Pearson Edexcel

Mark Scheme (Results)

November 2024

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 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 1

Question number	Answer	Mark
1(a)	**AO1 (1 mark)** **C** (mouth) The answer cannot be A, B OR D as they do not occur on earth's surface.	**(1)**

Question number	Answer	Mark
1(b)(i)	**AO1 (1 mark)** **A** (changes in height of landscape) The answer cannot be B (snowmelt), C (monsoon), D (geology)	**(1)**

Question number	Answer	Mark
1(b)(ii)	**AO1 (1 mark)** Award one mark a suitable definition of the term discharge: • The quantity of water flowing in a river at a particular time (1). • The volume of water flowing through a river channel (1). • Volume of water in a river (1). Accept any other appropriate response	**(1)**

Question number	Answer	Mark
1(c)	**AO2 (2 marks)** Award 1 mark for initial point and a further mark for explanation up to a maximum of two marks. • Long steady prolonged rainfall (1) will mean discharge will rise slowly (1) • Prolonged steady rainfall (1) will produce rivers with a long lag time / low peak discharge (1). • Heavy short showers (1) can cause rivers to rise quickly (1). • Flashy rivers with short lag time / high peak discharge (1) can be caused by heavy rainfall (1). • Heavy rainfall leads to river channel becoming full (1) overflowing creating a flood (1). Accept any other appropriate response	**(2)**

Question number	Answer	Mark
1(d)	**AO3 (1 mark)** Award one mark for the following: • River (1) • Stream (1) • Sea / Ocean (1) • Lake (1) • Snow (1) • Cloud(s) (1) • Groundwater (1) Accept any other appropriate response	**(1)**

Question number	Answer	Mark
1(e)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a specific feature in climate and a further mark for explanation (AO2) up to a maximum of two marks each. • June – August have very high levels of evaporation (1) meaning there will be less water in rivers for people to use (1). • There is no rainfall in August (1) but water demand increases as there will be lots of tourists (1). • Rainfall levels are very low all year (around 700 mm) (1) which means stores do not get refilled regularly (1). • The temperature is very high in summer (1) which will increase demand for drinking water (1). • There is a deficit between evaporation and rainfall overall (1) which reduces supply as more is lost than gained each year (1). **Do not credit high temperature all year.** Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
1(f)	**AO1 (2 marks)/AO2 (2 marks)** Award 1 mark (AO1) for the identification of a water management strategy and a further mark for explanation (AO2) up to a maximum of two marks each. • Dams are built across a river (1) this helps to control the flow which reduces flooding and droughts (1). • Reservoirs are created (1) this stores large amounts of water which can be released during drier periods/ makes stores of water more easily accessible (1). • Pipelines can be built to transfer water/redistribute water between regions (1) this ensures water reaches areas with the highest demand to avoid water shortages (1). • Water treatment works increase the amount of water available (1) as a higher quantity of water is safe for drinking / human use (1). • Government policies to limit water use (e.g. hose pipe ban) (1) which reduces domestic consumption (1). Accept any other appropriate response.	**(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. • Deforestation (1) reduces interception (1) which increases surface runoff making flooding more likely (1). • Deforestation (1) reduce the amount of water taken up by plants (1) which leads to increase surface runoff which increases discharge (1). • Deforestation (1) can lead to soil erosion this reduces infiltration (1) resulting in more surface runoff which makes flooding more likely (1). • Urbanisation (1) results in large areas of impermeable surface (1) this results in water reaching the river quickly causing flooding (1). • Building impermeable surface (1) reduces lag time (1) this rapidly increases discharge to exceed capacity of the river (1). • Climate change (1) which increases frequency of storms (1) causing flash flooding (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 erosion and transport processes in the creation of upland river landscapes. Candidates should discuss the role of processes and make some judgement regarding which process is dominant. **AO3** • Erosion is the wearing away and removal of rock. • There are four types of erosion: abrasion, attrition, hydraulic action, solution. • Transport is the movement of sediment from one place to another. • There are four types of transport: traction, saltation, suspension, solution. • The method of transport is dependent on the size of the material and the amount of energy the river has. • Rivers need higher discharge/velocity to erode material more quickly. • Upland areas have mainly erosional landforms such as: waterfalls, gorges, interlocking spurs, v-shaped valleys. • Upland areas are very steep and this suggests vertical erosion is more dominant. • All fluvial processes occur at this stage but erosion is likely the most dominant. • Other processes such as deposition, mass movement and weathering are likely to influence the river landform created. **AO4** • Figure 1c shows very steep land around heights of 300m. • Figure 1c shows very narrow valleys around widths of 2km. • Figure 1c shows the rivers are very narrow. • Figure 1c shows the river is shallow. • Figure 1c shows the bedload is large in size. • Figure 1c shows there is a mixture of sizes in the rivers bedload. • Figure 1c shows a waterfall. • Figures 1c shows interlocking spurs.	(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** (spit) The answer cannot be A, B, C (as all erosional landforms)	**(1)**

Question number	Answer	Mark
2(b)(i)	**AO1 (1 mark)** **D** (zigzag movement of sediment along a coastline) The answer cannot be A (suspension), B (traction), C (saltation).	**(1)**

Question number	Answer	Mark
2(b)(ii)	**AO1 (1 mark)** Award one mark for a suitable definition of mass movement: • The downslope movement of material under the force of gravity (1). • The movement of large amounts of sediment caused by gravity (1). • Movement of weathered material down a slope (1). Accept any other appropriate response.	**(1)**

Question number	Answer	Mark
2(c)	**AO1 (2 marks)/AO2 (2 marks)** Award 1 mark (AO1) for the identification of a process and a further mark for explanation (AO2) up to a maximum of two marks each. • Physical weathering / Freeze-thaw weathering (1) causes cracks to grow in size as water freezes and melts (1). • Mechanical weathering / Exfoliation weathering (1) causes rocks to crack as a result of expanding and contracting due changes in temperature (1). • Chemical weathering/acidity (1) causes rocks to dissolve (1). • Biological weathering (1) causes rocks to crack as plant roots burrow into them (1). Accept any other appropriate response.	**(4)**

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

Question number	Answer	Mark
2(e)	**AO2 (2 marks)** Award 1 mark for initial point and a further mark for development up to a maximum of two marks. • Trees have above ground roots (1) so they can absorb oxygen (as the soils contains very little) (1). • Trees have prop roots (1) which create a stable support system (as the sediment is very soft) (1). • Plants are halophytic (salt tolerant) (1) which allows them to survive in coastal conditions (1). • Leaves have specially adapted glands (1) which help to get rid of salt absorbed (1). • They act as a nursery for young fish (1) as the root systems protect them from predators (1). **Do not credit factors that affect distribution.** Accept any other appropriate response.	**(2)**

Question number	Answer	Mark
2(f)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a specific reason based on evidence from resource and a further mark for explanation (AO2) up to a maximum of two marks each. • Areas on the NE coast of the USA will experience over 8 inches of sea level rise (1) this could lead to flooding of urban areas (1). • Areas on the east coast of the USA will see rises in sea level (1) this could lead to the destruction of mangroves as they will not survive if their roots aren't exposed (1). • Areas on the south coasts of the USA will experience over 8 inches of sea level rise (1) this could lead to larger storm surges during hurricane season (1). • Areas in the east with a rise in sea level (1) could lead to the formation of rias/fjords/dalmation landforms (1). • Areas in the east with a significant rise in sea level (1) flood homes leading to displacement of people (1). • Alaska has a sea level decrease (1) which could leave behind raised beaches (1).	

	• Alaska has a falling sea level of more than 8 inches (1) (in places) this could mean harbours/roads need to be rebuilt (1). Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
2(g)	**AO2 (3 marks)** Award 1 mark for the identification of a suitable building design feature/building strategy and 2 marks for further explanation up to a maximum of 3 marks. • Elevate the property off the ground / building on stilts (1) will allow water to flow under the building (1) reducing damage to lower floors (1). • Avoid using timber/wood window/door frames (1) as they can rot when wet (1) increasing costs for repair (1). • Avoid fitted carpets on lower floor (1) as they are permeable (1) and will absorb more water increasing drying out time (1). • Use a waterproof lining/cladding (1) as this reduces the amount of water able to enter the building (1) which reduces damage (1). • Install foundation pumps (1) to reduce the pressure of water around the building (1) to reduce damage to building structure (1). Accept any other appropriate response.	**(3)**

Question number	Answer	Mark
2(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 different ways coastlines can be managed and recognise that users can have conflicting opinions. **AO3** • Soft engineering works with nature to reduce the impacts of flooding/erosion. • Hard engineering are man-made barriers built to prevent flooding/erosion. • Types of soft engineering include: managed retreat, beach replenishment, sand dune rejuvenation, cliff regrading. • Types of hard engineering include: sea walls, groynes, gabions, revetments, rock armour. • Conservationists are often in favour of soft engineering as it works with nature and protects ecosystems. • Bird watchers are often in favour of soft engineering as it keeps saltmarsh habitats which attract wildlife. • Governments/councils can be in favour of soft engineering as it cost less money. • Local residents/business owners/farmers are often against soft engineering as they risk their house/business being flooded. • Tourists may be against soft engineering as it may lead to beaches being removed. **AO4** • Figure 2c shows the high tide line has moved over 100m inland compared to 1902. • Figure 2c shows there are 3 areas of erosion. • Figure 2c shows that despite the sand dune regeneration the coastline is still retreating. • Figure 2c shows an urban area close to the coastline. • Figure 2c shows roads that run very close to the coastline. • Figure 2c shows a golf course could be at risk in the future. • Figure 2c shows the rate of erosion has increased as the gap between 1902 and 1982 is very small but is big between 1982 to 2011 despite being a much shorted time period. • Figure 2c shows a large area of beach. • Figure 2c shows there is £18 billion worth of buildings within 50m of the coastline. • Figure 2c shows it cost £13 billion to create the sand dunes.	**(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)(i)	**AO1 (1 mark)** **A** (crater) Answer cannot be B (earthquake), C (cyclone), D (earthquake)	**(1)**

Question number	Answer	Mark
3(a)(ii)	**AO1 (1 mark)** **B** (pyroclastic flow) Answer cannot be A (benefit of volcano), C (cyclone hazard), D (cyclone formation).	**(1)**

Question number	Answer	Mark
3(a)(iii)	**AO2 (2 marks)** Award 1 mark for initial point and a further mark for development up to a maximum of two marks. • Volcanoes create fertile land (1) which makes it good for farming (1). • Volcanoes attract tourists (1) which create jobs for local people (1). • Precious metals/minerals (1) are found in volcanic areas which can be mined for profit (1). • Some people do not think it will erupt in their life time (1) and so benefits outweigh the risks (1). • Some people are too poor and cannot afford to relocate (1) meaning they have no choice (1). • Some people trust in the monitoring / preparation / planning strategies put in place by their government (1) making them feel safe and protected (1). • Some people have lived there all their lives (1) and do not want to leave family/friends (1). Accept any other appropriate response.	**(2)**

Question number	Answer	Mark
3(b)	**AO1 (1 mark)** Award one mark for a suitable definition of earthquake risk assessment: • Process of identifying the chance of an earthquake happening (1). • An examination of anything that may cause harm (1). • A way to understand threat to avoid dangerous situations (1). • Identifying potential vulnerability from an earthquake (1). Accept any other appropriate response.	**(1)**

Question number	Answer	Mark
3(c)	**AO2 (2 marks)/AO3 (2 marks)** Award 1 mark (AO3) for the identification of a physical characteristic based on evidence from resource and a further mark for explanation (AO2) up to a maximum of two marks each. • The volcano has very steep sides (1) which makes landslides more likely which increase risks (1). • The volcano is snowcapped (1) which will melt during an eruption and cause flooding (1). • Tall volcanoes are often composite (1) which erupt more violently (1). • There is a lake at the base of the volcano (1) which has the potential to form a tsunami wave (1). • Close proximity to a volcano (1) which increases the risk of damage from ash/pyroclastic flow (1). Accept any other appropriate response.	**(4)**

Question number	Answer	Mark
3(d)	**AO3 (1 mark)** Award one mark for the following: • 30°N to 30°S (1)	**(1)**

Question number	Answer	Mark
3(e)	**AO2 (3 marks)** Award 1 mark for identification of an impact on people and 2 marks for further explanation up to a maximum of 3 marks. • Storm surges can drown people (1) causing emotional distress for family members (1) affecting peoples mental health (1). • Strong winds can injure people (1) which means they cannot work (1) leading to increases in government support (1). • Cyclones can destroy buildings (1) making people homeless (1) and needing to leave the area (1). • Buildings are damaged (1) causes businesses to close (1) meaning people lose their jobs (1). Accept any other appropriate response.	**(3)**

Question number	Answer	Mark
3(f)	**AO1 (2 marks)/AO2 (2 marks)** Award 1 mark (AO1) for an initial reason and a further mark for explanation (AO2) up to a maximum of two marks each. Ocean temperatures: • Tropical cyclones need warm oceans to form (1) as this heat drives energy into the storm (1). • Tropical cyclones need oceans about 26.5°C (1) as this increase evaporation which transfers heat energy into atmosphere (1). Wind shear: • Wind shear needs to be weak (1) so thunderstorms are not ripped apart before a cyclone can form (1). • Cyclones need low wind shear (1) to allow storm clouds to rise vertically to high levels (1). Accept any other appropriate response.	**(4)**

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 effectiveness of earthquake preparation strategies and make judgements regarding to overall effectiveness or deciding which aspects are more effective than others. Candidates will need to consider the strategies and their contribution to altering deaths. **AO3** • Earthquake preparedness are a set of measures taken to minimise the effects of an earthquakes. • Preparation strategies include: warning, evacuation plans/routes, building design, GIS, remote sensing. • Strategies are taken at different levels for example households can nail furniture to walls to prevent it falling to reduce risk. • Governments can support education to increase awareness of how to respond when an earthquake occurs. • Schools and business can run earthquake drills to ensure people know what to do. • Preparation can help to reduce impacts on people. • Preparation can help to reduce economic costs. • Some may say prevention is better than reaction and so is more effective. • Level of a country's development can influence how well they cope. **AO4** • Figure 3c shows the people dying from fires after earthquakes has reduced by 87.1%. • Figure 3c shows the highest number of deaths was in 1923 suggesting deaths are decreasing. • Figure 3c shows the percentage of people killed by building collapse has reduced by 6.1%. • Figure 3c shows measure to ensure safety in the home during an earthquakes. • Figure 3c shows a leaflet providing guidance on preparation.	(8)

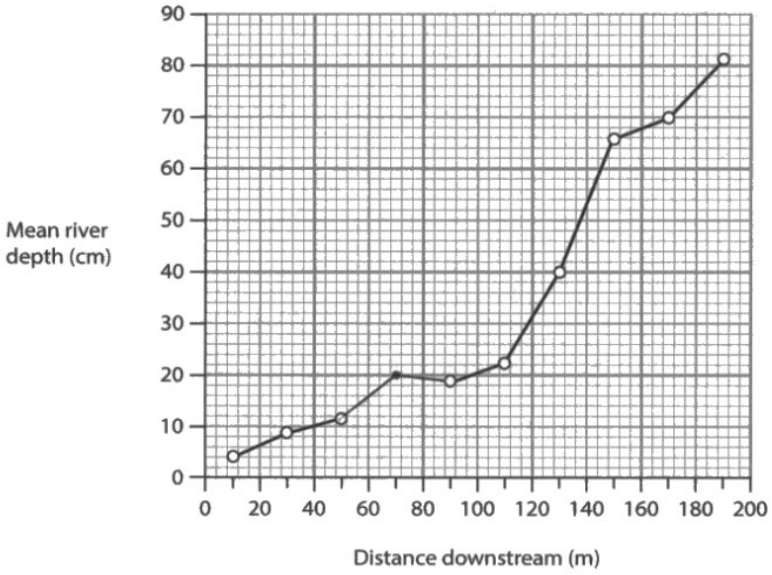
Question number	Answer	
Level	**Mark**	**Descriptor**
	0	No rewardable material.
Level 1	**1–3**	• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements 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 4

Question number	Answer	Mark
4(a)	**AO3 (1 mark)** Award 1 mark for a suitable piece of equipment for investigating river environments. • Stopwatch (1) • Ruler / tape measure (1) • Hydro prop / flow meter / dog biscuit (1) • Ranging pole (1) • Clinometer / angle measurer (1) • Calliper / Power's Index Scale / roundness scale (1) • Compass (1) Accept any other acceptable response. **No credit for stationery e.g. pen/paper**	**(1)**

Question number	Answer	Mark
4(b)	**AO3 (2 marks)/AO4 (2 marks)** Award 1 mark (AO3) for initial point and a further mark for development (AO4) up to a maximum of two marks. Advantage: • Field sketches help us remember the place (1) which can help to interpret data (1). • Field sketches allow for key features to be highlighted (1) which helps to explain data (1). • Field sketches allow notes to be added at the time of drawing (1) which helps to understand the environment being sketched (1). • Field sketches can be used to visualise the landscape before visiting (1) to help plan where to collect the data (1). Disadvantage: • Field sketches take more time than photographs (1) which can be a challenge if in a rush (1). • Field sketches cannot show change over time (1) which can bias your findings if it is completed at a certain time of year (1). • Field sketches are not drawn to scale (1) making it less accurate (1). • Field sketches are subjective (1) so may miss key details compared to someone else drawing it (1). Accept any other acceptable response.	**(4)**

Question number	Answer	Mark
4(c)	**AO4 (2 marks)** Award 1 mark for correct method of working with correct figures and 1 mark for correct answer. • (0.8-0.1 = 0.7) 0.7/0.1 x 100 = • = 700% (1) **Note**: figures in brackets as first part of method are not required for first mark.	**(2)**

Question number	Answer	Mark
4(d) (i)	**AO4 (2 marks)** Award 1 mark for correct plot and second mark for joining points.  	**(2)**

Question number	Answer	Mark
4(d)(ii)	**AO3 (1 mark)/AO4 (1 mark)** Award 1 mark for initial point and a further mark for development up to a maximum of two marks. • Depth increases downstream (1) as there is higher velocity (1). • Depth increases downstream (1) at 10m depth was 4cm and at 130m depth is 40cm (1). Accept any two correct pairs of data to demonstrate the relationship. • Depth increases downstream (1) as more tributaries join upstream increasing discharge (1). • Rivers begin shallow and get deeper (1) as the discharge increases (1). Accept any other acceptable response.	**(2)**

Question number	Answer	Mark
4(d)(iii)	**AO3 (1 mark)** **B** (data that does not fit the pattern) Cannot be A (quantitative), C (distribution) or D (trend).	**(1)**

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 effectiveness of planning their sampling for data collection. The candidate needs to evaluate the strengths and weaknesses of their site selection and sampling strategies to reflect on the reliability of their conclusion. **AO3** • Consideration to location and number of sites chosen for data collection. • It may be important to ensure key features of the area are represented in data collected. • Sites need to be easily accessible. • There are three main sampling strategies – systematic, random, stratified. • Random sampling removes bias from data collected. • Random sampling can lead to poor representation in data. • Systematic sampling ensures good coverage of sample area. • Systematic sampling is more biased as not all areas have equal chance of being selected. • Stratified sampling can be more representative. • Stratified sampling is difficult if sub-sets are not accurate/known. • A judgement about how site selection and sampling strategies helped to answer their enquiry title. **AO4** • Detail about the specific way they chose their sites in relation to collecting accurate/reliable data. • Detail about how many sites were selected and why this number of sites was chosen. • Detail about the sampling strategies used for each type of data collected and why this strategy was chosen. • Detail about any limitations in their chosen site and sampling strategies. • Detail about whether they could answer their hypothesis/predictions/enquiry questions.	**(8)**

	• Detail about specific mitigation strategies used to ensure data collected was reliable and accurate. • Detail about what conclusion were reached.	

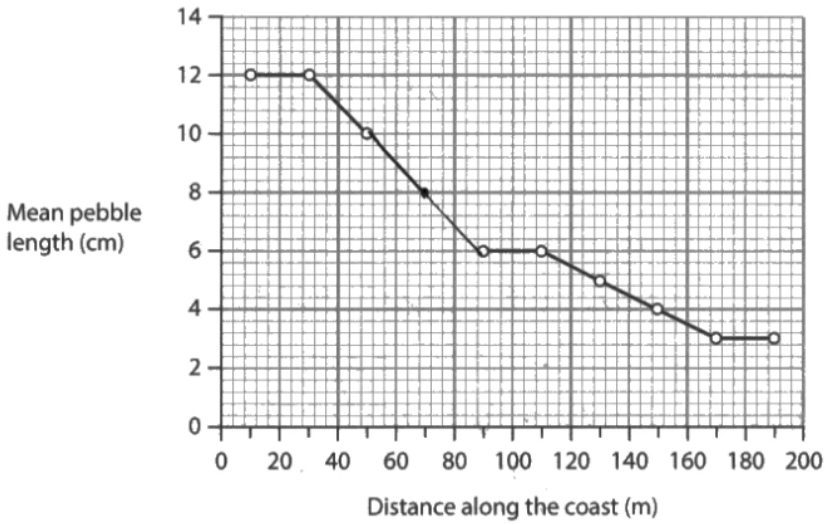
Question number	Answer	
Level	**Mark**	**Descriptor**
	0	No rewardable material.
Level 1	**1–3**	• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements 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)	**AO3 (1 mark)** Award 1 mark for a suitable piece of equipment for investigating coastal environments. • Stopwatch (1) • Ruler / tape measure (1) • Quadrat (1) • Ranging pole (1) • Clinometer / angle measurer (1) • Calliper / Power's Index Scale / roundness scale (1) • Compass (1) Accept any other acceptable response. **No credit for stationery e.g. pen/paper**	**(1)**

Question number	Answer	Mark
5(b)	**AO3 (2 marks)/AO4 (2 marks)** Award 1 mark (AO1) for initial point and a further mark for development (AO2) up to a maximum of two marks. Advantage: • Field sketches help us remember the place (1) which can help to interpret data (1). • Field sketches allow for key features to be highlighted (1) which helps to explain data (1). • Field sketches allow notes to be added at the time of drawing (1) which helps to understand the environment being sketched (1). • Field sketches can be used to visualise the landscape before visiting (1) to help plan where to collect the data (1). Disadvantage: • Field sketches take more time than photographs (1) which can be a challenge if in a rush (1). • Field sketched cannot show change over time (1) which can bias your findings if it is completed at a certain time of year (1). • Field sketches are not drawn to scale (1) making it less accurate (1). • Field sketches are subjective (1) so may miss key details compared to someone else drawing it (1). Accept any other acceptable response.	**(4)**

Question number	Answer	Mark
5(c)	**AO4 (2 marks)** Award 1 mark for correct method of working with correct figures and 1 mark for correct answer. • (8-1 = 7) 7/1 x 100 (1) • = 700% (1) **Note**: figures in brackets as first part of method are not required for first mark.	**(2)**

Question number	Answer	Mark
5(d) (i)	**AO4 (2 marks)** Award 1 mark for correct plot and second mark for joining points.  	**(2)**

Question number	Answer	Mark
5(d)(ii)	**AO3 (1 mark)/AO4 (1 mark)** Award 1 mark (AO4) for initial point and a further mark for development (AO3) up to a maximum of two marks. • Pebble size decreases along the coastline (1) as they have been exposed to more attrition (1). • Pebble size decreases along the coastline (1) at 10m pebble length is 12cm and 150m pebble length is 4cm. Accept any two correct pairs of data to demonstrate the relationship. • Pebble size is largest at the start (1) as they have been in water for less time (1). • Pebbles are exposed to erosion (1) meaning they get smaller from one end of the beach to the other (1). Accept any other acceptable response.	**(2)**

Question number	Answer	Mark
5(d)(iii)	**AO3 (1 mark)** **B** (data that does not fit the pattern) Cannot be A (quantitative), C (distribution) or D (trend).	**(1)**

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 effectiveness of planning their sampling for data collection. The candidate needs to evaluate the strengths and weaknesses of their site selection and sampling strategies to reflect on the reliability of their conclusion. **AO3** • Consideration to location and number of sites chosen for data collection. • It may be important to ensure key features of the area are represented in data collected. • Sites need to be easily accessible. • There are three main sampling strategies – systematic, random, stratified. • Random sampling removes bias from data collected.	**(8)**

	• Random sampling can lead to poor representation in data. • Systematic sampling ensures good coverage of sample area. • Systematic sampling is more biased as not all areas have equal chance of being selected. • Stratified sampling can be more representative. • Stratified sampling is difficult if sub-sets are not accurate/known. • A judgement about how site selection and sampling strategies helped to answer their enquiry title. **AO4** • Detail about the specific way they chose their sites in relation to collecting accurate/reliable data. • Detail about how many sites were selected and why this number of sites was chosen. • Detail about the sampling strategies used for each type of data collected and why this strategy was chosen. • Detail about any limitations in their chosen site and sampling strategies. • Detail about whether they could answer their hypothesis/predictions/enquiry questions. • Detail about specific mitigation strategies used to ensure data collected was reliable and accurate. • Detail about what conclusion were reached.	

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)

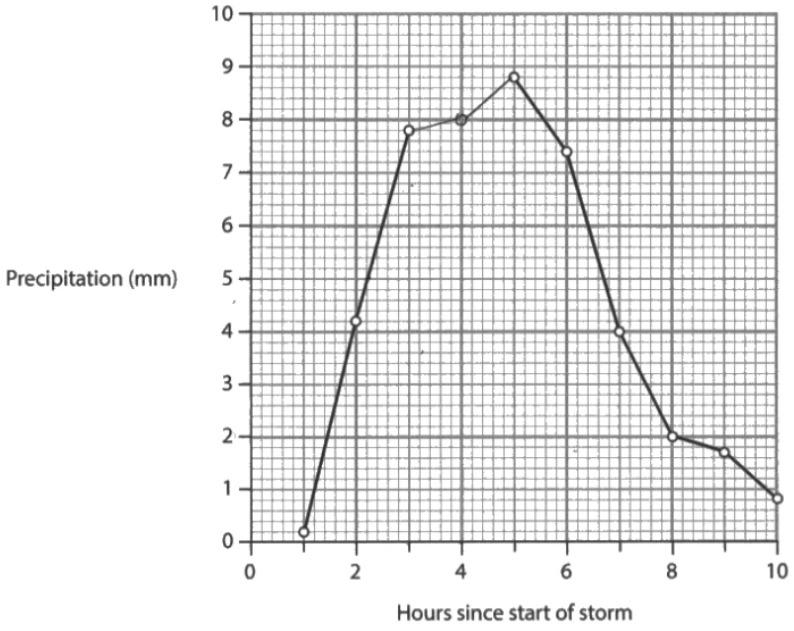
Question 6

Question number	Answer	Mark
6(a)	**AO3 (1 mark)** Award 1 mark for a suitable piece of equipment. • Stopwatch (1) • Ruler / tape measure (1) • Thermometer (1) • Rain gauge / beaker / measuring cylinder (1) • Oktas scale (1) • Barometer (1) • Anemometer (1) • Compass (1) • Beaufort scale (1) Accept any other acceptable response. **No credit for stationery e.g. pen/paper**	**(1)**

Question number	Answer	Mark
6(b)	**AO3 (2 marks)/AO3 (2 marks)** Award 1 mark (AO1) for initial point and a further mark for development (AO2) up to a maximum of two marks. Advantage: • Field sketches help us remember the place (1) which can help to interpret data (1). • Field sketches allow for key features to be highlighted (1) which helps to explain data (1). • Field sketches allow notes to be added at the time of drawing (1) which helps to understand the environment being sketched (1). • Field sketches can be used to visualise the landscape before visiting (1) to help plan where to collect the data (1). Disadvantage: • Field sketches take more time than photographs (1) which can be a challenge if in a rush (1). • Field sketched cannot show change over time (1) which can bias your findings if it is completed at a certain time of year (1). • Field sketches are not drawn to scale (1) making it less accurate (1).	

	• Field sketches are subjective (1) so may miss key details compared to someone else drawing it (1). Accept any other acceptable response.	**(4)**

Question number	Answer	Mark
6(c)	**AO4 (2 marks)** Award 1 mark for correct method of working with correct figures and 1 mark for correct answer. • (13-5 = 8) 8/5 x 100 (1) • = 160% (1) **Note**: figures in brackets as first part of method are not required for first mark.	**(2)**

Question number	Answer	Mark
6(d) (i)	**AO4 (2 marks)** Award 1 mark for correct plot and second mark for joining points.  	**(2)**

Question number	Answer	Mark
6(d)(ii)	**AO3 (1 mark)/AO4 (1 mark)** Award 1 mark (AO4) for initial point and a further mark for development (AO3) up to a maximum of two marks. • Rainfall is low as the storm starts (1) as the low pressure front arrives (1). • Rainfall rises to a peak after 5 hours (1) as the centre of the storm arrives overhead (1). • Rainfall starts low, rise and falls rapidly (1) as the storm travels overhead (1). • Rainfall starts low, rises and falls rapidly (1) it starts at 0.2mm and peaks to 8.8mm at 5 hours (1). Accept any other acceptable response.	**(2)**

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Question number	Answer	Mark
6(d)(iii)	**AO3 (1 mark)** **B** (data that does not fit the pattern) Cannot be A (quantitative), C (distribution) or D (trend).	**(1)**

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 effectiveness of planning their sampling for data collection. The candidate needs to evaluate the strengths and weaknesses of their site selection and sampling strategies to reflect on the reliability of their conclusion. **AO3** • Consideration to location and number of sites chosen for data collection. • It may be important to ensure key features of the area are represented in data collected. • Sites need to be easily accessible. • There are three main sampling strategies – systematic, random, stratified. • Random sampling removes bias from data collected. • Random sampling can lead to poor representation in data. • Systematic sampling ensures good coverage of sample area.	**(8)**

	• Systematic sampling is more biased as not all areas have equal chance of being selected. • Stratified sampling can be more representative. • Stratified sampling is difficult if sub-sets are not accurate/known. • A judgement about how site selection and sampling strategies helped to answer their enquiry title. **AO4** • Detail about the specific way they chose their sites in relation to collecting accurate/reliable data. • Detail about how many sites were selected and why this number of sites was chosen. • Detail about the sampling strategies used for each type of data collected and why this strategy was chosen. • Detail about any limitations in their chosen site and sampling strategies. • Detail about whether they could answer their hypothesis/predictions/enquiry questions. • Detail about specific mitigation strategies used to ensure data collected was reliable and accurate. • Detail about what conclusion were reached.	

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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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