



## Geography

Advanced Subsidiary GCE

Unit F761: Managing Physical Environments

## Mark Scheme for June 2013

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotation	Meaning
✓	Correct point (only to be used on point-marked questions – in this paper, question 1ai and 2ai).
<b>^</b>	Omission mark. Further development needed, missing point or link between points.
L1	Level one – to be used on the final, 9 mark part of Section A questions only.
L2	Level two – to be used on the final, 9 mark part of Section A questions only.
L3	Level three – to be used on the final, 9 mark part of Section A questions only.
?	Unclear, inaccurate or dubious validity.
IRRL	Irrelevant, a significant amount of material that does not answer the question.
NE	No example(s) used or provided.
R	Rubric error (place at start of question not being counted).
2	Highlighting an issue eg irrelevant paragraph. Can be used in conjunction with another stamp eg
SEEN	Point has been seen and noted.
Highlighter tool	Highlighting a particularly creditworthy part of the response. Can be used in conjunction with another stamp.

All answers and pages with a response must have at least one annotation to show that they have been seen.

In 9 mark questions, the Level awarded annotation should be positioned in left margin adjacent to the evidence for the award of that level. The wavy line or highlighter annotation may be used as well if the evidence covers more than one line of text.

Q	uesti	on	Answer	Marks	Guidance		
					Content Levels of response		
1	(a)	(i)	Indicative content: light coloured sediment/material on inside of bend; slip- off slope or point bar. Light coloured sediment/material in middle of channel; eyot/braiding. Presence of ox-bow lakes/cut-offs separated from the main channel. Flat floodplain adjacent to channel. Levées along river banks, darker/denser vegetation.	4	Point mark: 1 mark for identifying each piece of evidence plus 1 further mark available for the quality/detail of the description of appearance or location.		
		(ii)	Indicative content: slower velocity on side of bend meaning less energy available to carry sediment, reduced discharge over time leading to loss of energy and deposition in the channel, reduced flow velocity around meander when cut-off is formed meaning less energy for sediment transportation. Reduction in gradient leading to decrease in velocity/energy. Increasing sediment load beyond competence/capacity. Sediment trapped by obstacles/barriers may also be valid.	6	Range or depth of explanation may be provided. Answers may be in the context of landform formation, but must explain why deposition is taking place.	Level 2 (5–6 marks) Clear and accurate explanation with explicit references to reduction in energy available. Level 1 (0–4 marks) Some explanation of loss of velocity or volume or statements about low energy levels.	

Question	Answer	Marks	Guidance	
			Content	Levels of response
(b)	Indicative content: reasons include high economic value, potential conflicts between different land uses, pollution (visual, air, noise, water), environmental damage, fragile ecosystems, views and opinions of locals, protection from flooding and/or erosion may be required, need for planning of new developments. Cost/benefit analysis may be relevant. Different bodies responsible for different parts of a basin.	6		<ul> <li>Level 2 (5–6 marks)</li> <li>Two appropriate reasons well explained, with explicit links made to economic development.</li> <li>Level 1 (0–4 marks)</li> <li>Relevant reason(s) considered, but not fully explained. May be generic.</li> <li>No credit for simply stating a human activity as a reason.</li> <li>One explained well may reach the top of this level.</li> </ul>

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Question	Answer	Marks	Guidance
			Content Levels of response
(c)	<ul> <li>Indicative content: impacts include death, injury, disease, homelessness, trauma, disruption to daily life, damage to heritage/cultural/religious/recreation sites/buildings, loss of services/infrastructure.</li> <li>Impacts could be positive, for example flood deposits adding to soil fertility for subsistence farming.</li> <li>Impacts may be primary or secondary, eg obtaining adequate house insurance.</li> <li>Impacts may be short-term or long-term.</li> <li>This may be in the context of water exceeding channel capacity or by dam construction submerging land upstream.</li> <li>For primary impacts, explanation should have explicit links to the role of water.</li> <li>For secondary impacts, cause and effect links with the primary impact need to be explained.</li> </ul>	9	<ul> <li>Level 3 (8–9 marks)</li> <li>Uses a clearly identified example(s) to explain at least two impacts. Cause-effect links are stated and clearly explained. Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology.</li> <li>Level 2 (5–7 marks)</li> <li>Gives a clearly identified example(s) to explain at least one impact. Cause-effect links are stated but explanation may not be clear. Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology.</li> <li>Level 1 (0–4 marks)</li> <li>Limited or no example. Descriptive observations of impacts. Cause-effect links may be limited or absent. Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology.</li> <li>If no located example then top of Level 1 Max.</li> </ul>

Q	Question Answer		Answer	Marks	Guidance		
					Content Levels of response		
2	(a)	(i)	Indicative content: presence of a spit, light coloured beach sediment/sand along the coastline, infilling behind the spit with subsequent vegetation, dark coloured sediment/mud in salt marsh between spit and coastline, recurved laterals at end of spit, sand dunes at back of beach, sand accumulating against groynes.	4	Point mark: 1 mark for identifying each piece of evidence plus 1 further mark available for the quality/detail of the description of appearance or location.		
		(ii)	Indicative content: constructive/low energy waves dominant, swash>backwash, slack water behind spit, loss of river velocity in estuary, sediment dropped at the end of a spit in deeper water. Role of groynes in trapping sediment. Decrease in wind velocity at back of beach.	6	Range or depth of explanation may be provided. Answers may be in the context of landform formation, but must explain why deposition is taking place.	Level 2 (5–6 marks) Clear and accurate explanation of the reduction in energy available. Level 1 (0–4 marks) Some explanation of loss of velocity or volume or statements about low energy levels.	
	(b)		Indicative content: reasons include high economic value, potential conflicts between different land uses, pollution (visual, air, noise, water), environmental damage, fragile ecosystems, views and opinions of locals, protection from flooding and/or erosion may be required, need for planning of new developments. Cost/benefit analysis may be relevant. Different bodies responsible for different parts of the coast.	6		Level 2 (5–6 marks) Two appropriate reasons well explained, with explicit links made to economic development. Level 1 (0–4 marks) Relevant reason(s) considered, but not fully explained. May be generic. No credit for simply stating a human activity as a reason. One explained well may reach the top of this level.	

Question	Answer	Marks	Guidance		
			Content	Levels of response	
(C)	<ul> <li>Indicative content: as the shore erodes, buildings and other infrastructure are either demolished or relocated inland. It can also involve setting back a line of actively maintained defences to a new line inland of the original – or preferably to rising ground – and promoting the creation of intertidal habitat between the old and new defences. This can either be a complete removal or a breach of the defence.</li> <li>The coastline is protected because the area allowed to be naturally reclaimed by the sea, becomes a natural defence. Salt marshes are low energy environments and the plants reduce wave velocity by friction.</li> <li>Coast may also be realigned to try and restore equilibrium.</li> </ul>	9	The focus should be on managed retreat, which allows the shoreline to advance inward unimpeded, rather than soft/hard engineering strategies or 'do nothing'. Answers can gain full credit by focusing on the moving back of human uses vulnerable to erosion/flooding and/or the role of salt marshes in absorbing wave energy/excess water.	Level 3 (8–9 marks) Uses a clearly identified example(s) to explain how managed retreat protects coastal areas. Cause-effect links are stated and clearly explained. Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology. Level 2 (5–7 marks) Gives a clearly identified example(s) to explain how managed retreat is implemented in coastal areas. Cause- effect links are stated but explanation may not be clear. Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology. Level 1 (0–4 marks) Limited or no example. Descriptive observations of managed retreat. Cause- effect links limited or absent. Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology.	

Q	uesti	on	Answer	Marks	Guidance		
					Content	Levels of response	
3	(a)	(i)	<b>Indicative content:</b> moderate levels of precipitation, seasonal variation/max and min values. Low temperature regime, seasonal variation/max and min values.	4	No credit for confusing temperature and precipitation.	Level 2 (3–4 marks) Temperature and precipitation accurately described with reference to variations and use of data as evidence.	
						Level 1 (0–2 marks) Either - temperature and precipitation described, but without reference to variations and/or use of data as evidence. Or - one element described well.	
		(ii)	Indicative content: factors include high latitude, high altitude, pressure systems, prevailing wind direction, albedo, frontal precipitation, continentality, katabatic winds, Earth's tilt.	6		Level 2 (5–6 marks) Two appropriate factors well explained, with explicit links made to climatic conditions on the graph. Level 1 (0–4 marks) Relevant factor(s) considered, but not fully explained. May be generic. Credit the suggestion of each valid factor. One explained well may reach the top of this level.	

Question	Answer	Marks	Guidance		
			Content	Levels of response	
(b)	Indicative content: freeze-thaw/frost shattering/congelifraction, dilation/pressure release, expansion and contraction, carbonation, hydrolysis, biological (eg tree roots).	6	An outline only is required.	<ul> <li>Level 2 (5–6 marks)         Two appropriate processes well outlined, perhaps referring to repeated cycles or stress applied to rock.     </li> <li>Level 1 (0–4 marks)         One process well outlined or two processes briefly outlined.     </li> <li>No credit for simply naming a process.</li> </ul>	

Question	Answer	Marks	Guidance		
			Content	Levels of response	
(c)	Indicative content: exploitation may be by resource extraction/use, agriculture, military activity, tourism development. Short-term nature of gain may equate to unsustainability – not balancing socio- economic and environmental needs, over-reliance on a single resource, or not ensuring potential use for future generations. Gains include employment, income/profit, infrastructure, multiplier effect.	9	One example of exploitation explained well may satisfy the Level 3 criteria.	<ul> <li>Level 3 (8–9 marks)</li> <li>Uses at least one located example to explain how the area is being used and how it brings gains. Cause-effect links are clearly explained. Short-term nature of the exploitation is explicit. Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology.</li> <li>Level 2 (5–7 marks)</li> <li>Gives at least one located example to explain the exploitation. Cause-effect links are stated but not clearly explained. References to the short-term nature may be implicit. Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology.</li> <li>Level 1 (0–4 marks)</li> <li>Limited or no located example provided. Descriptive statements about human use(s). Cause-effect links are limited or absent. Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology.</li> <li>Max 2 for types of use only. If no located example then top of Level 1 Max.</li> </ul>	

Q	uesti	on	Answer	Marks	Guidance		
					Content	Levels of response	
4	(a)	(i)	Indicative content: low levels of precipitation, seasonal variation/max and min values. High temperature regime, seasonal variation/max and min values.	4	No credit for confusing temperature and precipitation.	Level 2 (3–4 marks) Temperature and precipitation accurately described with reference to variations and use of data as evidence. Level 1 (0–2 marks) Either - temperature and precipitation described, but without reference to variations and/or use of data as evidence. Or - one element described well.	
		(ii)	Indicative content: factors include latitude, pressure systems, prevailing wind direction, continentality, rain shadow effect, cold ocean currents, convectional rainfall in summer.	6		Level 2 (5–6 marks) Two appropriate factors well explained, with explicit links made to climatic conditions on the graph. Level 1 (0–4 marks) Relevant factor(s) considered, but not fully explained. May be generic. Credit the suggestion of each valid factor. One explained well may reach the top of this level.	

Questi	on	Answer	Marks	Guidance	
				Content	Levels of response
(b)		Indicative content: exfoliation/insolation, salt crystallisation, freeze- thaw/congelifraction, wetting and drying, hydration, oxidation, hydrolysis, carbonation, solution, biological (eg tree roots).	6	An outline only is required.	Level 2 (5–6 marks) Two appropriate processes well outlined, perhaps referring to repeated cycles or stress applied to rock. Level 1 (0–4 marks) One process well outlined or two processes briefly outlined. No credit for simply naming a process.

Question	Answer	Marks	Guidance		
			Content	Levels of response	
(c)	Indicative content: exploitation may be by resource extraction/use, agriculture, residential, military testing, filming, tourism development. Short-term nature of gain may equate to unsustainability – not balancing socio-economic and environmental needs, over-reliance on a single resource, or not ensuring potential use for future generations. Gains include employment, income/profit, infrastructure, multiplier effect.	9	One example of exploitation explained well may satisfy the Level 3 criteria.	<ul> <li>Level 3 (8–9 marks)</li> <li>Uses at least one located example to explain how the area is being used and how it brings gains. Cause-effect links are clearly explained. Short-term nature of the exploitation is explicit. Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology.</li> <li>Level 2 (5–7 marks)</li> <li>Gives at least one located example to explain the exploitation. Cause-effect links are stated but not clearly explained. References to the short-term nature may be implicit. Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology.</li> <li>Level 1 (0–4 marks)</li> <li>Limited or no located example provided. Descriptive statements about human use(s). Cause-effect links are limited or absent. Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology.</li> <li>Max 2 for types of use only. If no located example then top of Level 1 Max.</li> </ul>	

Question	Answer	Marks	Guidance	
			Content	Levels of response
5	<ul> <li>Indicative content: physical factors include steep relief, impermeable rock, heavy rainfall, spring snow melt, wet antecedent conditions, basin shape/size. Human factors include urbanisation, deforestation, building on flood plains, which increases risk.</li> <li>A valid link to flood risk is how the factor leadings to rivers over-topping their banks, perhaps due to rapid surface runoff.</li> <li>Factors that reduce flood risk, such as increasing channel capacity, are also valid.</li> <li>Examine requires comment, perhaps about relative importance, interrelationship or variability of factors.</li> <li>Storm surges, high tides may also be relevant near mouth.</li> </ul>	25	Comment(s) provided about the factors may include: relative importance, interactions, physical/human balance, degree of variability, MEDC v LEDC, different scales, risk v causal factors.	AO1 Knowledge and understanding Level 3 (11–13 marks) Detailed knowledge and understanding of the factors influencing flood risk. Cause-effect links are clearly explained. There is effective use of detailed exemplification with factors being explicitly linked to flood risk. Level 2 (7–10 marks) Some knowledge and understanding of the factors influencing flood risk. Cause- effect links are stated but not clearly explained. There is use of exemplification with some linkages made between factors and flood risk. Level 1 (0–6 marks) Limited knowledge and understanding of factors influencing flood risk. Cause- effect links may be limited or absent. There is limited exemplification of factor- flood risk linkages. If no located example then top of Level 1 Max. AO2 Analysis and application Level 3 (5 marks) Clear analysis and application of knowledge and understanding of factors and their influence on flooding.

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Question	Answer	Marks	Guidance		
			Content	Levels of response	
6	Indicative content: issues include cost, visual appearance, accessibility, effectiveness, environmental impact, maintenance, views and opinions of locals, potential conflicts with other activities/locations. Different methods include active intervention (hard/soft engineering) and managed retreat. Examine requires comment, perhaps about significance of issues or contrasts between different methods.	25	No active intervention (do nothing) is not valid as it is not a protection method.         Comment(s) provided about the issues may include: range, significance, short/long term, links between different methods and different issues, different scales, MEDC v LEDC, categories of issue (eg social, economic, environmental).	AO1 Knowledge and understanding Level 3 (11–13 marks) Detailed knowledge and understanding of at least two different methods and their issues. Cause-effect links are clearly explained. There is effective use of detailed exemplification with explicit links between methods and issues. Level 2 (7–10 marks) Some knowledge and understanding of at least two methods, which may not be very different, and their issues. Cause- effect links are stated but not clearly explained. There is use of exemplification with some linkages made between methods and issues. Level 1 (0–6 marks) Limited knowledge and understanding of methods and their issues. Cause-effect links may be limited or absent. There is limited exemplification of method-issue linkages. If no located example then top of Level 1 Max. AO2 Analysis and application Level 3 (5 marks) Clear analysis and application of knowledge and understanding of methods and their issues.	

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Question	Answer	Marks	Guidance	
			Content	Levels of response
			Level 3 = explicit comments made about contrasting issues. Level 2 = contrasting issues are included but not explicitly commented on. Level 1 = issues are not significantly contrasting.	Level 2 (3–4 marks) Some analysis and application of knowledge and understanding of methods and their issues. Level 1 (0–2 marks) Limited analysis and application of knowledge and understanding of methods and their issues. AO3 Skills and communication Level 3 (6–7 marks) Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology. Clear conclusion(s) are drawn. Level 2 (4–5 marks) Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology. Conclusion(s) are attempted. Level 1 (0–3 marks) Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology. No conclusion(s) are attempted.

Question	Answer	Marks	Guidance		
			Content	Levels of response	
7	<ul> <li>Indicative content: impact of people in exploiting, conserving or sustainably managing the ecosystem.</li> <li>Introduction of new species also relevant.</li> <li>May affect the ecosystem components (plants, animals, soil) or the processes (food chains/webs, energy flows). Interrelationships exist between the components of the ecosystem.</li> <li>Initial negative impacts may then be reduced/removed by management.</li> </ul>	25	Answers must relate to the ecosystem rather than other elements of the environment on their own, such as melting of permafrost. Comment(s) provided about the impacts may include: range, short/long term nature of the impacts, positive/negative differences, traditional/modern practices, planned/unplanned impacts, direct/indirect impacts, MEDC v LEDC.	<ul> <li>AO1 Knowledge and understanding</li> <li>Level 3 (11–13 marks)         Detailed knowledge and understanding of the impact of people on the ecosystem. Cause-effect links are clearly explained. There is effective use of detailed exemplification to provide evidence of impacts.     </li> <li>Level 2 (7–10 marks)         Some knowledge and understanding of the impact of people on the ecosystem. Cause-effect links are stated but not clearly explained. There is use of exemplification to provide some evidence of impacts.     </li> <li>Level 1 (0–6 marks)         Limited knowledge and understanding of the impact of people on the ecosystem. Cause-effect links may be limited or absent. There is limited evidence of impacts.     </li> <li>Limited knowledge and understanding of the impact of people on the ecosystem. Cause-effect links may be limited or absent. There is limited evidence of impacts.     </li> <li>If no located example then top of Level 1 Max.</li> <li>AO2 Analysis and application</li> <li>Level 3 (5 marks)</li> <li>Clear analysis and application of knowledge and understanding of impacts.</li> </ul>	

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Question	Answer	Marks	Guidance		
			Content	Levels of response	
8	Indicative content: impact of people in exploiting, conserving or sustainably managing the ecosystem.         Introduction of new species also relevant.         May affect the ecosystem components (plants, animals, soil) or the processes (food chains/webs, energy flows). Interrelationships exist between the components of the ecosystem.         Initial negative impacts may then be reduced/removed by management.	25	Answers must relate to the ecosystem rather than other elements of the environment on their own, such as climate change.	AO1 Knowledge and understanding Level 3 (11–13 marks) Detailed knowledge and understanding of the impact of people on the ecosystem. Cause-effect links are clearly explained. There is effective use of detailed exemplification to provide evidence of impacts. Level 2 (7–10 marks) Some knowledge and understanding of the impact of people on the ecosystem. Cause-effect links are stated but not clearly explained. There is use of exemplification to provide some evidence of impacts. Level 1 (0-6 marks) Limited knowledge and understanding of the impact of people on the ecosystem. Cause-effect links may be limited or absent. There is limited evidence of impacts. If no located example then top of Level 1 Max. AO2 Analysis and application Level 3 (5 marks) Clear analysis and application of knowledge and understanding of impacts.	

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Question	Answer	Marks	G	uidance
			Content	Levels of response
			Level 3 = explicit comments made about contrasting impacts. Level 2 = contrasting impacts are included but not explicitly commented on. Level 1 = impacts are not significantly contrasting.	Level 2 (3–4 marks) Some analysis and application of knowledge and understanding of impacts. Level 1 (0–2 marks) Limited analysis and application of knowledge and understanding of impacts. AO3 Skills and communication Level 3 (6–7 marks) Answer is well structured with accurate grammar and spelling. Good use of appropriate geographical terminology. Clear conclusion(s) are drawn. Level 2 (4–5 marks) Answer has sound structure but may have some errors in grammar and spelling. Some use of appropriate geographical terminology. Conclusion(s) are attempted. Level 1 (0–3 marks) Answer has little structure and has some errors in grammar and spelling. Little use of appropriate geographical terminology. No conclusion(s) are attempted.

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