

Mark Scheme (Results)

January 2012

GCSE Geography (5GB1H) Paper 01 DYNAMIC PLANET

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January 2012
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Question Number	Answer	Mark
_	 1 mark for each appropriate statement. Common statements are likely to include: On the edge of plates / on plate boundaries Most volcanoes are located along (or near) the coast Volcanic activity occurs in narrow belts Volcanic activity is not evenly distributed There is a ring of volcanoes around the Pacific Ocean There are many volcanoes in Japan, Indonesia, west coast of America. There is no volcanic activity in Australia, Central Asia, Western Africa. NB: Credit responses that refer to hotspots. 	(2)
	NB: Do not award statements that attempt to explain the distribution. (2x1)	

Question Number	Answer	Mark
1(b)	1 mark for identifying an appropriate action. Additional mark awarded for describing the impact / improvement the action would bring. Action may occur before, during or after the event; it could be short or long term. e.g. authorities can produce action plans (1 mark). These tell the emergency services what to do in the event of an earthquake (1 mark). e.g. construction laws can be tightened (1 mark) preventing buildings from collapsing during a quake (1 mark). Actions are likely to include: Improving monitoring / prediction Carrying out earthquake drills Stock piling food, tents and medical supplies Strengthening buildings (steel frames, shock absorbers, dampers etc) Reinforcing transport connections Producing action plans Landuse zoning and planning regulations Early warning systems Education and emergency service planning. NB: Do not credit simplistic extending statements that refer to 'decreasing deaths' or 'reducing damage'. Statements must highlight why deaths/damage will be lower.	(2)

Question Number	Answer	Mark
1(c)	 1 mark for each economic impact identified. Likely examples: San Francisco Earthquake Property damaged and destroyed in the Bay Area Businesses damaged or destroyed - factories forced to temporally close, creating short term unemployment. Transport links closed (Cyprus freeway collapsed), difficult for goods and workers to get to and from work. Insurance claims \$10 billion. Higher future premiums. Government cost of providing emergency support. Montserrat Eruption Crops lost and farmers forced out of work Tourism industry badly affected Settlements abandoned (including the capital – Plymouth). Property and businesses lost Large scale migration due to declining employment opportunities. Infrastructure (including port and airport) damaged or destroyed preventing imports and exports. Surviving businesses may struggle due to a loss of worker. 	(4)
	NB: Generic statements – maximum mark 3 NB: As the command word is describe, a list of economic impacts with no description maximum mark 3.	
	NB: As question asks for impact s , two must be identified for full marks. A single impact with in-depth extension can score a maximum of 3. (2+2) or (3+1)	

Question Number	Answer	Mark
2(a)	 1 mark for each appropriate statement. Common statements are likely to include: Average annual temperatures have fluctuated. Temperatures have generally increased. Average global temperatures have risen from 13.9°C to 14.7°C Average temperatures have increased by 0.8 °C (only allow 0.7 to 0.9 or approximately 1). Temperatures rose fastest between 1950 and 1980. Temperatures were highest in 2009 (and lowest in 1870) Candidates can attain full marks without including graph readings. E.g. The graph shows that the temperature has fluctuated since 1870, however the overall trend is an increase average temperature. (2 marks). 	(2)

Question Number	Answer	Mark
2(b)	 1 mark for an appropriate economic impact. E.g. The tourism industry could be affected. Additional mark awarded for extending statements. e.g. The tourism industry could be affected (1 mark). Winter sports resorts in Scotland could be forced to close (1 mark). Answers likely to include: Cost of building expensive flood defences Droughts could reduce farm output and increase food prices. Warmer climate could lead to new crops and new business opportunities for farmers. Growth in tourism on south coast End of Scottish ski industry Greater risk of flooding could lead to higher insurance premiums. Warmer temperatures would result in lower heating bills. Increased demand for air conditioning units and higher summer electricity bills. 	(2)

Question Number	Answer	Mark
2(c)	 1 mark to be awarded for each relevant statement made. An increase in greenhouse gases can result in climate change because: The sun's energy arrives as short-wave radiation Short-wave rays are able to travel through greenhouse gases. This energy is reflected off the Earth as long-wave radiation. Long-wave energy is unable to pass through greenhouse gases and are reflected back to Earth Greenhouse gases act like a blanket around the Earth This trapped heat causes the planet to warm up. NB: Credit students who identify a specific greenhouse gas. NB: Award students who use diagrams to explain the process. A clearly drawn illustrate with annotation can achieve full marks. 	(4)

Question Number	Answer	Mark
3(a)	One mark for identifying an appropriate reason. Additional mark awarded for an extending statement. e.g. Lianas are a sustainable industry because the plants are native (1 mark) and therefore do not a large amount of chemicals to grow (1 mark). e.g. As Lianas can be harvested without deforestation there is little impact on wildlife (1 mark) as habitats aren't destroyed (1 mark). Common answers likely to include: • Uses local skills and expertise • Environmentally friendly, doesn't require pesticides etc • Rainforest still intact – biodiversity maintained • Forest could have dual landuse e.g. vine industry and eco-tourism. • Appropriate technology – no need to buy, run or maintain expensive equipment. NB: Student can use their own personal knowledge to	(2)
	answer the question, e.g. lianas make strong furniture which can last a long time and therefore doesn't need replacing on a regular basis (2 marks).	

Question Number	Answer	Mark
3(b)	 1 mark for identifying a valid life support service. Addition mark awarded for statements which extend the description. e.g. Forests help to balance the atmosphere (1 mark) e.g. Forests balance the atmosphere (1 mark) by acting as a carbon sink (1 mark). e.g. The biosphere provides us with a range of essential goods (1 mark) such as the ingredients for cancer fighting medicines (1 mark). Chosen services are likely to include: Green lungs – Vegetation remove and store carbon dioxide and give out oxygen purifying the atmosphere. Vegetation cover protects the underlying soil by intercepting rainfall and reducing erosion. Forests increase lag time and reduce flood risk. Mangroves provide protection from winter storms. Forests provide leaf litter which rots down into humus, returning important nutrients to the soil. Vegetation provides habitats for wildlife. Vegetation provides food. Provides us with essential goods, such as important medical ingredients. 	(2)

Question Number		Mark
3(c)	One mark for identifying an appropriate local factor, additional mark(s) awarded for extending statements.	(4)
	Biomes can be affected by altitude (1 mark). The higher the altitude the lower the temperature (1 mark). This can affect the type of vegetation that grows (1 mark).	
	Biomes can be affected by deforestation (1 mark). Removing vegetation can destroy habitats (1 mark) and disrupt food chains (1 mark).	
	 Human Activities Deforestation – Cutting down forests can destroy habitats, affects the hydrological and nutrient cycles. Over-Grazing – soil can become exhausted causing vegetation to die. Exposed surface can be eroded. Unsustainable resource use – e.g. over-fishing could affect food webs affecting the biome. Urbanisation – Can remove natural water courses and cover the surface in impermeable materials. Human activity can impact on climate: urban heat affect / buildings channelling wind / cloud seeding. Pollution – rivers, lakes, soils and the atmosphere can all be polluted. Changing conditions for flora and fauna. 	
	 Physical Factors: Altitude – Temperatures fall by approximately half a degree for every 100 metres increase in altitude. Therefore, mountainous regions on the equator have coniferous forest and tundra. Distance from the sea – Seas warm nearby land in the winter and cool them in the summer, reducing temperature range whilst increasing precipitation. Drainage – Poor drainage can change soil conditions affecting vegetation, e.g. poor drainage in Scotland has led to peat bogs rather than forest. Geology – Bedrock can affect vegetation coverage. Permeable rocks reduce the amount of water available, restricting vegetation growth. E.g. Limestone areas in tropical regions tend to have deciduous forest. 	
	NB: As the questions asks for local factors If only one factor has been identified, maximum mark 3.	
	NB: As the command word is describe , a list of local factors with no description maximum mark 3.	
	NB: Award students who support descriptions with appropriate named examples.	
	NB: As question asks for factor s , two must be identified for full marks. A single factor with in-depth extension can score a maximum of 3. (2+2) or (3+1)	

Question Number	Answer	Mark
4(a)	 One mark for each appropriate statement Occurs when clouds become too heavy/full Water transferring from the atmosphere to the land (also allow more basic definitions such as "Moisture falling from the sky") Can fall as rain, sleet, snow etc Usually takes the form of rain Can be caused by relief, convection or fronts. NB: References to other stages of the water cycle are not to be credited. 	(2)

Question Number	Answer	Mark
4(b)	1 mark: Valid problem identified e.g. unreliable water supply may lead to a drought (1 mark).	(2)
	Addition mark awarded for extending statements e.g. Regions with unreliable water supply are often affected by drought (1 mark), which in turn could lead to a famine (1 mark).	
	Common responses likely to include:	
	 Drought conditions damage farming. Reduced farm output is likely to lead to higher market prices and in extreme cases famine. Farmers may be forced to change crops or sowing times. Dry soil can become baked, leading to soil erosion and increased flood risk. Dry periods can increase the likelihood of wild fires, which may damage property, transport connections and industry. Industries and farming dependent upon water may be forced to shut down or relocate. This could lead to unemployment, a drop in tax returns and a loss of trade (e.g. Australia's wine industry). Droughts may force large scale migration from arid destinations. Pressure on water supplies can lead to conflict between local users e.g. farmers who need the water for their crops and tourist resorts that use large quantities of water for swimming pools, gardens and golf courses. Water shortages could encourage greater extraction from alternative sources (e.g. aquifers) leading to long-term ecological impacts. Severe pressure on water supplies could lead to war (e.g. disputes over the Nile waters has lead to a militarising of the Sudan/Egypt border). Population forced to travel long distances. Often the role of children preventing them from attending schools. Lack of water could lead to dehydration and death, particularly amongst the young and old age. Limited water availability may force people to use dirty and contaminated sources, leading to the spread of disease. NB: No mark is awarded for naming an appropriate location. However, if no vulnerable area is identified, candidates can only score 1 mark. NB: Do not credit simplistic statements that refer to 'people 	
	dying'. Statements must identify the cause of death (e.g. dehydration).	
	NB: Do not credit responses which confuse insufficient/ unreliable water supplies with water quality issues.	

Question	Answer	Mark
Question Number 4(c)	1 mark for identifying a human activity that can disrupt water supply. Additional mark(s) awarded for extending statements that describe the impact of the human action. Water can be extracted for irrigation (1 mark). This can reduce a river's discharge (1 mark). Deforestation in the Amazon forest has disrupted water supply (1 mark). Cutting down the trees resulted in more 'mud' being washed into the river (1 mark) reducing the water quality (1 mark). Common activities likely to include: • Pollution from domestic and industrial sources can make a water supply dangerous and unusable. • Over abstraction of water may cause rivers and lakes to shrink or dry-up. E.g. Aral Sea has shrunk due to large scale irrigation on feeder rivers. • Deforestation / Afforestation – Can affect rates of interception, infiltration and transpiration, impacting on river flow. • Urbanisation leads to increased rates of overland flow and a higher flood risk. • Aquifers can also be affected by over abstraction. Over pumping can result in water being removed faster than it is replaced, leading to wells drying up and the porous rock compacting. E.g. Coca Cola and the Plachimada aquifer.	Mark (4)
	NB: As the command word is describe, a list of human actions with no description maximum mark 3.	
	NB: As the question asks for example s , for full mark students must include at least two ways humans can disrupt supplies.	
	NB: Award extending statements that highlight the impact of the disruption. (2+2) or (3+1)	

Question Answer Number 5(a) 1 mark for each correct statement.	
5(a) 1 mark for each correct statement.	
e.g. Cliff could have been affected by erosion (1 Hydraulic action (1 mark) could have weakened to fithe cliff (1 mark). e.g. The cliff could have been caused by slumping Rain could have saturated the rock (1 mark) make heavy and causing it to fall (1 mark). Statements likely to include: • The bottom of the cliff is weakened throug erosion, creating an unstable overhang. • Hydraulic action, abrasion (corrasion) and could have attacked the cliff face. • Differing geology – weaker rocks more east down. • Weathering can further weaken the cliff face. • Rock saturated by rainwater becomes heaved. • Cliff top construction adds weight that pust onto the cliff. • Rainwater percolating through the cliff acts lubricant. • Alternating band of permeable and impermican lead to slip-surfaces. • A destabilised cliff slides down in a rotation of the cliff slides down in a rotation of the cliff acts that refer to a lack of sea defences. NB: Watch out for terms which have been incorred defined / explained.	g (1 mark). king it too gh coastal corrosion sily broken ce. vier. shes down s as a meable rock nal manner. catements

Question Number	Indicative	e content	
5(b)	Coastal retreat can be managed using a number of different approaches.		
	Hard Sea Defences can be used to prevent further retreat – This strategy involves heavy construction and usually results in the destruction of the natural coastline. Sea Walls, gabions and rip rap are used to break-up the waves and reflect the wave's energy back to sea.		
	Strategic realignment is an alternative to the use of hard flood defences. This approach involves a combination of strategies from soft measures, such as the planting of marron grass to stabilise dunes, to the 'do nothing' approach. The first stage usually involves an audit of the coastline to establish which sections need protection and which can be left to retreat naturally.		
	explanati response	key factor for moving between levels is the amount of on. Level 1 will have little (or no) explanation; level 2 s <i>must</i> include some explanation, although this may be rather gue; whereas level 3 responses <i>must</i> include detailed on.	
Level	Mark	Descriptor	
	0	No rewardable material	
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of coastal management strategies.	
		e.g. They built a sea wall to manage the coast line (1 mark).	
Level 2	3-4	Location identified. Linked or elaborated statements. A range of geographical terms have been appropriately applied. At least one measure has been briefly explained.	
		e.g. In Scarborough, a new sea wall was built to protect the cliff by reflecting the power of the waves back out to sea. (3 marks).	
Level 3	5-6	Detailed / well developed answer focused on a case study region. A wide range of geographical terms have been effectively applied. At least one measure has been identified and explained in detail. For full marks the response must include clear and specific case study information.	
		e.g. In Scarborough a new taller sea wall was built with a curved top. The wall absorbs and reflects the energy of the waves. A large stone wall has been constructed to act like a giant groyne. This should stop the movement of sand by longshore drift, making the beach bigger. A large beach stops waves from reaching the cliff, stopping erosion (6 marks).	

Question Number	Answer	Mark
6(a)	 1 mark for identifying a process of river erosion. Additional mark(s) awarded for statements that describe the identified process. Potential answers: a) Corrosion – chemicals in the water dissolve minerals 	(3)
	 in the surrounding rock. b) Abrasion (corrosion) – stones and pebbles are smashed into the river's bed. Collisions results in small fragments of rock being chipped off. c) Hydraulic Action – Sheer force of the water breaks-up the channel. 	
	Also credit references to VERTICAL erosion.	
	NB: As the focus of the question is the break-up of the river's bed, attrition is not a valid answer.	
	NB: As the command word is describe, a list of erosional processes with no description maximum mark 2.	
	NB: Watch out for terms which have been incorrectly defined / explained.	

Question Number	Indicative content		
6(b)	Flood management schemes make use of a wide range of techniques to reduce the risk of flooding.		
	 Hard Engineering Methods: Embankments – Banks raised to increase channel size. Rivers can be canalised – channels deepened and / or straightened to allow more water to run through the channel quickly. Dams – Built to regulate and control river flow. Overflow channels – Extra channels built to carry surplus flow during periods of high discharge. Soft Engineering Methods: Washlands – parts of the floodplain where flooding is allowed. Afforestation – planting of trees to increase evapotranspiration and to reduce surface runoff Landuse zoning – planning restrictions introduced to reflect flood risk. Flood warning system – weather and river level monitoring to ensure residents are given ample time to evacuate and prepare. NB: The key factor for moving between levels is the amount of explanation. Level 1 will have little (or no) explanation; level 2 responses must include some explanation, although this may be rather basic/vague; whereas level 3 responses must include detailed explanation. 		
Level	Mark	Descriptor	
	0	No rewardable material	
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of management measures. e.g. They built a dam to stop flooding (1 mark).	
Level 2	3-4	Location identified. Linked or elaborated statements. A range of geographical terms have been appropriately applied. At least one measure has been briefly explained. e.g. In York, the Foss Barrier was built and flood walls were made taller to stop the river overflowing in residential areas (3 marks).	
Level 3	5-6	Detailed / well developed answer focused on a case study region. A wide range of geographical terms have been effectively applied. At least one measure has been identified and explained in detail. For full marks the response must include clear and specific case study information. e.g. In York they built the Foss barrier. The barrier was designed to prevent flooding by stopping the water from the Ouse backing up into the Foss. Clifton Ings has also been designated as a washland. A series of sluice gates has been built to channel flood waters into the Ings, lowering the amount of water going to other parts of the city. (6 marks).	

Question Number	Answer	Mark
7(a)	 1 mark for each appropriate suggestion. Additional mark can be awarded for extending statements. e.g. The number of dead zones may have increased because of climate change (1 mark). Higher water temperatures have resulted in more frequent storms which can damage fragile ecosystems (1 mark). Answers likely to include: Over fishing Toxic pollutants from industry and shipping Oil spills Eutrophication from sewage and fertilisers washed 	(3)
	 into the sea Food chain imbalance from fishing and pollution Habitat destruction (e.g. mangroves & coral reefs) Climate change leading to more storms, changes in salinity and warmer temperatures. 	
	At least TWO suggestions needed for full marks.	
	No marks are to be awarded for describing the data or providing graph readings.	

Question Number	Indicative	dicative content	
7(b)	than one in problem Common Firth of Co	inflict between fishermen: 'active' methods often cause mage to the seabed preventing the use of more 'passive' chniques. Inflict between tourists and fishermen: snorkelling disrupts dlife the fishermen are tying to catch. Tourist related lustries often want marine ecosystems protected; such obtection often restricts or bans fishing (e.g. the no-catch zone Lambash bay). Inflict between conservations and other uses: Conservations gue that certain marine ecosystems should be free from mmercial exploitation – both fishing and tourism related. Inflict between tourists and fishermen: Tourist activities want ecoastline to appear 'picture book' and tranquil. Fishing civities often damage reefs and results in damaged nets and wanted catch being abandoned on the beach. Inflict between poor locals and tourist related activities: Stocia's poor feel they have the right to subsistently fish the eastline. Private landowners (e.g. hotels) want to have private eaches for their customers only. Locals use the mangroves for noting, fishing and fuel wood. Hotels want to remove engroves to ensure easy beach. Inflict between conservations and tourists: Conservations argue and tourism related activities, such as snorkelling and yachting bould be banned to protect damaged reefs. These are a vital modern of income for many locals. In the conservation of the protect damaged reefs. These are a vital modern of income for many locals. In the conservation of the protect damaged reefs. These are a vital modern of income for many locals. In the conservation of the use of the protect damaged reefs. These are a vital modern of income for many locals. In the conservation of the use of the protect damaged reefs. These are a vital modern of the protect damaged reefs. These are a vital modern of the protect damaged reefs. These are a vital modern of the protect damaged reefs. These are a vital modern of the protect damaged reefs. These are a vital modern of the protect damaged reefs.	
Level	Mark	Descriptor	
	0	No rewardable material	
Level 1	1-2	Generic statements – simple descriptions. Answer identifies at least one point of conflict. The exact groups involved in the conflict maybe unclear. E.g. Different groups argue over fishing on coral reefs (1 mark).	

	T	,
Level 2	3-4	A located point of conflict has been identified. Linked or elaborated statements. A range of geographical terms have been appropriately applied. At least one point of conflict has been briefly explained.
		E.g. In St Lucia there was conflict between the poor locals and multi-national hotels. The poor locals wanted to fish the reef whilst the hotels wanted to make the coastline private to make it more appealing to their visitors. (3 marks)
Level 3	5-6	A located point of conflict has been identified. A wide range of geographical terms have been accurately applied. The point of view of both groups in the conflict must have been explained. For full marks the response must include clear and specific case study information.
		E.g. In the Firth of Clyde there is conflict between several groups. Conservationists want the area to be protected, restricting tourist activities such as yachting and snorkelling as they say these activities are damaging the ecosystem with their anchors. However, local tourism destinations argue that it is harmful fishing techniques that have damaged the coastline. They want to see a no-catch zone already in place in Lambash Bay extended. Many local fishermen are furious at the no-catch zone and want to see the ban replaced with laws on net size. (6 marks)

Answer Mark for each adaptation identified. Additional mark(s) available for describing the importance of the adaptation. Cactus: Surface layers which are thick and waxy preventing water loss. Extensive root systems to quickly absorb rainfall when it occurs. Deep roots so they can penetrate soil and rock to reach underground water sources. Fleshy bodies store water. Spikes discourage grazing animals and promote the formation of dew. Flowering only occurs when moisture levels are high enough. NB: Do allow statements which suggest that the flat shape of the cactus is for maximising light/photosynthesis, collecting water or for absorbing heat. Coniferous Tree: Downward sloping branches to allow snow to slip off. Evergreen needles reduce water loss and to allow the tree to grow as soon as the weather is warm enough. Shallow root systems as only the soil near the surface defrosts during the spring. Thick bark to provide protection from wind and low temps. Cones only open weather conditions are correct from seed dispersal.	Mark for each adaptation identified. Additional mark(s) available for describing the importance of the adaptation. Cactus: Surface layers which are thick and waxy preventing water loss. Extensive root systems to quickly absorb rainfall when it occurs. Deep roots so they can penetrate soil and rock to reach underground water sources. Fleshy bodies store water. Spikes discourage grazing animals and promote the formation of dew. Flowering only occurs when moisture levels are high enough. NB: Do allow statements which suggest that the flat shape of the cactus is for maximising light/photosynthesis, collecting water or for absorbing heat. Coniferous Tree: Downward sloping branches to allow snow to slip off. Evergreen needles reduce water loss and to allow the tree to grow as soon as the weather is warm enough. Shallow root systems as only the soil near the surface defrosts during the spring. Thick bark to provide protection from wind and low temps. Cones only open weather conditions are correct from	0	A	Manda
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Question Number	Indicative content		
8(b)	The culture of local peoples should be protected for a wide range of reasons: Essential local knowledge: • Knowledge of local foods (fruits, seeds, grubs etc) • An understanding of how best to farm the land. • Expertise in the medical properties of different plants. • Skills in hunting. • Appreciation of the delicate environmental balance. • Traditional systems for collecting water and irrigating crops. • Stories, poetry, music, crafts and art that contribute to the variety of life. • Knowledge of local wildlife and the dangers that they present. NB: The key factor for moving between levels is the amount of development. Level 1 will have little (or no) description; level 2 responses must include extending statements, although these may be rather basic/vague; whereas level 3 responses must include detailed description.		
Level	Mark	Descriptor	
	0	No rewardable material	
Level 1	1-2	Generic statements – simple descriptions. At least one unique aspect has been identified. E.g. Some cultures include types of music only they play. (1 mark).	
Level 2	3-4	Some statements are linked or elaborated. At least one unique aspect of culture / way of life has been described. Candidate accurately uses geographical terms. E.g. The Aboriginals know how to hunt and gather foods form the desert shrub. They know what foods are nsafe to eat. (3 marks)	
Level 3	5-6	At least one unique aspects of culture / way of life has been described in detail. Candidate uses a wide range of geographical terms effectively. Statements are detailed and developed. For full marks the response must include clear and specific case study information. E.g. The aboriginal peoples of Australia know how to find water and food during extreme droughts, such as witchetty grubs. The Tuareg tribe of Niger are renowned jewellers and clothes makers. They make a wide range of natural dyes from rocks and local vegetation. (6 marks).	

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