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General Certificate of Education (A-level)
June 2013

Geography GEOG1

(Specification 2030)

Unit 1: Physical and Human Geography

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from: aqa.org.uk

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GEOG1 General Guidance for GCE Geography Assistant Examiners

The mark scheme for this unit includes an overall assessment of quality of written communication. There are no discrete marks for the assessment of written communications but where questions are "Levels" marked, written communication will be assessed as one of the criteria within each level.

Level 1: Language is basic, descriptions and explanations are over simplified and lack clarity.

Level 2: Generally accurate use of language; descriptions and explanations can be easily followed, but are not clearly expressed throughout.

Level 3: Accurate and appropriate use of language; descriptions and explanations are expressed with clarity throughout.

Marking – the philosophy
Marking is positive and not negative.

Mark schemes – layout and style
The mark scheme for each question will have the following format:
a) Notes for answers (nfa) – exemplars of the material that might be offered by candidates
b) Mark scheme containing advice on the awarding of credit and levels indicators.

Point marking and Levels marking
a) Questions with a mark range of 1-4 marks will be point marked.
b) Levels will be used for all questions with a tariff of 5 marks and over.
c) Two levels only for questions with a tariff of 5 to 8 marks.
d) Three levels to be used for questions of 9 to 15 marks.

Levels Marking – General Criteria
Everyone involved in the levels marking process (examiners, teachers, students) should understand the criteria for moving from one level to the next – the “triggers”. The following general criteria are designed to assist all involved in determining into which band the quality of response should be placed. It is anticipated that candidates’ performances under the various elements will be broadly inter-related. Further development of these principles will be discussed during the standardisation process. In broad terms the levels will operate as follows:

Level 1: attempts the question to some extent (basic)
An answer at this level is likely to:

- display a basic understanding of the topic
- make one or two points without support of appropriate exemplification or application of principle
- give a basic list of characteristics, reasons and attitudes
- provide a basic account of a case study, or provide no case study evidence
- give a response to one command of a question where two (or more) commands are stated e.g. “describe and suggest reasons”
- demonstrate a simplistic style of writing perhaps lacking close relation to the terms of the question and unlikely to communicate complexity of subject matter
- lack organisation, relevance and specialist vocabulary
- demonstrate deficiencies in legibility, spelling, grammar and punctuation which detract from the clarity of meaning.

Level 2: answers the question (well/clearly)
An answer at this level is likely to:

- display a clear understanding of the topic
- make one or two points with support of appropriate exemplification and/or application of principle
- give a number of characteristics, reasons, attitudes
- provide clear use of case studies
- give responses to more than one command e.g. “describe and explain..”
- demonstrate a style of writing which matches the requirements of the question and acknowledges the potential complexity of the subject matter
- demonstrate relevance and coherence with appropriate use of specialist vocabulary
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation which do not detract from the clarity of meaning.

Level 3: answers the question very well (detailed)
An answer at this level is likely to:

- display a detailed understanding of the topic
- make several points with support of appropriate exemplification and/or application of principle
- give a wide range of characteristics, reasons, attitudes
- provide detailed accounts of a range of case studies
- respond well to more than one command
- demonstrate evidence of discussion, evaluation, assessment and synthesis depending on the requirements of the assessment
- demonstrate a sophisticated style of writing incorporating measured and qualified explanation and comment as required by the question and reflecting awareness of the complexity of subject matter and incompleteness/ tentativeness of explanation
- demonstrate a clear sense of purpose so that the responses are seen to closely relate to the requirements of the question with confident use of specialist vocabulary
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation which contribute to complete clarity of meaning.

CMI+ annotations

- The annotation tool is available on all questions. The following annotations should be used where appropriate by dragging comment down and placing it on relevant part of the response as the answer is marked.

Physical	
ch	change
com	comment
desc	description
econ	economic
expl	explanation
la	landform
li	links
mgt	management
soc	social
sust	sustainable
twe	to what extent
wild	wilderness

Human	
as	assess
com	comment
cs	case study
disc	discussion
ecd	economic development
expl	explanation
li	Links
neg	negative
pos	positive
use	usefulness

- Where an answer is marked using a levels response scheme the examiner should annotate the script with 'L1', 'L2' or 'L3 at the point where that level has been reached. At each point where the answer reaches that level the appropriate levels indicator should be given. In addition examiners may want to indicate strong material by annotating the script as 'Good Level…'. Further commentary may also be given at the end of the answer. Where an answer fails to achieve Level 1 zero marks should be given.

- Where answers do not require levels of response marking, the script should not be annotated. For point marked questions where no credit-worthy points are made, zero marks should be given.

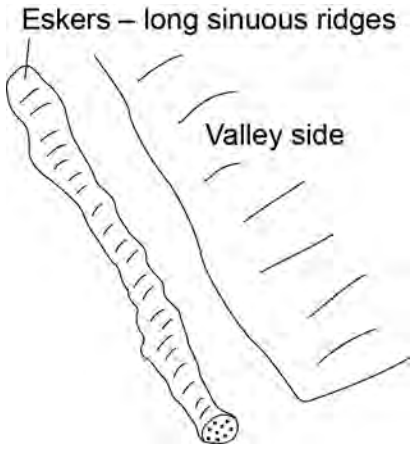
Other mechanics of marking

- Various codes may be used such as: 'rep' (repeated material), 'va' (vague), 'NAQ' (not answering question), 'seen', etc.
- Unless indicated otherwise, always mark text before marking maps and diagrams. Do not give double credit for the same point in text and diagrams.

1 (a)(i)	Magnitude frequency analysis refers to the size of floods (magnitude) and how often they occur (frequency). It seeks to predict the return period of a flood event of a particular scale, by looking at past occurrence. In this way, the expected recurrence interval is predicted. It can be seen as a way of predicting risk. 2 x 1	**(2 marks)** **AO1 – 2**
1 (a)(ii)	The diagram shows different levels of the river, including current, recent and highest. This allows a comparison to be made. The typical range is shown and the levels at which flooding are possible. Allow 1 mark for description. It indicates that on 14 April 2011 there was no risk of flooding and that the river was at the lowest level of its usual range. The recent recorded level provides a different scenario – with the level there being in the possible flooding category – showing a greater risk. The lack of specific dates regarding highest and recent recorded level limit usefulness of Figure 1. All 3 marks can be awarded for comment. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
1 (b)(i)	The photograph clearly shows a large dam – an example of a hard engineering flood management strategy. It is placed within a relatively narrow and deep valley. Behind it, there is a large area of water – this lake has been created by the dam and widens out in the background/to the left of the photograph; the river in front of the dam is much narrower. The dam allows the flow of the river to be controlled; surges no longer occur as flow is evened out. 4 x 1	**(4 marks)** **AO1 – 2** **AO2 – 1** **AO3 – 1**

1 (b)(ii)	Advantages likely to refer to the success of controlling the flow – as levels of river can be determined and maintained by identifying how much water should be released. This therefore takes away the flood risk. Other advantages relate to presence of water supply for local/regional populations, for irrigation of crops, for generation of HEP and for leisure/recreation and tourism purposes. Disadvantages likely to refer to the large cost involved, the impact – on areas lost beneath lakes/reservoirs and communities and significant displacement, the impact on the river – such as clearwater erosion, increased salinity due to use for irrigation a number of times, damage to river ecosystem and impact on people downstream of dams – where water source may be less. There is no requirement to use a case study, but specific information is clearly creditworthy. Comment likely to relate to advantages outweighing disadvantages or vice versa, the scale of a particular problem or advantages, relative needs of many versus those local and directly affected – any comment giving an analytical/evaluative slant is valid as long as it is in the context of the question. **Level 1 (Basic) (1 – 4 marks)** Understands how a dam works. Points simple and separate. Identifies either advantages and/or disadvantages with some development at top end. ***CMI annotation*** **L1 – identifies advantage and/or disadvantage** **Level 2 (Clear) (5 – 6 marks)** Aware of issues resulting – offers some comment. Is aware of advantages and disadvantages. Points are clear and developed. May be reference to specific example. ***CMI annotation*** ***L2 – comments on adv*antage*/disadv*antage**	**(6 marks)** **AO1 – 3** **AO2 – 3**

1 (c)	Physical factors are likely to refer to precipitation – length and intensity of rainfall, snowmelt; temperature levels and influence on evaporation levels, reference to antecedent conditions; slopes and their steepness; rock type and its permeability; type and extent of vegetation cover, including reference to seasonal change; size and shape of drainage basin. Human factors are likely to refer to levels of building – urbanisation; building on flood plains of rivers; drainage systems being put in place; impact of concreting gardens on a smaller scale; deforestation; agricultural practices – such as ploughing up and down slopes; local flood management schemes such as channelisation that take water away from one area faster. **Level 1 (Basic) (1-6 marks)** Simple statements – identifies factors affecting river discharge. Limited support. Links to thrust of question are tentative. ***CMI annotation*** ***L1 – identifies factors affecting river discharge*** **Level 2 Clear) (7 – 12 marks)** Tentative/implicit/simplistic/unsupported discussion/debate of (relative) importance – or one clear discursive point. Begins to develop points and sequence them – clear links between factor and river discharge. Some reference to both physical and human factors – although may be clear imbalance. ***CMI annotation*** ***L2 – begins to discuss*** **Level 3 (Detailed) (13 – 15 marks)** Clear/explicit/supported/informed discussion/debate of relative importance – a number of points. Develops points and sequences them – detailed links between factor and river discharge. Reference to both physical and human – a balanced account. Purposeful response. ***CMI annotation*** ***L3 – clear, purposeful discussion***	**(15 marks)** **AO1 – 8** **AO2 – 7**

2 (a)(i)	Glacial budget refers to the inputs/additions to the glacial system such as snowfall/avalanches and the outputs/losses from the system such as melting ice/ablation, evaporation and sublimation. This may be seen in terms of zones of the glacier or time scales – seasonal or long term. There is likely to be reference to the overall balance between inputs and outputs – whether there are more inputs than outputs so that the glacier gets bigger or reversal of this but not both. 3 x 1	**(3 marks)** **AO1 – 3**
2 (a)(ii)	The glacier was at its greatest extent in 1644. It has retreated substantially to its shortest length in 1977. It has retreated by about 1500m (+/- 100m) in a straight line or 2000 – 2100 via river. The retreat has not been consistent and it did advance between 1739 and 1822, before retreating again. As well as being shorter, it is much narrower at the current snout than it was – 500m approx. in 1894. Snout changed direction faces (qualified). 1 mark for quantification support. Any valid point that describes changes shown on Figure 3. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
2 (b)(i)	Marks should be awarded for correctly locating eskers, for appropriate shape, perhaps with reference to height and materials. They vary in height – 5 – 30m for small eskers and length – from a km to 400km (Munro esker in Canada). Width 10 – 50m. 4 x 1, including 1 mark for sketch. Dimensions – max 2.  1 mark for position – roughly parallel with valley side; winding nature. In addition, marks for labels relating to height, level of sorting; original indication of position within or beneath the ice.	**(4 marks)** **AO1 – 2** **AO2 – 1** **AO3 – 1**

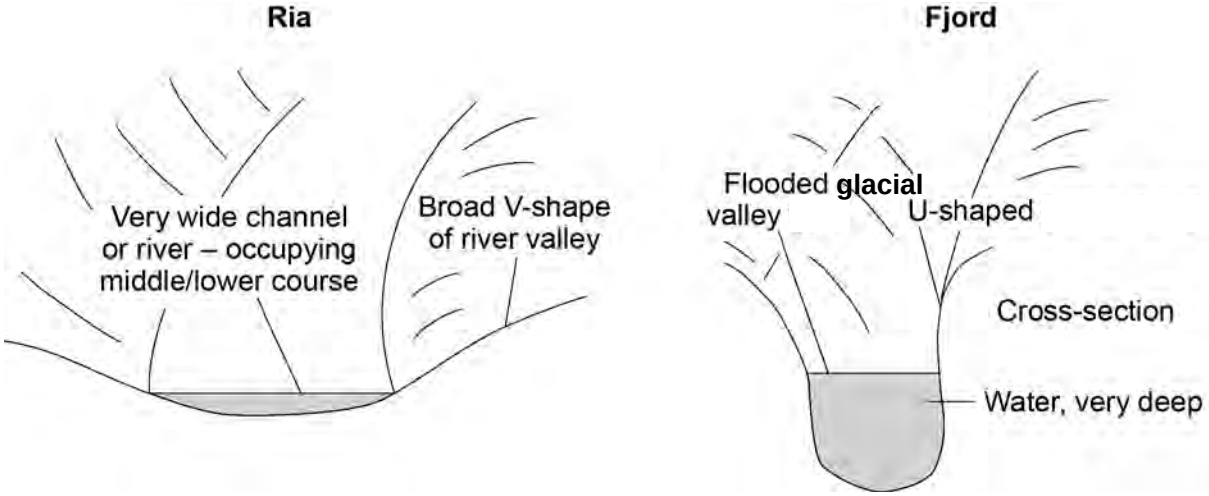
2 (b)(ii)	**Eskers** – these winding/sinuous ridges of often coarse sands and gravels are deposited by meltwater as it flowed in a channel beneath/within the glacier. Winding because of meandering habit of meltwater stream. They can be formed at the base of the ice or be completely surrounded by ice in a tunnel. Flow is under pressure and much material is carried, to be dropped when meltwater reduces in winter and exposed when the glacier melts. Material is rounded due to water erosion. **Level 1 (Basic) (1-3 marks)** Begins to explain – recognises that water is important. Will refer to eskers. Sequence will be incomplete. Some use of appropriate terminology present at the higher end. ***CMI annotation*** ***L1 – begins to explain*** **Level 2 (Clear) (4 – 5 marks)** Explanation is clear. Explanation focuses on the role of meltwater – may refer to a sudden drop in pressure. Sequence given so that resulting landform is clear. Appropriate geographical terminology is used. ***CMI annotation*** ***L2 – clear sequential explanation***	**(5 marks)** **AO1 – 2** **AO2 – 3**

2 (c)	**How ice moves** – there should be reference to **two or more** types of ice movement – internal deformation, rotational, compressional and extensional flow and basal sliding. Surges (whilst not named in spec) may be referred to, if relevant. There may be reference to the pressure melting point and a recognition that ice melts under pressure below freezing and the role of water in movement. Internal deformation occurs when individual ice crystals change shape in response to pressure (overlying ice) and position of crystals in relation to each other. This movement is slow and occurs especially in cold based glaciers. This links to compressional and extensional flow also. **Rotational** flow occurs in corries and relates to the ice pivoting around a central point and moving in a 'circular' way in the corrie so that it deepens area away from the lip. **Compressional and extensional flow** occur where there is a change in a gradient – where it steepens, velocity increases and extensional flow occurs, where gradient reduces, velocity falls and ice catches up with ice in front causing compressional flow. Compressional flow occurs in zone of ablation, whilst extensional flow occurs in zone of accumulation. **Basal sliding** occurs when weight of overlying ice and friction with bed (and sides) causes some ice to melt, even though temperatures are not above freezing. This encourages the ice to move as it is not frozen to its base and the presence of water acts as a lubricant. Obstacles to the ice flow (especially small ones under a metre) create added pressure on the ice as it begins to move over them; this causes melting which aids the passage of the ice over the obstacle – this is known as a regelation slip. (Regelation refers to the layer of ice where the process occurs at the base.) Larger items are overcome by creep. Here, the ice does not melt, but acts more like a piece of plastic and moulds itself around the obstacle as the ice crystals change shape or deform. This is important in warm based glaciers. **Surges** are rapid movements of glaciers that occur due to large level of inputs or presence of a large amount of meltwater that facilitate rapid movement and upset the balance within the glacier. There may be reference to which parts of a glacier move fastest/slowest with regard to surface position within the valley and depth. Why ice moves – there is likely to be reference to warm and cold based glaciers and different conditions that exist that encourage/discourage ice movements. Some aspects are specific to different types of ice movement and are included in types above, but there are generic points also – such as the thickness of the ice – (60m usually before movement occurs); gradient – steep slopes result in greater movement; presence of meltwater.	**(15 marks)** **AO1 – 8** **AO2 – 7**

	Level 1 (Basic) (1 – 6 marks) Partially describes how and/or explains why ice moves – occasional reference to terms. Points made are simple and random. ***CMI annotation*** ***L1 – partial description/explanation – simple, separate points*** **Level 2 (Clear) (7 – 12 marks)** May begin to explain – or may be reference to only description (or explanation). Description of movement is more specific. Begins to see sequence and make links. Must refer to two ways – may be imbalanced. ***CMI annotation*** ***L2 – clear description/explanation – links/sequence present at times*** **Level 3 (Detailed) (13 – 15 marks)** Explanation is clearly addressed – understanding is clear. Clear, purposeful description of two types of movement – greater balance. Description is sequential, links are made. Greater balance of two ways. ***CMI annotation*** ***L3 – description and explanation – sequential statements***	
3 (a)(i)	Eustatic sea level change is that which occurs on a global scale and within the seas and oceans. This may be caused by an increase in world temperatures, causing ice caps to melt. Isostatic sea level change is on a smaller scale and is the result of more localised factors – such as isostatic rebound or tectonic activity resulting in land uplift – and so is land-based. 3 x 1 Maximum 2 marks on one point.	**(3 marks)** **AO1 – 3**
3 (a)(ii)	Figure 4 shows that sea level has risen by about 0.2m between 1800 and 2007. There has been some fluctuation in the increase but it has generally quickened as the line steepens from about 1950. The two predictions show clear contrasts and both offer ranges of increase rather than specific figures. The more conservative – IPCC suggests an increase of between 0.2 and 0.6 by 2100, whilst Pfeffer predicts an increase between 0.8 and 1.9m/2.0m. Clearly there is a more optimistic and a more pessimistic prediction relating to overall sea level rise. More than one trend for 3 marks. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**

3 (b)(i)	Marks should be awarded for appropriate shape, reference to nature of valley sides, body of water between. Rias and fjords are likely, but series of islands – Dalmatian coasts - are also permissible. There may be reference to specific dimensions – e.g. 40 – 50m for a ria versus 300 – 400m deep for fjords – or even more. 4 x1, including 1 mark for sketch.	**(4 marks)** **AO1 – 2** **AO2 – 1** **AO3 – 1**

E.g. for fjord

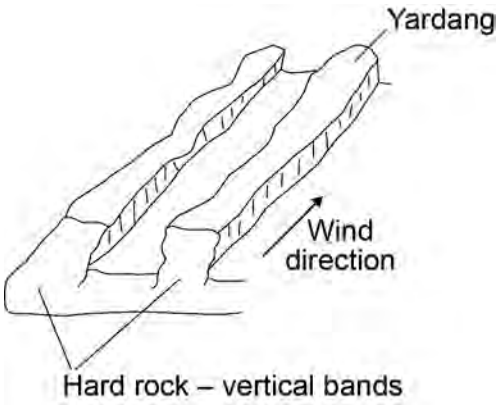


Ria 1 mark for broad V-shape, Curved nature of river, Presence of tributaries coming in or valid alternatives.	**Fjord** 1 mark for U-shape, Break in slope of valley sides near top, Waterfalls flowing down valley sides, Straight profile or valid alternatives.

3 (b)(ii)	Rias or fjords are the likely landforms. Rias form due to an increase in sea level. They are former river valleys and as sea rises, their lower reaches become inundated by the rising water. Their formation as a river valley initially is responsible for their V – shaped nature with the base being filled by the sea – creating an image of a 'lake' at the bottom – occupying the former flood plain, rather than the river. When river valleys in their upper or middle course level are flooded, a ria results. The deepest part is at the end – as the rivers flowed to base level. Fjords form due to the same reason – but their shape is different due to their glacial origin. Here, ice removed the interlocking spurs that give rias their characteristic inlets and created a straighter profile, as well as a deeper valley. Thus, fjords are much steeper, straighter in plan view and hold much deeper bodies of water. Fjords are at their deepest part way through their course and are marked by a reduction at the end – the threshold – where the ice was thinner and, therefore, eroded less. Estuaries – formed when flatter/lower course of the river is flooded are also permissible as is reference to the concordant coastlines where flooding results in areas of higher lying land protruding as a series of islands above the sea, parallel to the land as in Dalmatia area of Croatia. **Level 1 (Basic) (1 – 3 marks)** Begins to explain – recognises that increase in sea level/flooding is important. Will refer to chosen landform. Sequence will be incomplete. Some use of appropriate terminology present at the higher end. Landforms of emergence. ***CMI annotation*** ***L1 – begins to explain*** **Level 2 (Clear) (4-5 marks)** Explanation is clear. Explanation focuses on the role of increasing sea level – clearly to chosen landform. Sequence given so that resulting landform is clear. Appropriate geographical terminology is used. ***CMI annotation*** ***L2 – clear, sequential explanation***	**(5 marks)** **AO1 – 2** **AO2 – 3**

3 (c)	The processes responsible for shaping the coast include – marine erosion, transportation and deposition; land-based sub-aerial weathering, mass movement and runoff. The content will depend on the processes selected. There should be reference to **two or more** of the above. In addition, or as an alternative, there may be reference to what causes erosion to be high in some areas – such as fetch, height and steepness of waves and links to landforms, such as headlands and bays, arches in connection to shaping the coast. **Transportation** – the process of longshore drift and its links to formation of spits, bars. **Deposition** – the factors that encourage it and the landforms resulting – beaches, spits, bars, sand dunes and salt marshes. **Sub-aerial weathering** involves mechanical, chemical and biological and its impact on weakening cliff faces. **Mass movement** – the shifting of volumes of loose material down slope in areas of steep coastlines – via landslides, mudflows, rock falls. **Runoff** refers to the presence of surface water and its impact – whether in channels or not. The role of people may also be explored – in terms of interference with the natural system such as the building of groynes. Discussion aspect ought to consider relative importance – the fact that certain processes tend to be dominant in specific areas where certain conditions exist and lead to specific landforms and coastal characteristics. May assess relative importance with regard to those processes stated or other factors, such as geology.	**(15 marks)** **AO1 – 8** **AO2 – 7**

	Level 1 (Basic) (1 - 6 marks) Partially describes how processes operate – occasional reference to terms. Points made are simple and random. ***CMI annotation*** ***L1 – describes process – simple, separate points*** **Level 2 (Clear) (7 – 12 marks)** Begins to discuss – likely to be implicit or tentative. Description of processes is more specific. Begins to see sequence and make links to 'shaping the coast'. May be imbalance between two processes. ***CMI annotation*** ***L2 – beings to sequence and discuss points*** **Level 3 (Detailed) (13 – 15 marks)** Clear purposeful discussion – seeks to assess relative importance. Clear, purposeful description. Description is sequential; links are clearly made to 'shaping the coast'. Greater balance between two processes. ***CMI annotation*** ***L3 – purposeful discussion of relative importance***	

4 (a)(i)	The specification notes exogenous sources – those that originate outside the desert and continue through it without drying up, such as Colorado and Nile; endoreic – those that originate outside the desert but dry up or flow into inland lakes, such as Jordan and ephemeral – these are intermittent streams, present after rainfall. There may also be reference to aquifers and mist and fog, as well as direct precipitation. 1 mark for list of two or more sources. There must be reference to two sources for 3 marks. 3 x 1	**(3 marks)** **AO1 - 3**
4 (a)(ii)	Figure 5 suggests that water can have a significant effect and that it is present in substantial quantities at times. As such, the water has washed away a substantial depth of the material at the side of the road and has undercut it. 1 mark for description. This indicates a clear role for water in the desert in eroding and transporting material, and therefore, in shaping landforms – such as wadis, canyons. Material that has been transported will ultimately be deposited and such a substantial amount that has been moved will explain the subsequent formation of landforms such as alluvial fans. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
4 (b)(i)	Marks should be awarded for appropriate shape, reference to nature of rock layers and orientation, size – e.g. yardangs can be 100m high and continue for a number of km. 4 x 1, including 1 mark for sketch. Dimensions – max 2.  1 mark for showing parallel ridges of appropriate shape linked to layers of hard rock. In addition, mark for labelling different rock layers/alignment, shape indicating widening near top, undercutting at base.	**(4 marks)** **AO1 – 2** **AO2 – 1** **AO3 – 1**

4 (b)(ii)	Yardangs occur when there are vertical layers of hard and softer rock, running parallel to each other in the direction of the prevailing wind. Abrasion – is responsible for eroding the soft rock faster and leaving the yardangs as ridges above the height of the lower lying areas/troughs of soft rock. **Level 1 (Basic) (1 – 3 marks)** Begins to explain – recognises the role of wind or rock structure. Sequence will be incomplete. Some use of appropriate terminology present at the higher end. ***CMI annotation*** ***L1 – begins to explain*** **Level 2 (Clear) (4 – 5 marks)** Explanation is clear. Explanation focuses on the role of wind and rock type (may not be balanced). Sequence given so that resulting landform is clear. Appropriate geographical terminology is used. ***CMI annotation*** ***L2 – clear, sequential explanation***	**(5 marks)** **AO1 – 2** **AO2 – 3**

4 (c)	The specification refers to atmospheric processes relating to pressure, winds, continentality, relief and cold ocean currents. **Atmospheric pressure** should relate to the positioning of many hot deserts where there is high pressure. This coincides with the positioning of the falling limbs of the Hadley and Ferrel cells. This means that air that has previously risen, cooled and become denser is now falling and is being compressed and heated as a result. Thus, rain is unlikely as it has previously lost its moisture. The air is stable; skies are clear as a result of the presence of the high pressure. **Winds** are affected by the presence of the high pressure. Winds blow from areas of high pressure and so winds blow out from these areas of land – receiving no moisture – this contributes to the aridity. For example the North East Trade winds blow across north Africa across the Sahara from about 30 degrees north. **Continentality** refers to the positioning of many hot desert areas away from areas of water – seas and oceans – and as a result the probability of rainfall is less – the Sahara extends across north Africa – significant distances from the Atlantic. **Relief** links in part to winds also in creating a rain shadow effect and contributing to aridity. For example in Australia and South America, the prevailing winds are the South East Trades. As they approach from the east, they drop their moisture in this area. This effect is exacerbated by the presence of mountains – like the Snowy Mountains in south-east Australia and the Andes in South America. As winds rise to cross these, they are cooled, condensation occurs and precipitation falls on the eastern sides. Once the peaks are reached, the winds descend and are warmed, reducing the chance of rainfall and causing aridity in the Australian Desert and Atacama Desert. The scale of the area affected depends on the location of the mountains. **Cold ocean currents** are found off the western coast of continents moving from the poles towards the Equator – should winds approach from an alternative westerly direction to that of the prevailing winds, the lower layers of the air above the cold ocean current is cooled, causing condensation and precipitation (often mist and fog) to occur over the cold ocean current. The air is then warmed as it crosses over land, so aridity is encouraged. There are many links between these different factors and aridity is caused by a combination of them, not one in isolation.	**(15 marks)** **AO1 – 8** **AO2 – 7**

	Level 1 (Basic) (1 – 6 marks) Partially describes one or two causes of aridity – occasional reference to terms. Points made are simple and random. ***CMI annotation*** ***L1 – describes cause(s) – simple, separate points*** **Level 2 (Clear) (7 – 12 marks)** Description of cause(s) is more specific. Begins to see sequence and make links to aridity. ***CMI annotation*** ***L2 – begins to make links and explain*** **Level 3 (Detailed) (13 – 15 marks)** Explanation of two or more causes is to the fore. There may be some recognition of the links between the different causes and/or the fact that it is a combination of reasons that are responsible. Sees sequence and links clearly to aridityfor 2 or more. ***CMI annotation*** ***L3 – clear purposeful explanation of aridity***	
5(a)	There is a need to make clear contrasts between the two areas chosen. Individual description awarded up to 2 marks only. Reference may be made to any settlement characteristic that can be seen/inferred from OS map such as age, type, density of housing, road patterns, category of/ type of roads present, services present, open space – woodland/parkland. Clear, explicit contrasts supported by evidence can attract 1 + 1 mark. 4 x 1/1 + 1 x 2 Two per aspect – eg housing type, roads, etc Must be within area marked on map – in the box Once contrast is established in a part of answer (via whereas for example) all 4 marks are available. No mark for recognising zones, nor describing features such as relief – must relate to settlement.	**(4 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 2**

5(b)(i)	Specification mentions ethnicity, age structure, wealth and employment with regard to socio-economic characteristics – but any are valid. Expect reference to selected aspects of ethnic groups, e.g. Black Caribbean, Indian, as well as White British; selected age groups; type of jobs people do; levels of income, car ownership; educational achievement; numbers in very good/poor health; tenure of housing. Responses will depend on two areas selected by type or name. Must be small not regional (including counties) or national. **Level 1 (Basic) (1 – 3 marks)** Defines/identifies socio-economic characteristics. Some description of social or economic characteristics for either one or two areas – generic/general. ***CMI annotation*** ***L1 – separate/general statements*** **Level 2 (Clear) (4 – 5 marks)** Contrasts are drawn out. Clear, specific description of two socio-economic characteristics. Support is present. ***CMI annotation*** ***L2 – clear, supported contrasts***	**(5 marks)** **AO1 – 3** **AO2 – 2**

5 (b)(ii)	Social welfare refers to the wellbeing of the population living in different areas with regard to quality of life which is influenced by quality of housing and environment, health and facilities offered, education and quality of schools – building and service, provision of recreation/leisure facilities, a feeling of being safe, secure and have the freedom to go about daily routine without threat, irrespective of race, religion, age (youths threatening elderly – being intimidating). As in (b)(i) the content will depend on the settlement areas used, but reference is likely to relate to communities in suburban areas for example feeling more secure than in an inner city area due to lower crime rates, areas being more open, having more facilities. Health may be better in rural – urban fringe areas due to greater wealth and links to diet, access to private gyms, etc. People may feel more isolated in inner areas due to crime or due to lack of public transport in rural settlement and declining rural services. **Level 1 (Basic) (1 – 4 marks)** Defines social welfare – has a vague/confused idea of the concept. Describes one or two implications for social welfare. May be separate or occasional attempt to comment. One area/case study. ***CMI annotation*** ***L1 – describes implications for social welfare*** **Level 2 (Clear) (5 – 6 marks)** Comments on one or two implications for social welfare. Comment with regard to differences, causes, individual implications. Defines social welfare – has a clear idea of the concept. ***CMI annotation*** ***L2 – comments on implications for social welfare***	**(6 marks)** **AO1 – 4** **AO2 – 2**

5 (c)	Content will depend on two countries selected. China and its one child policy is likely to feature strongly, Iran, Italy and transmigration programme in Indonesia are in textbooks. There could be reference to managing changing population structure – with ageing in UK and youthful in Iran or a combination – the thrust is that the case studies must be of countries at different stages of development. The answer should include reference to what has been done specifically in case studies selected and an assessment of level of success – which should be supported. This may refer to falling levels of births, slowing levels of natural increase, etc., in context of anti-natalist policy and should come to a view as to whether it has been wholly successful, successful in some aspects but not others, unsuccessful, etc. **Level 1 (Basic) (1-6 marks)** Describes population policy in at least one country. General statements – applicable to any country of its type. Points made are simple and random. One county only/area within country/ies only ***CMI annotation*** ***L1 – describes population policy/ies*** **Level 2 (Clear) (7 – 12 marks)** Tentative/implicit simplistic/unsupported assessment of level of success of both or supported assessment of one. Description is more specific and precise – specific country/ies is/are recognisable. Points are supported in places. Two countries at different stages of development are referred to – but probably clear imbalance. ***CMI annotation*** ***L2 – begins to assess the success of at least one policy/country*** **Level 3 (Detailed) (13 – 15 marks)** Clear/explicit/supported assessment of level of success for both countries. Description specific and precise – clearly relates to specific countries. Two countries at different stages of development are referred to and there is a balanced account. Points are supported. ***CMI annotation*** ***L3 – clear purposeful assessment of both policy(ies)/country(ies)***	**(15 marks)** **AO1 – 8** **AO2 – 7**

6 (a)	Geopolitics relates to how countries interact with each other and the spatial implications of this. There may be reference to globalisation, trade, food security/insecurity. Recognition that decisions made by one country can have consequences for others. How can supply be made more even/equal? 2 x 1	**(2 marks)** **AO1 – 2**
6 (b)(i)	There has been an increase in world grain production from approx. 800-900m tonnes in 1960 to 2100-2200m tonnes in 2009. This represents a 2.5 times increase/more than doubled in about 50 years. Rate of increase has shown variation – being slow initially in early 1960s and late 1980s and faster in early 1980s. There was a decline in early 1990s. There has been a steady rate of increase from 1995 to 2009, an increase of approx. 500m tonnes. Both figures needed for evidence mark. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
6 (b)(ii)	In Haiti, there appears to be a clear shortage of food with reports of millions hungry after the 2010 earthquake. The fact that over half of the population has to survive on less than a $1 a day indicates how difficult it is to ensure people have enough food. There appear to be many causes of the limited amount of food available – as the area is prone to natural disasters, but also affected by illness and political systems which do not enable/encourage increases in food production to support the population. **Level 1 (Basic) (1 – 3 marks)** Describes problems in Haiti. Aware of lack of food and reasons. ***CMI annotation*** ***L1 – describes causes*** **Level 2 (Clear) (4 – 5 marks)** Clear comment. Relates problems in Haiti to food shortages/insecurity ***CMI annotation*** ***L2 – comments on causes***	**(5 marks)** **AO1 – 1** **AO2 – 2** **AO3 – 2**

6 (c)	Classification may relate to the underlying purpose of production – whether for food or for sale – subsistence versus commercial e.g. rice in south-east Asia and shifting cultivation versus grain and livestock on a much larger scale and for profit. It may also relate to the way in which output is produced – whether it is intensive – where there is a clear attempt to maximise output by maximising inputs of e.g. labour, fertilisers, growing under glass – or extensive – where inputs are relatively limited in contrast to the large amounts of land that are often involved e.g. cattle ranching in US, sheep in Australia. Finally, there may be reference to what is being produced – whether there is a focus on crops – arable – or livestock – pastoral – or a combination of them both on a mixed farm. Many agricultural systems have a number of aspects of classification – e.g. cattle-ranching in USA is commercial, extensive and deals with livestock – so different bases for classification are often used at the same time. **Level 1 (Basic) (1 – 3 marks)** Identifies at least one classification. Some basic support. ***CMI annotation*** ***L1 – identifies one or more classification*** **Level 2 (Clear) (4 – 5 marks)** Explains classification(s) – what underpins it. Offers examples in support. ***CMI annotation*** ***L2 – explains reasons for classification***	**(5 marks)** **AO1 – 3** **AO2 – 2**

6 (d)	Growing demand from richer countries for high value food exports from poorer countries and all year demand for seasonal produce are clearly related. Countries like the UK have always imported foodstuffs that cannot be grown here such as bananas, pineapples and greater quantity of food if it can be produced more cheaply elsewhere. However, there has been a growing demand for more exotic produce and produce that we can grow here only seasonally. Issues resulting from this include: • land being used in poorer countries to grow export crops, rather than food crops for home consumption – so called 'ghost acres' • demand on limited water supplies of crops and livestock for export • 'Food miles' incurred in transportation of crops and implications of this in terms of environment – or storage of that produced in growing season for rest of the year • clearance of land for commercial crop growing or rearing of livestock, including areas of tropical rainforest • impact of using chemicals, fertilisers and pesticides on the environment. • fair price for produce..fair trade • labour force issues – wages, conditions, expolitation The question is not demanding description of the growing demand, but there is a need to emphasise the issues which result from these increases in demand and engage in discussion. **Level 1 (Basic) (1 – 6 marks)** Defines/describes growing demand for high value foodstuffs and/or all year demand for seasonal produce. Identifies problems that result. Points made are simple and in a random sequence. ***CMI annotation*** ***L1 – describes concepts/problems*** **Level 2 (Clear) (7 – 12 marks)** Begins to discuss issues. Begins to target information to purpose in an ordered response. Understands the implications of growing demand for high value foodstuffs and/or all year demand for seasonal produce. May be clear imbalance. Intermittent support. ***CMI annotation*** ***L2 – begins to discuss issues*** **Level 3 (Detailed) (13 – 15 marks)** Discusses issues – this is emphasis. Support is given throughout. Clear, purposeful summary of issues resulting from the growing demand for high value foodstuffs and all-year demand for seasonal produce – in greater balance. ***CMI annotation*** ***L3 – clear, purposeful discussion of issues***	**(15 marks)** **AO1 – 8** **AO2 – 7**

7 (a)	Renewable energy resources will not run out. They are continuously present/being created – as long as the rate of use does not exceed their renewal. They include sources such as solar and wind and also sources such as fuelwood, biomass. They are also known as flow resources. 2 x 1	**(2 marks)** **AO1 – 2**
7 (b)(i)	The proportion of national energy demand provided by renewable resources clearly varies greatly in the small sample of 5 European countries. There is a range of 19.5% with UK having lowest at just under 8%. Denmark – the highest – produces approx. 3.5 times more energy from renewable sources than the UK. Spain is less than 2% behind Denmark, followed by Germany producing more than double than the UK from renewables. 3 x 1 Stating highest or lowest or both is worth 1 mark.	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
7 (b)(ii)	There is reference to the need to develop the technology available to make wave and tidal energy more attractive – and ensure that the coastal environment is not damaged. The cost of developing the technology and sites appear to be major brakes on development – such as barrages with regard to both finance and environment. All this must be considered against the successful large scale production of electricity using well-tried and tested means – such as coal, oil, HEP. **Level 1 (Basic) (1 – 3 marks)** Describes information given in Figure 10 – reliance on this or own knowledge only. May be very general or have a lot of detail. Begins to note problem or issue at top of level. ***CMI annotation*** ***L1 – describes info, notes problem or issue*** **Level 2 (Clear) (4 – 5 marks)** Uses information given in Figure 10. Summarises issues clearly. There is some support. ***CMI annotation*** ***L2 – summarises issues***	**(5 marks)** **AO1 – 1** **AO2 – 2** **AO3 – 2**

7 (c)	Acid rain is rainfall that has mixed with pollutants of sulphur dioxide and oxides of nitrogen as it passes through the atmosphere. These pollutants are from power stations that use coal (sulphur source) and other fossil fuels. The mixing with water produces nitric acid, sulphuric acid and compounds of ammonia. The effects are substantial – can cause breathing difficulties – especially in asthma prone people, bronchitis, damage to trees, especially conifers by causing damage to crown, making needles go yellow and can lead to them dying; damage to lakes where acidity is increased and there is an adverse impact on ecosystem – and fish die, damage to buildings with rates of chemical weathering increasing on limestone buildings. Thus, there are many effects, they are diverse and know no boundaries as pollutants carried in winds mean that countries beyond origin of pollutants are often seriously affected – e.g. Scandinavia, Germany affected by pollutants from UK. **Level 1 (Basic) (1 – 3 marks)** Defines acid rain. Describes effects. General statements. ***CMI annotation*** ***L1 – describes effects*** **Level 2 (Clear) (4 – 5 marks)** Clear comment. Understands effects – clear description of at least two. Support is present. ***CMI annotation*** ***L2 – comments on effects***	**(5 marks)** **AO1 – 3** **AO2 – 2**

7 (d)	Responses will depend on resource(s) selected – likely to be coal, oil or natural gas, possibly uranium? The question gives a clear structure, so there should be reference to global patterns of supply, consumption and trade. The following exemplar uses oil. Supply – may refer to proven reserves of production. The Middle East is the single main source – more important than the rest of the world. Saudi Arabia has 25% of proven reserves. Reserves in the North Sea and Canada, but are too expensive to extract at present. The Middle East is the most important producer. Russia and the UK are important producers, as are North America. Venezuela is significant in South America, and Nigeria, Libya and Angola in Africa. There may be reference to the likely lifespan of these global reserves – considered to be 40 years, the peak being reached now, but lifetime was 40 years 30 years ago. Consumption – biggest consumers are North America, Europe and Eurasia and Asian Pacific. The Middle East is a much smaller consumer. On a per capita basis, only the USA consumes more than 3.0 tonnes, this is followed by Saudi Arabia and Canada, Belgium and Eire on 2.25 – 2.99 tonnes. Much of rest of Europe is in category 1.5 – 2.24 tonnes and much of South America, Asia and Africa are between 0 and 0.74. With exceptions of some oil rich states, the poorer areas of the world clearly consume less. Trade – western Europe, USA and Japan are big importers of oil. The USA especially obtains oil from many different sources – global – from Venezuela, Algeria, Saudi Arabia, Russia and the North Sea. Europe is a big importer from the Middle East and China has an increasing demand. There may be reference to OPEC and its role in trade and perhaps factors affecting the price of oil, such as the growing demand, the oil companies operating with reduced stocks, political factors, such as terrorist attacks in Middle East, and unrest in oil-producing countries, such as Libya.	**(15 marks)** **AO1 – 8** **AO2 – 7**

	Level 1 (Basic) (1 – 6 marks) Identifies some points with reference to at least one of supply, consumption or trade. Has a national focus. Basic and generic. Points made are simple and in a random sequence. ***CMI annotation*** ***L1 – simple separate points about supply and/or consumption and/or trade*** **Level 2 (Clear) (7 – 12 marks)** Tentative/implicit comment. Has an international/partly global focus. Begins to target information to purpose in an ordered response. Considers at least two aspects – although may be imbalanced – with emphasis on supply, consumption and trade. Sees aspects separately. Clear description. Intermittent support. ***CMI annotation*** ***L2 – begins to comment .. 2 of 3 aspects considered*** **Level 3 (Detailed) (13 – 15 marks)** Clear, explicit comment. Has a clear global focus. Clear, purposeful summary of all three aspects – although may still be imbalance. Sees links between different aspects. Support Is given throughout. ***CMI annotation*** ***L3 – clear comment .. all 3 aspects***	

8 (a)	Morbidity relates to experiencing illness or disease. There is a knock-on effect on people's quality of life – reducing it. May refer to diseases that are notifiable by law in that their occurrence must be reported or relative rates of disease in societies. Measured via prevalence, incidence, DALY's (Disability Adjusted Life Years)..healthy years lost. Census has included a question relating to health and limiting long-term illness since 2001. 2 x1	**(2 marks)** **AO1 – 2**
8 (b)(i)	Life expectancy decreases as the level of deprivation increases. This is true for both males and females. However, at all levels of deprivation, females live longer than males. The differences increase as the level of deprivation worsens – with a difference of 4 years for the two least deprived quintiles and 6 years for the most deprived. Any valid point. 3 x 1	**(3 marks)** **AO1 – 1** **AO2 – 1** **AO3 – 1**
8 (b)(ii)	Of the causes of death present, Manchester does badly – being worst for deaths from smoking and early deaths from heart disease and stroke. Only slightly better is early deaths from cancer and infant death, whilst being nearer the centre of the line, still means Manchester is slightly better than average for road injuries and deaths, whilst fares well on excess winter deaths, being in the best quartile. Overall, the picture is not an optimistic one. This may relate to income levels, type of jobs done, levels of deprivation implied in previous question. The lower rates may reflect traffic calming measures in a big city or community and healthcare in the context of excess winter deaths. **Level 1 (Basic) (1 – 3 marks)** Describes cause of death. Can interpret significance of key to some extent. ***CMI annotation*** ***L1 – describes causes(s) of death*** **Level 2 (Clear) (4 – 5 marks)** Clear comment on causes of death. Is aware of meaning of data – can interpret relative importance/data clearly. ***CMI annotation*** ***L2 – comments on causes of death***	**(5 marks)** **AO1 – 1** **AO2 – 2** **AO3 – 2**

8 (c)	Content will depend on local case study used and potentially changes that may be in force by then, following government review and enhancing role of GPs. One textbook looks at Wirral and Sheffield, so these are likely to feature in answers. Answer need not be UK based, but the scale must be local, not national. There should be recognition of the NHS and the role of primary care – currently delivered by Primary Care Trusts who are in charge of budgets and are the front line of doctors, dentists, opticians that are first visited. These include trying to enhance people's health, monitor disease and offer checks/test. Subsequently there are other 'trusts' that are responsible for hospital care and more specialist services in next rung. In Sheffield, the PCT covers the City of Sheffield and a population of 520 000. Hospital care for children is provided by Sheffield Children's Foundation Trust, focussing on the Children's Hospital at Western Bank. There are five adult hospitals, including Royal Hallamshire and North General, as well as mental health, delivered by Sheffield Care Trust. **Level 1 (Basic) (1 – 3 marks)** Identifies how health care is provided in a local area. Points are general – and applicable to many areas in UK. National scale used. ***CMI annotation*** ***L1 – identifies how healthcare provided generically*** **Level 2 (Clear) (4 – 5 marks)** Describes how health care is provided in a local area. Points are specific to the case study. ***CMI annotation*** ***L2 – describes how healthcare provided in specific area***	**(5 marks)** **AO1 – 3** **AO2 – 2**

8 (d)	The response will depend on the infectious disease selected. This is likely to be HIV/AIDS, but any infectious disease, such as flu, malaria, cholera is valid. The content will vary, depending on the infection. The mark scheme is written using HIV/AIDS – but there are generic points that indicate universal application. The question gives a structure – with three components identified. Impact on health – the impact on life expectancy – and huge reductions e.g. from 74 to 28 years in Botswana, quality of life and the reduced ability to live a 'normal' life as susceptibility to infection increases – with diseases such as pneumonia likely as immune system is affected. Economic consequences are likely to be to the fore. People will be unable to work and this has a huge impact on areas where farming is important. The cost of treatment is significant and resources are taken from other budgets such as education and the disease places a brake on development. At family level, loss of wages will mean lack of food falling yields as there is less money to invest in fertilisers and less ability to buy food products. There are huge lifestyle changes due to the stigma that is attached to the disease and sufferers can be ostracised; there are many orphans who are brought up by extended family, especially grandparents or are placed in orphanages; children pulled out of school to work on farms. There are many links between the three different aspects. **Level 1 (Basic) (1 – 6 marks)** Describes impact with reference to at least one category – may drift into cause. Ideas generic with limited reference to specific disease. Limited support. Points may be random. Non-communicable diseases. ***CMI annotation*** ***L1 – describes impact – simple, separate points*** **Level 2 (Clear) (7 – 12 marks)** Begins to discuss impact(s). Begins to develop points with regard to impacts – two or three of categories are clearly addressed – may be imbalanced. Support is present – clear reference to selected disease. ***CMI annotation*** ***L2 – begins to discuss and relate to selected disease*** **Level 3 (Detailed) (13 – 15 marks)** Discusses the impacts – this is emphasis. Clear, purposeful analysis of three categories of impacts but may still be imbalanced. Support is present throughout – reference to chosen disease is clear and specific. ***CMI annotation*** ***L3 – clear purposeful discussion that relates to selected disease***	**(15 marks)** **AO1 – 8** **AO2 – 7**