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Mark Scheme (Results)

June 2011

GCSE Geography B 5GB1H
Dynamic Planet

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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.
- Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

  i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear

  ii) select and use a form and style of writing appropriate to purpose and to complex subject matter

  iii) organise information clearly and coherently, using specialist vocabulary when appropriate.

Question Number	Answer	Mark

1(a)	1 mark for each valid statement.
	
	Likely answers to include:
	
	• Strong earthquake – magnitude 9.0
	• Earthquake affected a densely populated region
	• Earthquake created a tsunami
	• Affected countries were LICs with…
	  o Poorly constructed buildings
	  o No tsunami warning system
	  o Few emergency services
	  o Limit access routes for aid
	  o Poor medical care for survivors
		(2)

Question Number	Answer	Mark
1(b)	1 mark for identifying an appropriate action. Additional mark awarded for describing the impact of the identified action e.g. Geologists could carefully monitor the volcano's shape (1 mark). This would enable them to predict any future eruption (1 mark). e.g. Channels can be dug to re-direct lahars (1 mark) away from settlements (1 mark). Actions likely to include: • Improved prediction • Concrete shelters to protect against volcanic bombs • Evacuation routes and regular drills • Concrete channels to re-direct lahars and lava flows • Constructions rules to ensure buildings can take the weigh of ash deposits • Landuse zoning, restricting access to the most dangerous locations	**(2)**

Question Number	Answer	Mark
1(c)	1 mark for each appropriate statement. Common responses likely to include: Constructive Boundaries: • Convection currents drag plates in opposite direction • Plates pull apart • Hot magma rises from the mantle • On contact with the sea or air lava cools and solidifies • Basic lava is thin and runny • Basic lava travels long distances before solidifying Destructive Boundaries: • Convection currents cause plates to collide • The denser oceanic crust is pushed down into the mantle • As the crust descend, its melts. • The melted crust rises up through cracks and faults in the continental crust. • Acid lava is thick and 'gluppy' and quickly solidifies • Volcano builds up from layers of lava and ash. NB: Answer can be drawn, written or a combination of both. A diagram without labels or explanation – max mark 1. No marks to be awarded for descriptive statements e.g. shield volcanoes are gently sloping.	**(4)**

Question Number	Answer	Mark
2(a)	X= Carbon dioxide from deforestation Y = Nitrous Oxide (2x1)	**(2)**

Question Number	Answer	Mark
2(b)	1 mark for identifying an appropriate impact. Additional mark awarded for extending statements. e.g. Global warming may force British farmers to grow different crops (1 mark), e.g. warmer summers could make vineyards more successful (1 mark). Consequences likely to include: Britain: • Increased drought risk • More extreme weather conditions • Coastal flooding from higher sea levels • Habitat loss • Impact on UK farming • Lower heating bills • Increased popularity of coastal resorts Bangladesh: • Delta islands lost to the sea • More frequent and powerful cyclones • Dry and wet monsoon to increase in severity Egypt: • Rising sea levels, and more frequent storms, erode delta • Farmland lost to rising sea levels • Water shortages leading to drought • Food shortages resulting in famine • Desertification If no country is named, or If statements are generic, maximum mark 1.	**(2)**

Question Number	Answer	Mark
2(c)	1 mark for identifying an appropriate affect. Additional mark(s) awarded for statements which extend the description. As the question refers to both people and ecosystems, to achieve full marks at least one impact from each group must be identified. e.g. During the little ice age temperatures fell making farming difficult(1 mark), e.g. this resulted in a shortage of food (1 mark). Common responses likely to include: <u>People</u> • Drop in agricultural output • Marginal agricultural land no longer productive • Food shortages led to price rises and famine • People forced to migrate from increasingly hostile environments e.g. Vikings in Greenland • Rapid spread of disease e.g. bubonic plague • New crops introduced e.g. wet and cold loving potatoes. <u>Ecosystems</u> • Increased sea ice in northern latitudes • Food chains affected affecting food supplies • Some animals experienced rapid population decline e.g. Seals • Slow down in plant growth NB: As the command work is **describe**, at least one of the affects identified needs to be extended for the awarding of full marks.	**(4)**

Question Number	Answer	Mark
3(a)	1 mark for each appropriate statement. Common responses likely to include: • The area affected by deforestation has increased • Logging activities have spread westward • Forest close to transport links has been deforested the most • Little natural forest remains on in the east	**(2)**

Question Number	Answer	Mark
3(b)	1 mark for identifying an appropriate management measure. Additional mark awarded for describing the impact of the identified management technique. e.g. establish national parks (1 mark) to control construction(1 mark). e.g. Sign treaties such as CITES (1 mark) to outlaw the trade in endangered species (1 mark). Common conservation methods include: • National Parks – legal status given to designated regions to protect habitats and wildlife. • Trade Agreements – CITES (Convention on International trade in endangered species) signed by 166 countries. Purposed to prevent trade of items made from endangered species, e.g. ivory products or crocodile skin footwear. • Biodiversity Action Plans – Designed to protect native / natural vegetation in areas where habitats and wildlife are under threat. • Global Treaties – The Ramsar Convention on Wetlands aimed to provide special protection status to endangered wetlands in 151 countries. • Promotion of eco-tourism – Tourism based activities which are designed to be sustainable. Minimising damage to the environment. • Sustainable resource use e.g. logging industries replant deforested regions.	**(2)**

Question Number	Answer	Mark
3(c)	1 mark for each appropriate statement. Common responses likely to include: Temperature: • Temperatures are affected by latitude • Sunlight arriving at the equator is highly concentrated. • This concentration of solar energy leads to higher temperatures and a longer growing season. Precipitation: • Vegetation growth rates are highest in regions with regular and reliable rainfall. • Rainfall tends to be highest in coastal regions due to the impact of maritime winds. • Highland regions also have reliable precipitation due to relief rainfall. • Low pressure belts also experience heavy rainfall as converging air is forced up. NB: If only one factor has been identified, maximum mark 3. NB: As the command word is explain, candidates must include some explanation in their response to attain full marks. A candidate who lists or describes is limited to a maximum of 3.	**(4)**

Question Number	Answer	Mark
4(a)	1 mark awarded for each identifying the general pattern: i.e. The southern half of the continent has a water surplus whilst the northern half has a shortage. Additional mark awarded for extending statements that either provide more detailed description or identify exceptions. E.g. Water shortages appear to be most extreme in central Brazil. E.g. Although the southern half of the continent generally has an excess of water, there is a thin band on the west coast which has a water shortage.	**(2)**

Question Number	Answer	Mark
4(b)	1 mark for identifying an appropriate benefit. Additional mark awarded for statements that extend the description. E.g. Hand pumps in Tanzania have given the people sewage free water (1 mark), preventing the spread of diseases such as cholera (1 mark). E.g. Pumpkin tanks have reduced the need to walk long distances to access clean water (1 mark). This has meant that women in the village have more time to look after their children (1 mark). Small Scale: • Reliable water supply • Improved water quality • Local people have ownership • Projects make use of local skills / expertise • Reduced infection from water-borne disasters • Less dependence on 'outside agencies' • Less time spent collecting water Large Scale • Provided Hydroelectric power • Reliable water supply and cheap power leads to industrial growth • Water for irrigation • Tourism opportunities • Improved transport.	**(2)**

	• Fishing industry may benefit from reservoirs and improved water quality. If no case study is identified, single mark only.	

Question Number	Answer	Mark
4(c)	Water can be transferred from the land to the atmosphere through evaporation and transpiration. 1 mark awarded for identifying each process. Additional mark(s) awarded for extended statements. • Evaporation (1) is the process whereby water in a liquid state is transformed into gas (1) as a result of heat (1). • Transpiration (1) is the release of water from vegetation (1) through small pores known as stomata in the leaves (1). NB: If only one process has been identified, maximum mark 3.	**(4)**

Question Number	Answer	Mark
5(a)	A – Swash B – Backwash C - Plunging wave, spilling wave, breaking wave or destructive wave.	**(3)**

Question Number	Indicative content		
5(b)	The rate of coastline retreat can be affected by a range of physical processes: • Wave type: coasts that face a major ocean have a long fetch, resulting in powerful destructive waves. Destructive waves are also common in areas which experience regular storm activity. • Weathering: biological and physical weathering can weaken rocks and destabilise cliffs. • Erosion: Waves can erode the cliff face in three ways – (a) Corrasion (Abrasion): by smashing rocks and pebbles into the cliff, (b) hydraulic Action: the sheer force of the water dislodging and loosening material, and (c) Corrosion (Solution): Chemicals within the water destabilising the cliff face. • Mass Movement: Cliffs destabilised by erosion at their base can experience landslides. Heavy rain can increase the likelihood of slippage by adding weight. Rainwater can also lubricate slip zones.		
Level	Mark	Descriptor	
	0	No rewardable material	
Level 1	1-2	At least one physical process has been identified. No attempt to explain. Limited use of subject specific vocabulary. e.g. Cliffs can be eroded by the waves (1 mark).	
Level 2	3-4	At least one process has been briefly explained. Geographical terms have been appropriately applied. e.g. The coastline maybe eroded by abrasion. This is where the sea picks up pebbles and stones and throws them at the cliff. Erosion is fastest when there are destructive waves. (4 marks).	
Level 3	5-6	Detailed / well developed answer. Two or more processes have been clearly explained. A wide range of geographical terms have been effectively applied. e.g. Coastal retreat maybe the result of erosion. Destructive	

		waves smash pebbles into the cliff face breaking off sections of rock, this is known as abrasion. The higher sections of the cliff maybe weakened by weathering. Plants roots may widen cracks whilst low winter temperatures may cause the rock to fracture and break as process known as frost shattering. (6 marks)

Question Number	Answer	Mark
6(a)	A = Meander B = Ox-bow Lake C = River Channel (accept channel and main channel), straight river, canalised river (accept canalisation).	**(3)**

Question Number	Indicative content	
6(b)	River flooding is complex process, the risk of flooding can be increased by a number of landuse changes: • Urbanisation: Covers the surface in impermeable materials. Rainwater is quickly channelled by gutters and sewers directly to the river. Little opportunity for evapotranspiration. • Deforestation: Results in greater surface runoff as water is no longer intercepted or transpired. Increased surface and through flow resulting from a reduction in barriers. • Changes in Farming: The ploughing of pastures for arable crops can reduce levels of transpiration. Up-and-down ploughing can result in rainwater being quickly 'channelled' into nearby rivers. Bare fields increase surface runoff as they are more likely to become 'baked' during the summer and 'frozen' during the winter.	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	At least one land use change has been identified. No explanation. Limited subject vocabulary used. e.g. Cutting down trees can lead to more frequent flooding (1 marks).
Level 2	3-4	At least one change has been briefly explained. Geographical terms have been appropriately applied. e.g. The risk of flooding may increase as a result of deforestation. Cutting down trees leads increased surface runoff and a short lag time. (3 marks).
Level 3	5-6	Detailed / well developed answer. Two or more land use changes have been clearly explained. A wide range of geographical terms have been effectively applied. e.g. The expansion of urban areas often leads to a higher flood risk. Many of the materials used in towns are impermeable (e.g. concrete and tarmac), stopping the rainwater from soaking into the soil. Instead rainwater flows

		into gutters and drains which carries it directly to the river. To make space for expanding towns, woodlands are often cut down. Deforestation leads to lower levels of transpiration increasing the amount of rainwater that reaches the river (6 marks).

Question Number	Answer	Mark
7(a)	1 mark awarded for recognising the general pattern, e.g. The amount of Bluefin tuna declined rapidly between 1970 and 2005. Additional mark awarded for supporting statements with **accurate** graph readings or for identifying changes in the rate of decline. e.g. The amount of Bluefin tuna declined rapidly between 1970 and 2005 (1 mark). The fall was fastest between 1975 and 1980 (1 mark) when catches fell from 70,000 to 20,000 metric tonnes (1 mark).	**(3)**

Question Number	Indicative content	
7(b)	Climate change has the potential to add additional stress to marine ecosystems: • Changing water temperature could destroy vulnerable ecosystems such as coral reefs • Higher ocean temperatures could trigger increased storm activity resulting in increased wave damage to coastal habitats • Flooding could increase the amount of pollution leaching into the oceans and could result in more widespread siltation • Melting glaciers and polar ice-sheets could result in sea water becoming less salty and dense, affecting ocean currents. This could result in some region becoming colder whilst others warm-up. In turn this could result in wildlife extinctions and mass migrations. • Rising sea levels caused through thermal expansion and ice melt could lead to important marine habitats (e.g. mangrove forests) becoming completely submerged.	
Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	At least one marine impact of climate change identified. No explanation. Limited subject vocabulary used. Warmer oceans could kill coral reefs. Melting ice will change global currents. (2 marks).
Level 2	3-4	At least one impact of climate change has been briefly explained. Geographical terms have been appropriately applied. E.g. Warmer oceans could lead to coral reefs being damaged by more frequent storms. Corals are fragile and can be easily broken by strong waves. (4 marks).
Level 3	5-6	Detailed / well developed answer. Two or more impacts of climate change have been clearly explained. A wide range of geographical terms have been effectively applied. E.g. Warmer oceans will lead to higher rates of evaporation and in turn more frequent and more powerful storms. These storms will whip-up waves which crash into and break fragile coral reefs. Warmer oceans may also add stress to fragile reef systems by causing bleaching as the higher temperatures are too warm for the algae that live inside the corals (6 marks).

Question Number	Answer	Mark
8(a)	1 mark awarded for recognising the general pattern, e.g. Temperatures are highest in July and lowest in December. Additional mark awarded for supporting statements with accurate graph readings. Answer must refer to both maximum and minimum temperatures to gain maximum marks. e.g. Phoenix is warmest during June, July and August (1 mark) when maximum temperatures are above 35C (1 mark). The difference between maximum and minimum temperatures remains constant throughout the year (1 mark).	**(3)**

Question Number	Indicative content	
8(c)	Hot Arid: • Many plants have surface layers which are thick and waxy preventing water loss. • Transpiration levels are reduced during drought periods as the stomata on leaves close. • Cacti have extensive root systems to quickly absorb rainfall when it occurs. • Some plants have deep roots so they can penetrate soil and rock to reach underground water sources. Arctic: • Conifer trees have downward sloping branches to allow snow to slip off, so they don't break under the weight. • Most trees have evergreen needles reduce water loss and to allow the tree to grow as soon as the weather is warm enough. • Most plants have shallow root systems as only the soil near the surface defrosts during the spring. • Conifers have thick bark to provide protection from wind and low temps.	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	At least one adaptation has been identified. No explanation. Little use of subject specific terms. e.g. Conifers have downwards sloping branches. (1 mark).
Level 2	3-4	At least one adaptation has been briefly explained. Geographical terms have been appropriately applied. e.g. Conifers have downward facing branches so that the snow slips off, stopping the branches from snapping. (3 marks)
Level 3	5-6	Detailed / well developed answer. Two or more adaptations have been clearly explained. A wide range of geographical terms have been effectively applied. e.g. Downward facing branches means the snow slips off, stopping the branches from snapping. Evergreen needles allow the tree to start growing as soon as the sunlight is powerful enough, extending the growing season. Needles are more 'hardy' than leaves and reduce the amount of moisture lost through transpiration. (6 marks)

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