Mark Scheme (Results)

January 2012

GCSE Geography (5GB1F) Paper 01
DYNAMIC PLANET

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Question Number	Answer	Mark
1(a)	**A** There are many volcanoes around the edge of the Pacific	**(1)**

Question Number	Answer	Mark
1(b) (i)	1 mark for an appropriate threat (danger). Answers likely to include: 1) Direct Threats • Lava flow • Pyroclastic flows • Ash clouds • Lahars • Lightning storms • Volcanic bombs • Landslides • Earthquakes • Tsunami • Poisonous gases 2) Indirect Threats • Houses collapse • Crops destroy • Water supply contaminated • Climate change Do not allow basic statements such as 'people die'/'things are destroyed' or 'people are homeless'.	**(1)**

Question Number	Answer	Mark
1 (b)(ii)	1 mark for making a statement that implies the plates are moving together. Common responses likely to include: This is when... • two plates collide • one plate goes over the top of another • a plate subducts beneath another • two plates crash together Second mark awarded for an extending statement Common responses likely to include: • The more dense plate sinks • The collision can lead to the formation of fold mountains • Are characterised by earthquakes and volcanoes • Leads to the creation of deep sea trenches. • The plates move due to convection currents. • Oceanic plate descends. • Appropriate examples, e.g. where the Nazca and South American plates meets.	**(2)**

Question Number	Answer	Mark
1(c)	1 mark for identifying an appropriate action. Additional mark(s) awarded statements which extend the description. 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 • Education programmes and emergency service training. • Early warning systems NB: If only one action has been identified, maximum mark 3. NB: For full marks, the candidate must have identified **two** actions NB: Do not credit simplistic extending statements that refer to 'decreasing deaths' or 'reducing damage'. Statements must highlight why deaths/damage will be lower. Likewise, do not score references to making buildings 'stronger' the candidate needs to describe how.	**(4)**

Question Number	Answer	Mark
2(a)	**B** Average global temperatures was higher in 2010 than 1860	**(1)**

Question Number	Answer	Mark
2(b)(i)	1 mark for an appropriate natural cause. Potential answers: • Volcanic Eruptions • Sunspots • Orbital changes • Changes in the Earth's tilt • Solar Output • Surface reflection (ice coverage) • A **natural** increase in greenhouse gases NB: Answers that refer to greenhouses gases but don't make the distinction between natural and human sources are not to be rewarded. NB: Global warming refers to man made climate change and so should not be awarded. NB: As the increase in cattle ranching and rice farming over the past 50 years has been the result of human decisions / actions; do not score answers that refer to methane released from cattle or paddi fields.	**(1)**

Question Number	Answer	Mark
2(b)(ii)	1 mark for identifying a valid human activity e.g. driving a car (1 mark) Addition mark awarded for statements which extend the description, e.g. Petrol is a fossil fuel. (1 mark) Using petrol releases carbon dioxide. (1 mark) Chosen actions are likely to include: • Transport –The use of petrol in car engines leads to emissions of carbon dioxide. • Thermal power stations generate electricity through the burning of fossil fuels which release carbon dioxide into the atmosphere. • Deforestation has removed trees which previously absorbed carbon dioxide through photosynthesis. • The expansion of cattle ranching and rice farming has led to higher levels of methane. (2 x 1)	**(2)**

Question Number	Answer	Mark
2(c)	1 mark for an appropriate economic impact. E.g. The tourism industry may grow. Additional mark(s) 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) whilst beach resorts along the south coast may attract more visitors (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. NB: Maximum mark if only one impact identified - 3. NB: For full marks, the candidate must have identified **two** impacts NB: As the question refers to climate change, answers relating to both increasing and decreasing temperatures should be accepted.	**(4)**

Question Number	Answer	Mark
3(a)	1 mark for each appropriate statement. Answers may be extracted from the resource or from personal knowledge. Potential answers: • Simple to harvest – no expensive equipment needed. • Harvested without damaging the environment • Utilises local skills and experience • Twisty characteristic make them ideal to work with • No need to clear forest • Pesticides not needed • Jobs for local people • Generate money for the local economy • Maintains traditions of forest communities • Sustainable industry • Renewable resource (2x1)	**(2)**

Question Number	Answer	Mark
3(b)	1 mark for each correct gap fill. **Altitude** can affect temperature, with a half degree fall for every 100 metres in height. Drier regions are usually **inland** as winds blowing from the sea quickly lose moisture. (2x1)	**(2)**

Question Number	Answer	Mark
3(c)	1 mark for identifying a valid life support service. Additional mark(s) 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) whilst releasing oxygen (1 mark). Answers 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 hold back silt and intercept rainfall reducing 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 a huge range of organisms. • Vegetation provides food. • Regulates water supply • Provides essential goods, such as plants for medicine and wood for construction/fuel. NB: If only one life support system has been identified, maximum mark 3. NB: For full marks, the candidate must have identified **two** life support systems. Lists of life support systems, maximum mark 2.	**(4)**

Question Number	Answer	Mark
4(a)	A = Evaporation B = Precipitation (all examples of precipitation e.g. rain, snow, sleet, hail, fog) Also allow raining, rainfall, snowing, hailing, sleeting.	**(2)**

Question Number	Answer	Mark
4(b)	1 mark for identifying an appropriate activity. Additional mark for providing an extending statement. e.g. Farm pollution can lead to a decline in water quality (1 mark). Farm waste can make the water poisonous (1 mark). Answers likely to include: • Pollution from Industry. • Excessive use of fertilisers. • Deforestation. • Sewage waste disposed in river courses. • Chemical sprays from gardens, farms and parks. • Hot water released from power stations. • Over-extraction. NB: As question simply refers to a reduction in water quality, marine activities should also be accepted. NB: Allow extending statements that refer to the water source becoming contaminated / poisonous. Do not credit answers that state the water has become dirty or muddy. (2 x 1)	**(2)**

Question Number	Answer	Mark
4(c)	1 mark for identifying a valid problem. Addition mark(s) awarded for extending statements e.g. unreliable water supply may lead to a drought (1 mark). e.g. Regions with unreliable water supply are often affected by drought (1 mark), reducing farm output (1 mark). This could lead to a famine (1 mark). Common responses likely to include: - Drought conditions damage farming. Reduced farm out is likely to lead higher market prices and in extreme cases famine. - 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 dry to wetter 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). - 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.	**(4)**

NB: If only one problem has been identified, maximum mark 3.

NB: No mark is awarded for naming an appropriate location. However, if no vulnerable area is identified, candidates can only score 3 marks. (Africa is not a suitable location)

NB: Do not credit simplistic extending statements that refer to 'people dying'. Statements must identify the cause of death (e.g. dehydration).

NB: For full marks, the candidate must have identified **two** impacts

NB: Do not credit responses which confuse insufficient/ unreliable water supplies with water quality issues.

Question Number	Answer	Mark

5(a)	1 mark for identifying an appropriate process. Additional mark for providing an extending statement.
	
	e.g. The cliff may have collapsed because of erosion (1 mark).
	
	e.g. The cliff may have collapsed because of erosion (1 mark). Stones on the beach could have been banged into the cliff during high tide (1 mark).
	
	Potential answers:
	❑ Erosion
	   o Hydraulic Action
	   o Solution
	   o Abrasion
	❑ Weathering
	   o Mechanical (Physical) Freeze-thaw
	   o Chemical
	   o Biological
	❑ Rainfall Saturation
	❑ Destructive waves
	❑ Undercutting
	❑ Mass Movement
	   o Slumping
	   o Landslide
	   o Rotational Slip
	
	NB: Do not allow references to coastal defences as these are not a process.
	
	(2x1)
		(2)

Question Number	Answer	Mark
5(b)	1 mark for an appropriate response. Answers likely to include: • Property damaged • Farmland lost • Roads closed • Amenities affected (e.g. telephone lines) • Difficult access to the beach • Tourism discouraged • Death/injury • Ugly – discourages tourism • Residents/businesses forced to move	**(1)**

Question Number	Indicative content
5(c)	Hard rock coastlines are characterised by a range of distinctive landforms including cliffs, arches, stacks, wave cut-platforms and headlands/bays (coves).
	NB: Students can 'name' their chosen coastline by referring to the location (e.g. Flamborough Head) or the rock (e.g. granite).
	NB: *If the candidate has made no attempt to locate their destination, maximum score 4.*
	NB: *If the answer is focused entirely on a section of soft rock, maximum score 2.*

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statement(s). Identifies at least one hard rock landform. Unlikely to refer to a specific location. *Little (or no) explanation*. May be a list of landforms.
		e.g. Coastlines made from hard rocks have arches and stacks (2 marks)
Level 2	3-4	Likely to have identified a coastal region which includes hard rock. Answer identifies at least one hard rock landform. A range of geographical terms have been used. *Answer will include some explanation*.
		e.g. Studland near Swanage is a hard rock headland. Part of the headland has collapsed leaving a stack. (3 marks)
Level 3	5-6	Located identified. Response is detailed and well developed. Answer focuses on how the coastline has developed (changed) or will change in the future. A good range of geographical terms have been effectively applied. *Answer includes clear explanation.*
		e.g. Studland near Swanage is a hard rock headland. There is a stack which was once attached to the headland as part of an arch. The stack became separated when top of the arch collapsed. This was because the sea eroded the headland making the arch bigger and bigger, eventually it became too heavy and fell into the sea. (6 marks).

Question Number	Answer	Mark

6(a)	1 mark for identifying an appropriate process. Additional mark providing an extending statement.
	
	e.g. The valley has been made by erosion (1 mark).
	
	e.g. The cliff may have collapse because of erosion (1 mark). The river's current smashes stones into the bed of river making the valley deeper (2 marks).
	
	Potential answers:
	❑ Erosion
	   o Hydraulic Action
	   o Solution
	   o Abrasion
	❑ Weathering
	   o Mechanical (Physical)
	   o Freeze-thaw
	❑ Mass Movement
	   o Soil Creep
	   o Slumping
	   o Rockfalls / landslides
	❑ Transport
	   o Traction
	   o Saltation
	(2x1)
		(2)

Question Number	Answer	Mark
6(b)	1 mark for any appropriate problem Common answers likely to include: • Property damaged • Businesses forced to close • Access prevented • Crops destroyed • Livestock trapped • Transport affected • Illness/disease • Contamination of water supply	**(1)**

Question Number	Indicative content
6(c)	Human causes of floods include: • Urbanisation • Deforestation • Changes in farming (e.g. up and down ploughing) • Alterations to the river's channel Natural causes of floods include: • Continuous rainfall • Torrential rainfall • Snow melt • Baked soil – impermeable surface • Saturated soil • Point of confluence – rapid increase in water volume • Steep slopes – little time to infiltrate. • Impermeable rock NB: Do not allow comments referring to global warming unless the candidate has specifically linked climate change to river rather than coastal flooding. NB: Do not allow simplistic statements about litter being dumped into rivers causing flooding. Credit should be given if the candidate links litter to blocked drains or debris dams. NB: Do not credit statements that relate to dams unless the candidate specifically refers to flooding upstream caused by the dam's construction or flooding downstream as result of dam collapse.

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statement(s). Identifies at least one cause of river flooding. Unlikely to refer to a specific location. *Little (or no) explanation*. May be a list of causes. e.g. It had rained non-stop for two days. (1 mark)
Level 2	3-4	Likely to include a named location. A range of geographical terms have been used. *Answer will include some explanation*. Answer is likely to refer to more than one flood cause. e.g. Keswick flooded as the ground was already saturated so no more water could be taken in by the soil. The rain was really heavy and lasted for two days. (3 marks)

Level	Mark	Descriptor
Level 3	5-6	Detailed, well developed answer referring to specific locations. A good range of geographical terms have been effectively applied. Response includes both human and physical causes. Clear explanation included. e.g. The town of Keswick flooded in 2009 because of a torrential downpour that came after weeks of above average rainfall. The ground was already saturated so the rainwater quickly flowed into nearby rivers. Keswick was particularly badly hit as houses had been built right next to the river, narrowing the channel. (6 marks)

Question Number	Answer	Mark
7(a)	1 mark for each correct statement: Answers likely to include: - The number of dead zones has increased - Dead zones increased from 10 in 1920 to over 410 in 2010 - The rise in dead zones was most rapid after 1980 - Between 1920 and 1970 there was only a slow increase in dead zones. - There are now 400 more dead zones than in 1920 - There is an increase every 10 years. **NB: Do not credit incorrect graph readings.**	**(2)**

Question Number	Answer	Mark
7(b)	1 mark for an appropriate response. Answers likely to include: - Over fishing - Toxic pollutants from industry and shipping - Oil spills - Eutrophication from sewage and fertilisers washed 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. - Aquarium trade - Unsustainable fishing techniques, such as trawling and cyanide fishing. - Scuba Diving NB: Do not allow tourism by itself, the candidate most explain how tourism has degraded the marine ecosystem. E.g. divers stepping on coral reefs.	**(1)**

Question Number	Indicative content
7(c)	Examples can be local or global. Common examples likely to include:
	• St Lucia introduced a community-based coastline management programme in 1986. 19 areas (including reefs and mangroves) were declared Marine Reserve Areas. These areas have been developed as ecotourism resorts to provide local communities with new employment opportunities which enhance rather than destroy the coastline.
	• The EU has introduced a fisheries policy for all its member states in an attempt to revive fish stocks. Each year a limit is placed on the number of fish from each species that can be caught, this quota is based on a annual 'state of stock' survey. The EU has also designated some regions as no-take zones for species particularly under threat e.g. North Sea Cod.
	• Lambash Bay, in the Firth of Clyde, has seen the introduction of a 'no-take' zone as the local scallop beds had been completely over-fished. Although some fishing is allowed in the surrounding region, new laws forbidding destructive methods have been introduced. There are plans to make Lambash Bay one of Scotland's first Coastal and marine parks.
	NB: One case study can include many examples.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	Generic statements – simple statements. At least one management method has been identified. *Little (or no) explanation*. May be a list of management methods. E.g. marine ecosystems can be managed by making reserves (1).
Level 2	3-4	Likely to include a named location. A range of geographical terms have been used. *Answer will include some explanation*. Answer is likely to refer to more than one management methods. E.g. In St Lucia reserves were set up to protect their coral reefs. Local fishermen were employed to manage the reserve so no-one lost their job (4 marks).
Level 3	5-6	Answer refers to an appropriate location. Detailed, well developed answer. *At least two management methods have been clearly explained*. A good range of geographical terms have been effectively applied. E.g. In St Lucia reserves were established. These reserves banned fishing and the use of mosquito sprays that were poisoning wildlife. Local people supported the scheme as they were given new jobs either looking after the reserve or working in new tourism resorts(6).

Question Number	Answer	Mark
8(a)	Mark for each feature identified. Cacti: • Surface layers which are thick and waxy • Extensive root systems • Deep roots so they can penetrate soil and rock • Fleshy bodies that store water. • Spikes discourage grazing animals • Flowers when its rains. Conifer Trees: • Downward sloping branches. • Evergreen needles. • Shallow root systems. • Thick bark. • Cones protect seeds from climatic extremes. NB: If the candidate has made reference to both types of vegetation in their answer, maximum mark 1.	**(2)**

Question Number	Answer	Mark
8(b)	Mark awarded any appropriate suggestion. Hot: • Light colours to reflect heat • Air-conditioning • Gutter system to collect rainwater • Solar panels to generate electricity • Garden Planting to provide shade • Buildings built into the ground. Polar: • Steeply sloping roofs. • Triple glassed windows. • Built on raised stilts. • Heavily insulated roofs and walls. • Small windows.	**(1)**

Question Number	Indicative content
8(c)	Local approaches to sustainable development depend upon the case study region. Some examples include: Hot Arid: In Siguin Vousse in Burkina Faso Oxfam has been working with local farmers to improve soil fertility and improve rainwater management. Diguettes, earth barriers, were laid to trap soil and soil down rainwater. In Zambia, Oxfam has trained people to use conservation farming. Crop yields have been increased through a multi-cropping programme. This system involves the growing of trees, shrubs, and ground level plants all in the same area. As well as increased output this layered vegetation approach improves soil quality and reduces moisture loss. Polar: In Iceland geothermal energy has been used to create sustainable energy. Magma heated groundwater is used for heating and electricity generation. Using geothermal energy, farmers are able to heat and light greenhouses allowing vegetables and fruits to be grown throughout the year. Inuit people build their houses on stilts to prevent leaking heat from melting the permafrost. *NB: Answer may refer to environmental, social or economic sustainability*

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Generic statements – simple descriptions. At least one attempt to achieve sustainability has been identified. *Little (or no) explanation*. May be list of sustainable lifestyle choices. E.g. Sustainable energy can be created in arid countries by using solar panels. (1 mark)
Level 2	3-4	Likely to include a named location. A range of geographical terms have been used. *Answer will include some explanation*. Answer is likely to refer to more than one sustainable action. E.g. Farmers in Iceland are able to grow fruit and vegetables throughout the year by using geothermal energy to heat and light greenhouses. Geothermal energy is a clean and renewable energy source. (4 marks)

Level	Mark	Descriptor
Level 3	5-6	A specific region has been identified. Likely to include at least two examples of sustainable action. *Clear explanation*. Wide range of geographical terms applied. Sustainable aspect of action is clearly identified.

E.g. Farming in Zambia has become more sustainable due to a conservation farming technique introduced by Oxfam. Oxfam's approach involves farmers growing a wide range of foods on the same land. As well as providing a healthier diet the plants protect the soil from erosion. This systems means farmers are no longer depending on the success of one crop or its price at market. (6 marks). |

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