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Mark Scheme (Results)

Summer 2012

GCSE Geography B 5GB1H
Dynamic Planet

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Question Number	Answer	Mark
1(a)	One mark for each valid statement. Common responses likely to include: • Earthquakes can damage buildings • Lahars can wash away villages • Volcanic (lava) bombs can rain down on settlements • Ash can damages aeroplane engines • Accumulations of ash can cause roofs to collapse • Lightening storm • Heavy rainfall can cause flooding • Landslides can over property • Pyroclastic flows destroy everything in their path. • Poisonous gases	**(2)**

Question Number	Answer	Mark
1(b)	1 mark for identifying an appropriate technique. Additional mark awarded for providing an extending statement. e.g. Scientists measure the gases given off (1 mark). Increases in gas can indicate magma moving near the surface (1 mark). e.g. Monitor the volcano with tilt meters (1 mark) to detect any changes in shape (1 mark), e.g. Use thermal imaging (1 mark) to see if there is a build-up of magma in the volcano (1 mark). Techniques are likely to include: • Measure gases – sulphur dioxide • Tilt meters – Swelling / changing shape • Water temperature – rivers and lakes can be heated by the rising magma • Seismometers – measure small earthquakes that indicate moving magma beneath the surface • Infrared satellite imagery – Can show changing surface temperatures. • Monitoring of mass movements – landslides can indicate pressure build-up below. • Eruption history – Patterns of activity. • Boreholes – Monitoring water temperatures.	**(2)**

Question Number	Answer	Mark
1(c)	1 mark for identifying an appropriate preparation strategy. Additional mark(s) for extending statements. 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) ensuring all buildings have steel supports (1 mark) to enable them to bend rather crumble when shaken by an earthquake (1 mark) Preparations 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 NB: As the command word is 'describe', at least one preparation must have been extended for full marks. Lists of preparations - max 3. (1+1+2, 2+2 or 3+1)	**(4)**

Question Number	Answer	Mark
2(a)	One mark for each valid statement. Common responses likely to include: Manchester has... • Bigger population • Larger transport network • Greater car ownership • More factories NB: Also credit reasons which might explain Cumbria's low emission rates compared with Manchester, e.g. Agricultural rather than industrial economy.	**(2)**

Question Number	Answer	Mark
2(b)	1 mark for identifying an appropriate human activity. Additional mark awarded for providing an extending statement. e.g. Driving cars (1 mark) releases carbon dioxide (1 mark). e.g. Deforestation (1 mark) prevents the absorption of carbon dioxide (1 mark). Actions are likely to include: • Transport / Power Stations – Use carbon based fuels. • Deforestation – Trees act as a carbon sink, release carbon when burnt. • Cattle farming / Paddy field – Release methane • Fertilisers / sewage farms – Give off nitrous oxides • Halocarbons – 'man made' powerful greenhouse gas used by industry to make solvents and for equipment cooling. • Construction – cement making and steel manufacture release large quantities of carbon dioxide.	**(2)**

Question Number	Answer	Mark
2(c)	1 mark awarded for a simple description. Additional mark(s) awarded for extending statements. E.g. Sunspots give off huge amounts of radiation (1 mark). Therefore, more sunspots leads to higher temperatures on Earth (1 mark). E.g. The earth's orbit changes from circular to elliptical (1 mark). Scientists have noticed that circular orbits tend to result in lower temperatures (1 mark). Chosen actions are likely to include: • Orbital Changes – **(a)** Changes from a circular to an oval orbit can affect the amount of sunlight the earth receives. It takes 100,000 years for the Earth's orbit to change from being more circular to an ellipse and back again. These changes are called Milankovitch Cycles. **(b)** The Earth wobbles on its axis leading to changes in its tilt. When the Earth is more upright, it receives a greater amount of energy from the sun and experiences higher temperatures. • Solar output is not constant. Cycles of increased activity have been detected and linked to periods of higher temperatures on Earth. The most well know phenomenon is sunspot activity. These are explosions of intense heat on the sun's surface. For full marks, response MUST refer to BOTH solar output and orbital changes. (2+2 or 3+1)	**(4)**

Question Number	Answer	Mark
3(a)	One mark for each valid statement. Responses likely to include: • In the south of Australia • Located close to the coastline. • Biggest area in South East close to Melbourne and Sydney • Small area in South West close to Perth • Occupies Tasmania • Borders the savannah. Allow 'negative' comments such as 'there is no temperature forest in the northern half of Australia'.	**(2)**

Question Number	Answer	Mark
3(b)	1 mark for identifying an appropriate human action. Additional mark awarded for an extending statement. e.g. tropical rainforests have been damaged by deforestation (1 mark). Deforestation leads to soil erosion (1 mark). e.g. Expanding farmland (1 mark) destroys habitats (1 mark). Actions are likely to include: • Removal of natural vegetation (deforestation) • Expansion of agricultural and urban areas – habitat loss. • Disruption to natural cycles from over grazing / fishing • Introduction of non-native plants and animals, affecting food web balance. • Pollution from mining, industry, farming and urban areas – water and atmospheric. • Interference in the water cycle – reservoirs, over-extractions etc… • Mass tourism can destroy fragile ecosystems and disturb wildlife. NB: No named biome, max mark 1.	**(2)**

Question Number	Answer	Mark
3(c)	1 mark awarded for identifying a valid management method. Additional mark(s) awarded for extending statements. E.g. Establish national parks (1 mark) to ban economic activities that harm the ecosystem (1 mark) such as open-cast mining (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. • 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. • Zoning – Designating different regions to different land uses to keep conflicting activities apart. NB: As the command word is 'describe', at least one management method must have been extended for full marks. Lists of management schemes - max 3. (1+1+2, 2+2 or 3+1)	**(4)**

Question Number	Answer	Mark
4(a)	One mark for identifying an appropriate problem. Additional mark awarded for providing an extending statement. e.g. An unreliable water supply could cause crop failure (1 mark), leaving the farmer with only a small harvest to sell at market (1 mark). Responses likely to include: • No water for irrigation • Conflict with other water uses • Crops die or produce small yields • Poor grazing for livestock, possible starvation • Soil becomes baked, preventing root penetration • Soil may be eroded by the wind • Baked soil is impermeable, leading to flooding when the rains return. NB: Focus of question is unreliable water supply. Do not credit responses which refer to poor water quality. (1+1 or 2)	**(2)**

Question Number	Answer	Mark
4(b)	1 mark for identifying an appropriate activity. Additional mark awarded for providing an extending statement. E.g. Pollution from heavy industry (1 mark), can lead to toxic substances being released into rivers (1 mark). E.g. Over use of fertilisers (1 mark) can result in algae blooms (1 mark). Activities likely to include: • Disposal of industrial waste poisoning wildlife. • Excessive fertiliser use resulting in eutrophication. Algae blooms block out sunlight and starve the water of oxygen. • Deforestation leading to water course siltation. • Sewage can use algae blooms and poison river life. • Chemical sprays from gardens, farms and parks can be washed into rivers, poisoning river life. • Hot water released from power stations can reduce the water's oxygen content, reducing the rivers ability to sustain life. • Litter can damage river habitats and poison wildlife. • Pollution from transport and industry leading to the creation of acid rain, affecting the rivers ph.	**(2)**

Question Number	Answer	Mark
4(c)	1 mark for identifying an appropriate benefit / cost. Additional mark(s) awarded for extending statements. E.g. The Three Gorges project on the Yangtze river in China, generates HEP (1 mark) and therefore attract industry (1 mark) and create jobs (1 mark). E.g. The building of the Three Gorges project resulted in the flooding of large areas (1 mark). The population had to be relocated (1 mark) and some important cultural sites were submerged (1 mark). Common benefits are likely to include: • Flood control • Generation of HEP • More reliable water supply • Reservoir for fishing • Dam / reservoir tourist attraction • Regulated flow benefits river transport • Water supply promotes irrigation Common costs are likely to include: • River habitats destroyed. • Silt is trapped and deposited in the reservoirs • Dams can prevent transport and logging • Fish migrations can be affected. • Settlements and cultural sites may be submerged. NB: Named project must be specific and large scale. Failure to select a suitable project, max mark 3. NB: A full mark answer must refer to BOTH costs and benefits. NB: As the question asks for both 'costs' and 'benefits' to be described, a response which lists numerous impacts but offers no extension – max mark 2. (2+2 or 3+1)	**(4)**

Question Number	Answer	Mark
5(a)	Correct answers will include (a) two changes and one point of explanation, or (b) one change and two points of explanation. E.g. the cave will be enlarged by erosion (1 mark). Pebbles from the beach will be picked and smashed into the cave's sides (1 mark) turning it into an arch (1 mark). E.g. The stack will collapse to form a stump (1 mark). Abrasion (1 mark) will weaken the base of the stack (1 mark). E.g. The cliff will retreat (1 mark). Waves will hit the cliff forming a notch (1 mark). The notch will grow larger until the cliff above collapse due to a lack of support (1 mark). NB: No mark awarded for just identifying a landform.	**(3)**

Question Number	Indicative content	
5(b)	**Holistic approaches to coastal management consider the social, economic and physical impact of any measure. The aim of these approaches is to make the management of our coastline more sustainable. They consider the entire coast not just one location along it.** Many of the management techniques used in holistic schemes are described as being 'soft'. Soft Engineering techniques are more environmentally friendly and are considerably cheaper to implement. However, they are often less effective at stopping coastline retreat and usually result in land being lost to the sea. Holistic approaches often include an element of 'do nothing'. Some sections of coastline are left to retreat naturally. NB: Students who concentrate on hard engineering only – max mark 3.	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of benefits. e.g. modern approaches can stop coastal retreat. (1 mark).
Level 2	3-4	Linked or elaborated statements. Accurate use of geographical terms. At least one benefit has been briefly explained. e.g. On some parts of the Holderness coastline they are using managed retreat. Some land will no longer be protected from the sea. Creating natural marshes that will attract wildlife and store water in times of flood. (4 marks)
Level 3	5-6	Response must clearly define the meaning of 'holistic'. Detailed / well developed answer. A wide range of geographical terms have been effectively applied. At least two benefits have been explained. *For full marks the response must include clear location specific information.* e.g. At St Anne's in Lancashire a holistic approach has been used. Marron grass has been planted to stabilise the coastline as this has no negative impacts on other stretches of the coastline. As no heavy machinery is needed and the dunes are easily maintained. The dunes make a habitat for wildlife, like the endangered great-crested newt, sheltering them from strong winds. The dunes also look natural and are therefore appealing to tourists. (6 marks)

Question Number	Answer	Mark
6(a)	Correct answers will include (a) two changes and one point of explanation, or (b) one change and two points of explanation. E.g. the plunge pool will be made deeper (1 mark) by erosion (1 mark) as pebbles carried by the river will smash into the river's bed (1 mark). E.g. The waterfall will retreat (1 mark). Soft rock is easily eroded (1 mark) by the river's fast current, hydraulic action (1 mark). E.g. The bed load will be smaller (1 mark). Pebbles and stones in the water will smash into the bedload chipping off jagged edges (1 mark), a process known as attrition (1 mark). NB: No mark awarded for just identifying a landform.	**(3)**

Question Number	Indicative content	
6(b)	River flooding is complex process, the risk of flooding can be increased by a number of human actions: • 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 plough 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. • Climate Change: Human actions that release greenhouse gases are leading to climate change. A warmer planet will also lead to higher rainfall totals and more extreme weather events. • Building on floodplains – construction on floodplain areas means that when flooding occurs the impact will be greater.	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of human actions. e.g. Cutting down trees can cause flooding (1 marks).
Level 2	3-4	At least one human action has been explained. Linked or elaborated statements. Accurate use of geographical terms. e.g. In Yorkshire they chopped down trees. Deforestation increases the chance of flooding as lower transpiration rates result in more rain water getting to the river. (3 marks).
Level 3	5-6	Detailed / well developed answer. A wide range of geographical terms have been effectively applied. At least two human actions have been explained. *For full marks the response must include clear location specific information.* e.g. York has flooded due to the expansion of urban areas in the catchment of the River Ouse. Concrete and tarmac are impermeable, stopping rainwater from soaking into the ground. Gutters and drains quickly carry the water to the river, significantly cutting the lag time. To make space for these new urban areas, a number of woods have been deforested. Cutting down trees also increases surface runoff by reducing interception and lowering transpiration. (6 marks).

Question Number	Answer	Mark
7(a)	1 mark for each valid statement. Common responses likely to include: • The coral has died/damaged/destroyed • The reef no longer support marine life • Coral has changed colour • The food chain / web has broken down • Marine habitats have been destroyed • Coral has been bleached • Water is more murky/less clear	**(2)**

Question Number	Answer	Mark
7(b)	Mark awarded for *identifying* an appropriate international action. NB: Credit both named examples and descriptions of un-named schemes Common responses likely to include: • The Law of the Sea (UNCLOS), established to prevent individual countries from taking more than their fair share of the ocean's resources. • International Seabed Authority established to safeguard resources and environments. • International laws ratified to prevent the dumping of pollution or radioactive waste into the sea. • Global Marine Species Assessment is an internationally financed and managed programme designed to establish a clearer understanding of the marine ecosystems and wildlife which our oceans support. NB: Do not credit LOCAL actions.	**(1)**

Question Number	Indicative content	
7(c)	Management measures introduced to protect marine ecosystem often bring benefits to some people, whilst creating problems for others. Supporters: • New job opportunities for some • Habitat protection will please local conservationists • Those employed in tourism will welcome the new opportunities Against: • Access to the beach / coastline may be restricted • Fishermen may loose their income	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of reasons for views. E.g. Fishermen were annoyed. (1 mark)
Level 2	3-4	At list one view on marine management has been explained. Linked or elaborated statements. Accurate use of geographical terms. E.g. In St. Lucia fishermen were angry as they were banned from fishing off some parts of the coastline. However, this was good for the islands tourism industry as it made scuba diving more popular. (3 marks).
Level 3	5-6	Focused on a named location. Detailed / well developed answer. A wide range of geographical terms have been effectively applied. Two or more differing views on marine management have been explained. *For full marks the response must include clear location specific information.* E.g. In Lambash Bay a no-take zone was introduced. This was supported by local divers (COAST) and tourism businesses. Fishing had removed the fragile maerl & destroyed the habitats of marine wildlife. The no-take zone lead to wildlife returning, boosting the region's tourism industry, creating jobs. However, local fishermen opposed the no-take zone. Fishing is a vital source of income in the region, the new restrictions lead to a drop in income and forced some fishermen to abandoned the industry altogether. (6 marks)

Question Number	Answer	Mark
8(a)	Full marks can be achieved by either identifying two design features or by highlighting a single feature and providing a brief explanation. Common responses likely to include: HOT-ARID • Solar Panels to generate electricity • Light colours to reflect heat • Open spaces to aid the movement of air • Covered external spaces • Shaded windows to reduce magnifying effect of glass • Flat roof for water collection. POLAR: • Small windows to reduce heat loss • Built on stilts to stop permafrost melt • Double glazed windows • Sloping roof to stop the build-up of snow • Fuel supply (Wood) stored beneath building	**(2)**

Question Number	Answer	Mark
8(b)	Mark awarded for *identifying* an appropriate international action. Credit both named examples and descriptions of un-named schemes Common responses likely to include: • Kyoto Treaty • Antarctic Treaty • Protocol on Environment Protection environmental impact has been carried out. • International Year of the Desert • Arid lands environment council (ALEC) – protects extra climate flora and fauna. NB: Do not credit LOCAL actions.	**(1)**

Question Number	Indicative content	
8(c)	Life is changing for populations in polar and hot arid regions because: • Improved transport links have introduced new ideas and enabled local populations to migrant. • Tourism has lead to traditional cultures being over-whelmed, and in some cases being exploited as an attraction. • Increasing levels of economic development has lead to pollution and habitat destruction. • New developments in some regions had lead to the destruction of culturally important sites. • Climate change –Polar: Traditional hunting and transport no longer suitable because of melting pack ice. Hot Arid: New farming methods and population migrations driven by more frequent droughts.	
Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	Simple statements. Limited subject vocabulary used. Generic statements. May be a list of changes. e.g. Indigenous people have been affected by tourists who have brought in new cultures (2 marks).
Level 2	3-4	At least one change has been explained. Linked or elaborated statements. Accurate use of geographical terms. e.g. The Inuit culture is under threat from growing tourism. Tourists have brought new products and culture such example alcohol drinks cuasing social problems (4).
Level 3	5-6	Focused on a named location. Detailed / well developed answer. A wide range of geographical terms have been effectively applied. Answer is likely to have explained two or more changes. *For full marks the response must include clear location specific information.* e.g. The aboriginal people of central Australia have experienced many changes. Their culture has been threatened by growing tourism, which has exploited their cultural, turning it into a 'disney' attraction. However, more recently, growing media coverage has led to a growing interest in traditional aboriginal foods which has lead to the creation of new jobs in traditional farming. (6 marks)

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