Local live feed / risk maps show data spatially. • Secondary sources can be out of date making information less reliable. • Secondary sources will not show the exact sites the primary data is collected from. • Time of year can affect the environment making primary and secondary sources very different. • It is difficult to determine if secondary data was collected accurately. • Weather is very seasonable making it difficult to make a definitive hypothesis. • Climate change is affecting weather events making it difficult to predict future weather events. • Areas with tall buildings can alter wind patterns in an area. • The hypothesis is valid for the extreme weather event shown in the secondary source. • Every extreme weather event is different meaning the hypothesis may not be fully valid. • The hypothesis is less suitable as the lowest air pressure is not always when wind speed is at the highest. **AO4** • Figure 6 shows the highest wind speed was 50 kph. • Figure 6 shows the lowest wind speed was 10 kph. • Figure 6 shows the highest air pressure was at 7am. • Figure 6 shows the lowest air pressure was at 3pm. • Figure 6 shows the wind speed fluctuates much more than air pressure, which falls consistently after 7am.	

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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