Coastal environments- 3

Name: _____

Class: _____

Date:_____

Time:

Total Marks Available:

Total Marks Archived:

Level: IGCSE Mathematics A

Subject: Geography

Exam Board: Edexcel IGCSE Geography- it is however suitable for use by mathematics student of other boards

Topic: Coastal environments -3

Type: Mark Scheme

To be used by all students preparing for Edexcel IGCSE Geography- Students of other Boards may also find this useful

Mark Scheme

Q1.

Question number	Answer indicative content
	AO3 (4 marks) AO4 (4 marks)
	Marking instructions
	Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below.
	Indicative content guidance
	The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited.
	This question is about investigating the importance of prediction and prevention to help manage the impacts of Coastal flooding. The resource also gives candidates. Candidates would be expected to make the link between the types of prevention and the prediction methods and also to make a judgement on the level of importance of prevention and prediction in managing floods.
	AO3
	• Flood prediction can be very important in helping people plan to manage the impacts.
	• It is important to be able to identify areas that are likely to flood to enable suitable prevention techniques to be used such as restoring wetlands.
	• There is no point in investing in flood prevention in areas that are not prone to flooding.
	• By accurately predicting flood events it enables land use zoning to take place.
	• High value buildings or industry can be planned in areas which are less likely to flood whilst open spaces can be planned for flood prone areas.
	• This is of high importance to limit the human and financial risks of flood events.
	• By understanding when flooding will occur it enable education and emergency response plans to be developed

	AO4
	• Fig 2c show that there are different levels of flood risk in south eastern USA
	• Fig 2c tells us that GIS can be used to predict area that might be flooded
	• Fig 2c computer modelling allows us to look at how the weather might impact coastal flooding
	• Fig 2c tells us that real time data can also be used at the coast to monitor sea levels.
	• Fig 2d tells shows different ideas of how floods can be prevented through human intervention

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)

Q2.

Question number	Answer indicative content
	AO3 (4 marks) AO4 (4 marks) **Marking instructions** Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the level based mark scheme below. **Indicative content guidance** The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. This question is about investigating the issue of why different soft engineering techniques have been used. Candidates should be exploring cost, maintenance and suitability based on the map/resource evidence and their own knowledge. To access level 3, both Figures 2c and 2d need to be used.

AO3

- Soft management techniques such as beach replenishment, building bars, cliff regrading
- Managed retreat – abandoning certain areas of coastal defence and allowing nature to take its course
- Candidates should be able to look at costs and benefits – this could be around cost/impact on the environment/local perception
- Coastal defences create visual pollution in the area
- Candidates may relate the type of technique used with the land use at the cost, they may also relate this to overall cost.

AO4

- Fig 2C shows different techniques have been used in different places
- Fig 2C shows the offshore breakwater has been positioned to limit the effects of the prevailing wind and dissipate the effect of the prevailing wind
- Fig 2C shows the positioning beach nourishment to help lessen the effects of erosion
- Fig 2D shows the type of soft engineering methods
- Fig 2D demonstrates that cost/maintenance of the method of soft engineering methods
- Fig 2D shows the relationship between soft engineering techniques and different land use types on the coast

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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)

Q3.

Question number	Answer indicative content	Mark (8)
	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. The question is about analysing the different coastal management strategies used on the coastline and how different groups of people have different priorities. **AO3** • Conflicts can arise over which management strategies are used based on the different ways groups want to use the coastline. • Different groups have their own agendas which can lead to conflict as they may not be compatible, for example allowing natural retreat in area that affects a lot of residents' homes. • Residents and local businesses are likely to favour protecting the coastline where there are economic assets at stake. • Local councillors need to manage the conflicts of the different people in the area, balancing any potential economic, social and environmental impacts of measures taken.	

AO4

- Fig 2c shows how there are different coastal management strategies in place around the Isle of Wight.

- Figure 2c demonstrates how some settlements and other urban areas need hard engineering strategies to protect the buildings that are located there.

- Figure 2c shows how some areas of land have been allowed to retreat to allow natural processes to take over, creating a salt marsh.

- Figure 2 c demonstrates a range of conflicting views on the protection of the coastline based on the views from different groups of people.

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)

Q4.

Question number	Answer	Mark
	AO1 (2 mark)/AO2 (2 mark) Award 1 mark (AO1) for a valid idea and 1 mark (AO2) for development of the explanation up to a maximum of 2 marks. • Disadvantage: - Most structures are expensive to build and maintain (1) to repair a sea wall can cost £3000 (1) • Disadvantage: - The hard engineering techniques take a long time to construct (1) which may cause a negative impact on the tourism trade (1) • Advantage: - hard engineering can be more effective than other methods (1) because it tends to last longer (1) • Advantage: - hard engineering techniques such as building sea walls (1) can provide employment for the local community (1) Accept any other appropriate response.	(4)

Q5.

Question number	Answer	Mark
	AO2 (3 marks)	
	Award 1 mark for identification of a cause and 2 marks for development through further explanation, up to a maximum of 3 marks.	
	• There has been a sudden rise in sea level (1) caused by a storm surge/very strong winds (1), which push the water on an ocean's surface on top of more water (1).	
	• Rising sea levels (1) due to climate change/isostatic rebound (1) will mean that more low-lying areas are vulnerable (1).	
	• An area can flood if there is a tsunami (1) resulting from an earthquake/volcanic eruption/meteor impact (1), which causes a major displacement of water in the ocean and, consequentially, coastal flooding (1).	
	• Some coastal settlements have developed on reclaimed land (1), which is characteristically low-lying and flat (1), so a small rise in sea level from a mild storm surge is enough to flood it and cause extensive damage (1).	
	Accept any other appropriate response.	
		(3)

Q6.

Question number	Answer	Mark
	AO2 (3 marks) Award 1 mark for initial point and 2 marks for further explanation up to a maximum of 3 marks. • Climate change can cause the melting of ice caps (1) so global sea levels will rise (1) and so coastal settlements may become flooded or abandoned (1). • Climate change may cause increased coastal erosion (1) because sea levels are higher (1) and may be accompanied by more extreme weather events so more erosion (1). • Climate change could destroy coral reefs (1) because sea temperature rises (1) which leads to coral bleaching (1). • Climate change could increase severity of storms (1) which will increase erosion of mangroves (1) leading to loss of biodiversity (1). Accept any other appropriate response.	**(3)**

Q7.

Question number	Answer	Mark
	AO1 (1 mark)/AO2 (1 mark) Award 1 mark (AO1) for initial point and a further mark for explanation of the reason (AO2) up to a maximum of two marks. • Building designs such as being built on raised stilts (1) so they are above the level floods usually reach (1). • City and town planning that recognises which areas most at risk (1) and limits new building activity in these areas (1). • Including strategies for responding to coastal flood events in education programs (1) so people know how to respond, for example evacuation routes and shelters (1). • Using forecasting technologies (1) to be able to predict when coastal flooding will happen and evacuate before the event hits (1). • Building hard engineering strategies (sea walls) can reduce the energy/power of the waves (1) which can prevent damage to buildings (1). Accept any other appropriate response.	
		(2)

Q8.

Question number	Answer	Mark
	AO2 (2 marks)/AO3 (2 marks) Award 1 mark (AO3) for identification of any reason and a further mark for explanation of the reason (AO2) up to a maximum of two marks each. • Some areas of the coast are not being provided with any protection (1), so they are likely to experience faster rates of coastal erosion (1). • Those in Puerto Banus may resent people in Caleta de Velez (1) because they have a range of hard engineering strategies being used to protect the coastline (1). • Industry owners in El Zabal may feel their livelihood is more important to protect than fishing (1) and may not understand why there is not protection strategy there (1). • Building a sea wall is expensive (1) which means less money is spent on other services (1). Accept any other appropriate response.	**(4)**

Q9.

Question number	Answer	Mark
	AO1 (2 mark) AO2 (2 marks) Award 1 mark for initial point (AO1), and 1 further marks (AO2) for the extension of this point up to maximum of 2 marks for each point. • Prediction techniques can be used to develop evacuation plans (1) which will enable people to move to areas of lower risk (1). • Prediction techniques can be used to plan where to build flood defense's (1) which can reduce damage to buildings (1). • Prediction techniques can be used to plan land use zones (1) enable lower value land uses is higher risk areas (1). Accept any other appropriate response.	**(4)**

Q10.

Question number	Answer	Mark
	AO2 (3 marks) Award 1 mark for the identification of a way in which government can help prepare the population and 2 marks for development through further explanation up to a maximum of 3 marks. • Governments can prepare people for a hazardous event by carrying out emergency drills (1) which involves the population practicing what to do (1) and where they should go increasing the chances of them surviving (1). • Governments can prepare people for a hazardous event by investing money (1) in earthquake proof infrastructure/new technology (1) which means that people will have time to evacuate buildings more efficiently (1). • Governments can prepare people for hazardous events by creating evacuation plans (1) which can be shared with the population (1) so that the people know what to do in the event of an earthquake (1). Accept any other appropriate response.	(3)

Q11.

Question number	Answer	Mark
	AO1 (1 mark) B Beach nourishment (1)	(1)

Q12.

Question number	Answer	Mark
	AO3 (1 mark) Award 1 mark for the following: • Dune management (1) Accept any other appropriate response	(1)