Pearson Edexcel

Mark Scheme (Results)

November 2024

Pearson Edexcel International GCSE
In Geography (4WGE1)
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.

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)** **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 mark)/AO3 (2 mark)** 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 reason for high water usage and a further mark for explanation (AO2) up to a maximum of two marks each. Industrial: • Demand for energy has increased (1) (increasing water usage) as water is required to drive turbines in power stations (1). • Demand for manufactured food has increased (1) (increasing water usage) as items like bread require water when being made (1). • Rates of manufacturing have risen (1) and the machinery requires water for cooling machinery (1). Leisure: • Water is used to maintain parks/golf courses (1) which require frequent irrigation (1). • Water is used in leisure centres to fill swimming pools (1) which is present in areas with high disposable income (1). • Water is used for water fountains in city centres (1) to attract visitors/be aesthetically pleasing (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 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 significance of different fluvial processes in the creation of lowland river landscapes. Candidates should discuss the role of processes and make some judgement regarding the significance of each process. **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. • Deposition is the dropping of sediment. • Deposition occurs when rivers lose energy. • Sediment is deposited in size order with the largest being dropped first. • Rivers need higher discharge/velocity to erode material more quickly. • lowland areas have mainly depositional landforms such as: oxbow lakes, floodplains, levees, deltas. • Lowland areas are very flat and this suggests lateral erosion is more dominant. • References about the influence of subaerial processes (weathering and mass movement). • All fluvial processes occur at this stage but deposition is likely to be more dominant as a river reaches its mouth and loses energy. • As the river has a high discharge transport will occur consistently as material has eroded to become small.	**(8)**

	AO4 • Figure 1c shows very flat land. • Figure 1c shows the lower course of the river is 10 km long. • Figure 1c shows very wide valleys with widths around 15 km. • Figure 1c shows the rivers are wide. • Figure 1c shows the river is deep. • Figure 1c shows the bedload is small. • Figure 1c shows an oxbow lake. • Figure 1c shows levees. • Figures 1c shows a floodplain.	

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 2

Question number	Answer	Mark
2(a)	**AO1 (1 mark)** **D** (spit) The answer cannot be A, B and C are 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 type of erosion and a further mark for explanation (AO2) up to a maximum of two marks each. • Hydraulic action (1) is the force of the water pushing air into cracks in the cliff making the crack bigger (1). • Attrition (1) occurs when pebbles carried in the waves bump into each other and become smaller/more rounded (1). • Abrasion/corrasion (1) occurs when sediment carried in the waves is thrown at the cliff and scrapes down the cliff face (1). • Solution/corrosion (1) occurs as salt is dissolved in the seawater creating a weak acid that dissolves the rock (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)	**AO1 (1 mark)/AO2 (1 mark)** 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 mark)/AO3 (2 mark)** 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 mark)** 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 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 different ways coastlines can be managed and recognise that stakeholders/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 against hard engineering as it does not work with nature. • Bird watchers are often against hard engineering as it can destroy habitats like saltmarshes. • Governments/councils can be against hard engineering as it is expensive. • Governments/councils can be in favour of hard engineering as it can help them win votes. • Local residents/business owners/farmers are often in favour of hard engineering as it protects their houses/businesses/farmland. • Tourists may be in favour of hard engineering as they can help to build up beaches. • Tourists can be against hard engineering as they are ugly. **AO4** • Figure 2c shows an area of coastline which has retreated/eroded more slowly to the north. • Figure 2c shows there is an area to the south which has eroded/retreated much more rapidly. • Figure 2c shows areas of coastline protected by sea walls, groynes, rock armour. • Figure 2c shows the beach is wide. • Figure 2c shows the beach is used by tourists. • Figure 2c shows this stretch of coastline is eroded on average 3m per year. • Figure 2c shows a settlement at the top of the cliff.	(8)

	• Figure 2c shows the groynes cost £5.2 million to build and maintain.	

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)	**AO1 (1 mark)/AO2 (1 mark)** 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 mark)/AO3 (2 mark)** 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 mark)** 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 the initial factor and a further mark explanation (AO2) up to a maximum of two marks each. Coriolis force: • As the Earth rotates air is deflected (1) creating the rotation required for tropical cyclones to form (1). • Wind blows anticlockwise around a low pressure system (1) creating the rotation seen in tropical cyclones (1). Air pressure: • An area of low pressure (1) draws in surrounding winds causing more air to rush in creating more energy (1). • Heat energy warms the air creating an area of low pressure (1) as the air rises more warm moist air is driven into the system (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 response 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 reducing impacts. **AO3** • Earthquake response are how a country reacts to an earthquake. • Response strategies include: emergency aid, shelter, supplies, rebuilding. • Strategies are taken at different levels for example individuals will need to rebuild their own homes. • Governments/international aid charities will need to organise shelters, supplies and search and rescue teams. • Charities can help to respond to earthquakes in developing/emerging countries. • The speed of response can have a significant impact on severity of social impacts. • Developed countries have more resources and so have better responses. • Emerging/developing countries struggle to afford responses. **AO4** • Figure 3c shows there were 217,800 fewer casualties in 2021. • Figure 3c shows there were 220,000 fewer buildings damaged in 2021. • Figure 3c shows that economic losses were $6,300,000,000 lower in 2021. • Figure 3c shows the USA provided $32 million in aid. • Figure 3c shows the USA sent 65 search and rescue professionals to help in 2021. • Figure 3c shows the USA sent a range of emergency relief supplies. • Figure 3c shows that the USA sent a disaster response team.	(8)

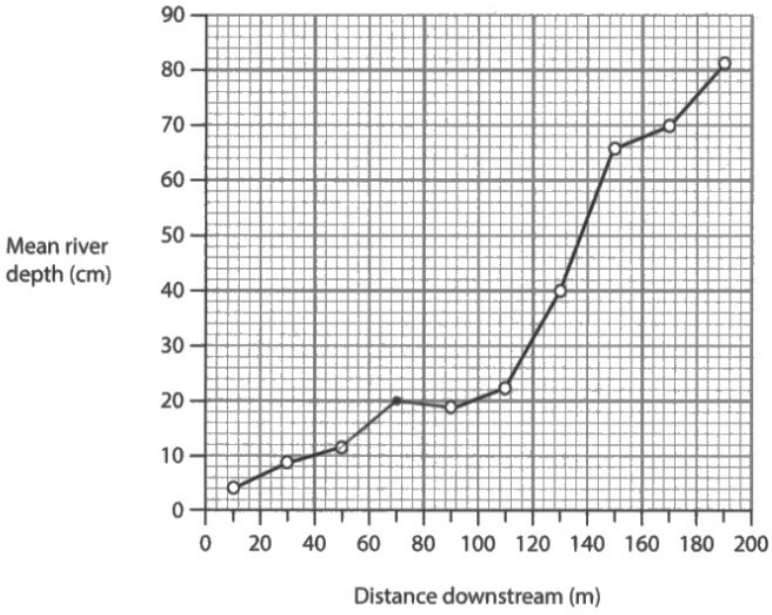
Question number	Answer	
Level	**Mark**	**Descriptor**
	0	No rewardable material.
Level 1	**1–3**	• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements 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.	**(8)**

	• 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. • 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)

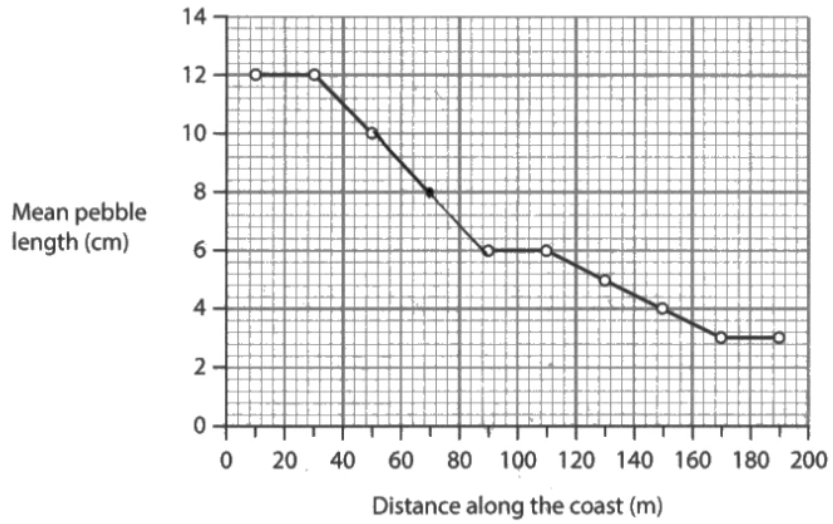
Level 3	**7–8**	• Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3) • Uses geographical 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.	**(8)**

	• 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. • 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)

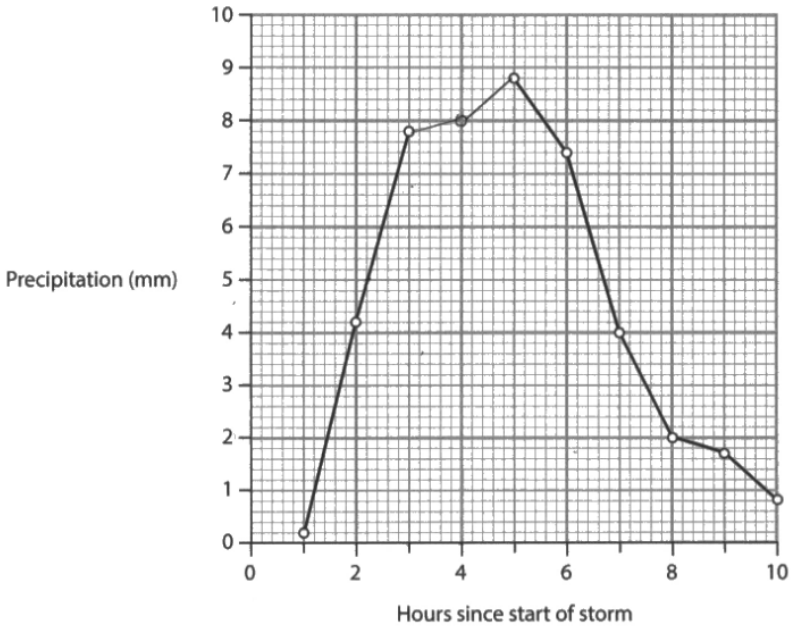
Question 6

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)**

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.	**(8)**

	• 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. • 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)

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