A Level
Geography
GEOG 1 Physical and Human Geography
Mark scheme

2030
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Version 1.0: Final

Mark schemes are prepared by the Lead Assessment Writer 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 associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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

GEOG1 General Guidance for GCE Geography Assistant Examiners

Marking – the philosophy
Marking should be positive rather than 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 Standardisation meetings. 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
- 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 ("more than one") where the question requires it
- provide detailed 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, etc
- provide highly detailed accounts of a range of case studies
- respond well to more than one command
- demonstrate evaluation, assessment and synthesis throughout
- 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.

SECTION A

Question 1: Rivers, Floods and Management

1(a)(i)	A drainage basin is the area surrounding a river from which a river gets its water – its catchment. Thus it is an area where the height of the land rises from the river to a higher point. The highest points which mark the boundary of the drainage basin form the watershed – this is a ridge of higher land. 2 x 1	**[2 marks]**
1(a)(ii)	Water is lost by direct evaporation from the river channel - or via evaporation from any other surface water or the surface of vegetation within it. Water can also be lost as the river exits the drainage basin – ending in a lake or the sea or at a confluence. Infiltration of water through river bed or bank when flowing over permeable rocks such as limestone. Water can also percolate so far down underground following initial infiltration that it is effectively inaccessible to the river. There may be reference to water being taken by people. 3 x 1 or (1+1) for a developed point +1.	**[3 marks]**
1(b)(i)	The command is to describe so allow 1 mark only for identification of any two landforms. Subsequent description should refer to further detail such as the relatively flat/gently sloping, flood plain on both sides of the river; the gentle slip-off slope present on the inside bend of the meander with deposited sediment present and the steep river cliff clearly visible on the outside of the meander giving an asymmetrical profile of the channel. Only 1 mark each for description of river cliff and slip off slope. 4 x 1	**[4 marks]**
1(b)(ii)	A diagram or diagrams should be used to support the text here. Diagram(s) may show sequence of formation or focus on cross section of channel or include both aspects. For sequence of formation, the following stages should be recognised – the initial straight channel has alternating shallow and deeper sections – known as riffles and pools. These are the result of banks of sediment on the bottom – deposited at times of low flow – around which the river weaves. This movement targets one bank of the section after the riffle – and leads to erosion – via abrasion and hydraulic action – on what becomes the outside bend of the meander. (The following focuses on the cross section). This leads to a river cliff forming, whilst material eroded further upstream is deposited on the opposite bank (as a result of a corkscrew movement within the river known as helicoidal flow) – this leads to a convex slip-off slope forming and gives the asymmetrical cross section of the channel. Continued erosion and deposition leads to the increasing sinuosity of the meanders. These processes also mean that they are not static but that they shift downstream – meander migration. **Level 1 (Basic)(Midpoint 3)**	**[6 marks]** **[1-4 marks]**

	Begins to explain – partial and/or in a random order. Text or diagram(s) only. **Level 2 (Clear)(Midpoint 5)** Explanation is more complete and sequential. Text is supported by appropriate diagram(s) **CMI+ comments** L1 Partial sequence L1 Text or diagram L2 (More) complete sequence L2 Text and diagram	**[5-6 marks]**
1(c)	The **long profile** – is the change in altitude and the gradient from the river's source to its mouth – where it joins another river or flows into a lake or sea. It is seen as a smooth concave profile – with initial relatively rapid reductions in height and steep gradient, reducing to become relatively very gentle towards the mouth. There may be unexpected breaks in this where there are quick falls – such as at waterfalls – and a stepped profile may occur. Explanation for the long profile should refer to the river seeking to reach base level in the most efficient way; the dominance of vertical erosion initially and then the subsequent increase in lateral erosion as discharge increases. There may be reference to graded profile and potential and kinetic energy. Deviation from the smooth concave profile may be the result of different rock types – creating waterfalls and a break in profile and rejuvenation where there may be a series of waterfalls. The **cross profile** – is the change from one valley side, across the valley floor which contains the channel to the other valley side. This changes with distance downstream. Near the source it is steep-sided (inter-locking spurs form sides) with a narrow valley floor – the channel may take up all of this. As distance from the source increases, the cross profile sees the valley floor become wider and the sides reduce in height – creating bluffs in the middle course. This continues to the lower course where the valley floor is wider again and the bluffs lowest. Levees may be present here on either side of the channel. Explanation will refer to dominance of vertical erosion in the upper course creating a narrow valley whilst lateral erosion dominates in middle and lower course as does deposition building up floodplain and levees during flooding. Diagrams maybe used as part of the answer; explanation may be done for long and cross profiles separately or together. **Level 1 (Basic)(Midpoint 4)** Identifies how long and/or cross profile change. Explanation is basic – erosion/deposition processes. Defines long and/or cross profile. Likely drift to channel.	**[15 marks]** **[1–6 marks]**

	Level 2 (Clear)(Midpoint 10) Describes how long and cross profile change. Answer is logically ordered – from source to mouth. There may be some clear imbalance between the two aspects – with a focus on cross profiles. Explanation is partial – specific types of erosion likely; reference to long and cross profile. Appropriate geographical terminology is used.	**[7–12 marks]** **[13–15 marks]**
	Level 3 (Detailed)(Midpoint 14) Describes how long and cross profile change – interrelates the two aspects. Explanation is more complete and sequential – underlying reasons – graded profile, gravitational potential energy. There is greater balance between long and cross profile but the cross profile is likely to be to the fore. Specific terminology is used throughout. **CMI+ comments** L1 Identifies changes L1 Basic explanation L2 Describes changes L2 Some sequence in explanation L2 Imbalanced L3 Describes changes for both L3 Complete sequential explanation L3 Balanced account	
	Total for this question:	**30 marks**

Question 2: Cold Environments

2(a)	The glacier occupies the space between the higher valley sides; it varies in width – perhaps due to the debris from the left hand side. Snow appears to be adding to the mass of the glacier – from the middle right valley side. There is a fairly steep descent initially - ice fall present - and somewhat stepped profile. The glacier surface is ridged with lines visible at right angle to the sides – probably crevasses. In the foreground near the snout, the glacier has clear cracks which appear more parallel to the valley sides. There is a lobe where the glacier is spreading/piedmont glacier. 4x1	**[4 marks]**
2(b)(i)	Diagram can be a plan view, a cross section or 3D. Only one diagram is required. It may depict current glacial or post glacial position. The following types of moraine may be shown – lateral following the valley sides, medial down the middle of the glacier; ground beneath it, terminal at the end of the maximum advance (not present position of snout necessarily) and recessional in front of the snout, but before the terminal. End moraine only valid if at the snout. May be reference to englacial, supraglacial and subglacial moraine showing current transportation of moraine. Allow 1 mark for clear diagram showing context – relationship of moraine to glacier or valley and 3 for identification of moraine. There must be reference to two types for full marks.	**[4 marks]**
2(b)(ii)	Moraine is unsorted, angular material that has been transported and deposited by ice. There should be reference to the origin of the material forming the moraine – and therefore reference to freeze-thaw weathering on the valley sides above the glacier which leads to the breakdown of the rock and pieces subsequently falling onto the glacier via mass movement, such as rockfalls. Reference may also be made to plucking with regards to pieces of rock being torn away from the sides and base as the ice moves and pulls items frozen within it (as warm – based) following the presence of meltwater. Reference should also be made to the position of the moraine and therefore the location of the deposition and why it occurred there – the lateral moraine due to material falling from the valley sides and then being transported in a linear fashion; medial is similar but has occurred where two glaciers with a lateral moraine have merged to form a medial moraine which continues down the centre; ground moraine is present as material carried by the ice has either been plucked from the base or progressed through the network of crevasses to reach the base. Terminal moraine is that which marks the maximum advance and is the result of bulldozing whilst recessional reflects temporary static positions where moraine has been pushed to the front of the glacier.	**[7 marks]** **[1–4 marks]**

	Level 1 (Basic)(Midpoint 3) Begins to explain. Sequence will be incomplete – and perhaps in no clear order. Origin or location of material will be explained. Some use of appropriate terminology present at the higher end. **Level 2 (Clear)(Midpoint 6)** There should be reference to two types of moraine. The features of the moraine are clearly linked to explanation. Sequence is (completely) given so that resulting landform is clear. Reference will be made to both origin and location. Appropriate geographical terminology is used. **CMI+ comments** L1 Partial explanation L1 Origin or location addressed L2 (More) complete explanation L2 Origin and location addressed	**[5–7 marks]**
2(c)	The landforms are those indicated in the question. Nivation, permafrost formation, frost heave and solifluction are the processes in the specification. These should be referred to in the explanation section. **Nivation** occurs mainly on north/north east facing slopes under snow cover and is the impact of frost action on the underlying rock. This causes the rock to be weakened and parts to break off. Subsequent removal leads to a **nivation hollow** forming a circular shaped hollow that is the precursor to a corrie. Permafrost is important in the formation of a number of landforms – ice wedges, patterned ground, pingos and solifluction lobes. **Permafrost formation.** This is permanently frozen ground. It is the layers below the surface (the subsoil) that remains frozen for at least two years on the run that enables permafrost to form. Thus, temperatures must be very cold to cause this. There is some surface melting – up to 3 metres below the surface – this is the active layer. There may be reference to how the freezing and thawing processes both occur from the surface. Ice wedges can be over a metre wide and between 8 and 10m deep – this takes about 100 years to reach these dimensions – they often occur in specific polygon shapes and these are visible above the surface. They are formed during the re-freezing of the active layer in winter. Once this is frozen, sub-zero temperatures cause the ground to contract and crack. These cracks extend into the permafrost below the active layer to create deep wedges. The ice wedges grow in size due to melting in the spring when water can then enter the cracks in the permafrost caused by contraction. This subsequently freezes and further contraction occurs the following winter as temperatures decline. The cracking occurs in a polygonal shape and so gives rise to the **ice wedge polygon**.	**[15 marks]**

	Patterned ground occurs where stones are arranged in particular shapes – often polygons, but stripes are also common. They vary in size and the larger stones (although not of uniform size) mark the shapes within the patterned ground. The shapes are repeated over an area. Formation relates to the process of **frost heave**. This leads to the separation of the stones from the finer material. The stones cool down quicker than finer material. Part deleted The area beneath the stone also freezes relatively quickly as the stone conducts cooler temperatures below the stone and ice forms pushing up the stone. Freezing penetrates beneath the stone and an ice lens is formed leaving the stone nearer the surface as it is pushed upwards. During spring, when the active layer of the permafrost melts, the finer material collapses into the space left following melting and the stones remain near the surface. Once at the surface, where frost heave has concentrated and therefore there is a slight doming that causes the stones to roll down the gentle gradient to form circles initially and then as they merge, polygons. Stone **polygons** are found on gently sloping land, whilst **stone stripes** are found on steeper slopes and the elongation is caused by gravity. **Pingos** (open system or East Greenland type) are dome shaped hills. Size varies from 1m to 50/60m in height and 05./0.6km in width. Some have a dome that has collapsed in the middle There is likely to be a small lake at the centre of these. Explanation should refer to the formation of an ice lens or core beneath the dome shape which increases in size due to upward movement of additional water under pressure. The lens causes the doming at the surface and cracks appear within the formation. Alternatively, explanation may refer to the process of development beneath lakes (closed system or Mackenzie type). This moved from 2nd/3rd line. The lakes insulate the land below and prevent it from freezing. However, the lake infills as sediment is deposited in it, it loses its insulating effect and permafrost present around it begins to encroach it. This traps the sediment on the former lake bed between the advancing permafrost. The trapped groundwater also freezes, forming as mass of ice that pushes up the former sediment of the lake bed. There needs to be an element of description in order to identify reasons. The answer likely to adopt a season-by-season approach the starting point does not matter. **Solifluction lobes** are sloping terrace like features (5m high and 50m long) that occur on valley sides of about 10 to 20 degrees, but may form on very gentle slopes – 2 degrees – and are described as tongue-shaped. They may be characterised by the presence of stones (due to frost heave) or may be vegetation covered – stone banked or turf banked. They are the result of solifluction or (gelifluction more specifically) where the melting of the active layer in spring/summer lubricates the soil particles and reduces friction, facilitating a very slow movement downslope.	

	There may be reference to other periglacial landforms not mentioned in the specification such as thermokarst – thaw lakes, alases; asymmetrical valleys, blockfields, scree. **Level 1 (Basic)(Midpoint 4)** Describes some aspects of landform(s). Begins to explain – processes noted. May one part only – so complete imbalance – but good on one part. Points made are simple and random. **Level 2 (Clear)(Midpoint 10)** Description of landforms (2 needed but there may be significant imbalance) is more specific and precise. Begins to develop explanation of two landforms – processes defined or described. Develops answer with clearer, more complete sequence and more appropriate terminology. **Level 3 (Detailed)(Midpoint 14)** Detailed purposeful description of landforms (2 needed and there is a more balanced account here) - can visualise. Explanation of two landforms – processes explained Developed answer with detailed and complete sequence – links and is easy to follow. Appropriate terminology is used. **CMI+ comments** L1 Some basic description L1 Some basic explanation L2 Clear description L2 Clear explanation L2 Imbalanced L3 Precise description and clear sequence L3 Balanced account	**[1–6 marks]** **[7-12 marks]** **[13-15 marks]**
	Total for this question:	**30 marks**

Question 3: Coastal Environments

3(a)	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 – 50 m for a ria versus 300 -400 m deep for fjords – or even more; 0.5kkm versus 12km approx in width; length up to 150-200km for fjord versus under 10km for ria. Diagram can be plain view, a cross section or 3D. Only one diagram is required. Allow 1 mark for clear diagram and 3 for labels linked to the characteristics of the landform. 4 x 1	**[4 marks]**
3(b)(i)	Content will depend on case study selected. Textbooks use Towyn, north Wales – storm and ailure of coastal protection - the sea wall, Bangladesh – storm surges often linked to cyclone, 1953 North Sea storm surge and Hurricane Katrina. The storm surge at the end of 2013 would be expected to appear which resulted from intense low pressure. On-shore winds are responsible for pushing sea water up narrow estuaries or bays. This water then piles onto the shore - which is usually low lying. This may be linked to a combination of factors such as high spring tides, high rainfall and river discharge and failed protection. Points made should relate to the case study and may be simple points or elaborated 4 x 1 or 2x(1+1) – any combination	**[4 marks]**
3(b)(ii)	There is reference to social aspects such as number of deaths and the focus on older people, the struggle to survive and the poor conditions in the cold and lacking basic amenities; the extent of the damage – the large scale – with regard to buildings and infrastructure; the total devastation of a particular area. Comment could relate to the scale, the level of hardship, the vulnerability of the elderly, the time scale, the environmental impact, the impact on a very rich country. **Level 1 (Basic)(Midpoint 3)** Tentative / implicit comment. Describes one/some consequence(s). Relies heavily on Figure 3. **Level 2 (Clear)(Midpoint 6)** Explicit comment regarding consequences. Describes different consequences Uses information in Figure 3.	**[7 marks]** **[1-4 marks]** **[5-7 marks]**

	CMI+ comments L1 Tentative comment L1 Relies heavily on Figure 3 L2 Explicit comment L2 Uses information in Figure 3	
3(c)	There should be recognition how the strategies work – e.g the sea wall providing a substantial, constant barrier that will absorb energy and protect the foot of the cliffs and is often curved to deflect the energy of the waves back out to sea. Rock armour (rip rap) gabions and revetments work on a similar principle – they are placed parallel to the cliff and seek to protect the base of it or the base of a sea wall – often for rock armour. They are different structures – rock armour consists of huge boulders of a hard rock placed directly at the base of cliffs; gabions are similar but rocks are smaller and contained within wire cages. Revetments are further away from the cliff face and seek to dissipate the wave energy before it reaches the cliff. These are angled and made of wood often with some gaps to allow for the build-up of sediment behind the revetment. Groynes are built at approximately right angles to the coast and are fences made of wood or concrete designed to prevent the process of longshore drift. Here, the material can only shift as far as the next groyne, so material is held in place offering natural protection – the beach – for the cliffs or sea wall. Barrages are dams across estuaries and are on a much larger scale designed to offer protection by keeping seawater out. Effectiveness may relate to costs relative to maintenance, effectiveness in one place but knock on adverse effect on others – especially groynes; increased effectiveness with more than one method in place; the need to consider effects on environment and economy e.g where seaside resort present. **Level 1 (Basic)(Midpoint 4)** Describes one / two hard engineering methods. Effectiveness may be simply referred to. Points made are simple and random. **Level 2 (Clear)(Midpoint 10)** Begins to explain two hard engineering methods – there may be clear imbalance. Begins to assess their effectiveness – clear reference to one strategy. Begins to consider the links between the two components. **Level 3 (Detailed)(Midpoint 14)** Clear, purposeful explanation of two hard engineering methods – in greater balance. Clear/explicit assessment of the effectiveness each of the strategies. Awareness of links between the two components.	**[15 marks]** **[1–6 marks]** **[7-12 marks]** **[13-15 marks]**

	CMI+ comments L1 Some basic description L1 Simple points on effectiveness L2 Begins to explain L2 Some assessment of effectiveness L2 Begins to link L3 Clear explanation L3 Explicit assessment of effectiveness L3 Links in balanced account	
	Total for this question:	**30 marks**

Question 4: Hot Desert Environments and their Margins

4(a)	Rainfall is low – identified as less than 250mm per year. The rainfall is very unreliable and there maybe years without any rainfall and then very heavy, intense rainfall. Temperatures are characterised by high diurnal ranges – of perhaps 30 degrees – and annual ranges with temperatures in the 50's in summer but the 20's in winter. Figures may be used to illustrate for specific places and indeed to note the variation between places that have a hot desert climate. Qualified reference to other climate characteristics, such as cloud, fog, wind, humidity. 4 x 1	**[4 marks]**
4(b)(i)	Sketch should be recognisable with the skyline, valley sides and river. Labels must point to the specific aspect being described. There should be reference to the river which appears wide given the vertical extent; it appears to be bend in the distance and is split in the foreground. The sides are very steep in places – there is evidence of much loose weathered material forming cone shapes on the left hand side. Allow 1 mark for clear,recognisable diagram and 3 for labels linked to the landscape – max 2 on river or rocks. 4 x 1	**[4 marks]**
4(b)(ii)	The role of water may be related to weathering – both chemical salt weathering for example – and mechanical – exfoliation. It is also related to erosion via rivers such as the Colorado and there may be reference to rivers that flow continuously like the Colorado and their role. This may be perceived as different to ephemeral streams and the resultant wadis, gulleys and badlands. Equally the greater importance of water previously may be considered and the role of flash floods to-day. There are likely to be diverse answers to this. **Level 1 (Basic)(Midpoint 3)** Tentative / implicit comment. Describes what water does – probably rivers. **Level 2 (Clear)(Midpoint 6)** Explicit comment regarding role. Describes how water shapes the land. May be aware that there are other influences beyond rivers. **CMI+ comments** L1 Tentative comment L1 Describes what water/rivers do L2 Explicit comment L2 Describes what water does	**[7 marks]** **[1-4 marks]** **[5-7 marks]**

4(c)	There is likely to be consideration of the adverse conditions in the Sahel and issues such as removal of trees as fuel for cooking at a faster rate than it grows – and with an impact in desertification; the unreliability of the rainfall and resultant drought and impact on food supply with famine especially in the 1970's and 1980's. Subsequent migrations and civil war have led a negative image. This provides the background to various strategies aimed at improving life in the Sahel – such as the contour stone lines designed to retain water for agriculture and reduce soil erosion, simple wells and pumps for clean water supply, seeking to provide early warning of possible food shortages means that planning and preparation to manage them can be put in place, small scale improvements using appropriate technology, the development of co-operatives and the role of NGO's such as Oxfam and WaterAid. A focus on these aspects is likely to lead to conclusion that there is at least some cause for optimism as things are clearly improving and progress is being made at a sensible pace using local resources. "To what extent" must reflect earlier content. **Level 1 (Basic)(Midpoint 4)** Describe life in Sahel. May describe strategies. Points made are simple and random. **Level 2 (Clear)(Midpoint 10)** Begins to address the 'to what extent' command. Some support using the Sahel. Begins to link improvements to struggle **Level 3 (Detailed)(Midpoint 14)** Clear/explicit statement of 'to what extent'. Clear, purposeful discussion – support provided from Sahel. Clearly links the two components - improvements to struggle. **CMI+ comments** L1 Describes life L1 Describes strategies L2 Tentative twe L2 Begins to link L3 Explicit twe L3 Clear links and support	**[15 marks]** **[1–6 marks]** **[7-12 marks]** **[13-15 marks]**
	Total for this question:	**30 marks**

SECTION B

Question 5: Population Change

5(a)(i)	Stage 2 Birth rate should show a high, steady or fluctuating line with death rate showing an initial rapid decline. Stage 3 Birth rate shows decline with death rate continuing to fall, but at a slower rate. Stage 4 Birth rate should be low. There may be some fluctuation with birth rate above death rate or death rate above birth rate at different times. 1 mark for birth rate and death rate per stages 2, 3 and 4 Tick below stage. 3 x 1	**[3 marks]**
5(a)(ii)	Marks are awarded for correct identification – where stage 3 begins when birth rate begins to fall in a sustained way; stage 4 begins when birth and death rates are in close proximity, with birth rate above the death rate **or where low fluctuation occurs.** Tick next to line. 2 x 1	**[2 marks]**
5(b)(i)	Germany was in stage 5/decline and this became more apparent between 2004 and 2012. This is because the death rate was slightly higher than the birth rate in 2004, but this increased over the 8 years to give a natural decrease/**negative natural increase** of 2 per 000; 0.2% - a doubling of rate of decline. 1 mark for identifying stage and 2 x 1 or (1+1) for justification. 3 x 1	**[3 marks]**
5(b)(ii)	There appear to be clear links with wealth – as the levels of births and deaths change with GNI – as an indicator of development suggesting a degree of fit. There could be reference to the birth and death rates separately with comment noting that death rates decline until the richest countries are reached. The countries at a lower level of development appear to be in the earlier stages of demographic transition. Burkina Faso has an increasing rate of positive population change indicating stage 2. Both Brazil and India appear to be slowing down – India has stayed the same in terms of natural increase over the eight years whilst Brazil has a reduction of 3 per 000. Botswana – although has a higher GNI than Brazil shows a clear and significant increase in natural change of 11 per 000 between 2004 and 2012 – which would not be expected. This may be because the rate of increase in 2004 was lower than expected – probably due to the impact of HIV/AIDS. The UK as one of the richest countries has relatively low rate of growth – which appears to be increasing slightly – which would not be expected – perhaps due to immigration. Germany in decline as the richest, most developed on this criteria fits what the model predicts. Overall, there is a sound fit, but it is not perfect – countries fit a stage although Botswana and UK appear atypical. There must be reference to data in the table, not generic comments	**[7 marks]**

	about DTM. **Level 1 (Basic)(Midpoint 3)** Tentative/implicit comment Describes information. May consider births and deaths separately. Links to stage of DTM at top end. **One country only.** **Level 2 (Clear)(Midpoint 6)** Clear comment addressing the extent to which the DTM can be applied to the countries. Birth and death rate are considered simultaneously – so natural change is emphasis and links to DTM. Considers countries that do not fit. Data is used to support points made. **CMI+ comments** L1 Tentative comment L1 Info described L1 Begins to link L2 Explicit comment L2 Clear links	**[1–4 marks]** **[5-7 marks]**
5(c)	Responses will vary significantly with the area of migration being considered and the resulting impacts on structure and implications for the balance between population and resources. However, there must be a focus at country/national level. Impact of migration on population structure – economic migration will result in an increase in the number/proportion of people who are in late teens and especially 20's an 30's and possibly 40's in receiving countries. UK may be cited as an example of this. However, in countries of origin, there will be a loss of such economically active age groups – especially males possibly – in areas of Eastern Europe – Poland, Lithuania. Population will become older in countries of origin and younger in destination. There may be recognition of likely knock-on effect on birth rates – increasing in destination and therefore encouraging further natural change whilst there will be a reduction in origin in terms of numbers and a fall in natural increase. Reference may also be made to increasing the range of different groups – and societies becoming more multicultural in destination countries. Refugees may also be included. USA, Germany and Dubai are examples of recipient countries in textbook. Implications for the balance between population and resources likely to suggest positives in terms of economically active ages able to provide workforce and encourage growth, filling gaps in labour market but may refer to increased pressure placed on recipient countries for housing, schools, health care for additional population and how such demands may be met. Conversely, in the countries of origin, there may be	**[15 marks]**

	limitations placed on development and an inadequate or ageing population to develop the resources available. **Local/regional illustrations are permissible in an overall national context.** **Level 1 (Basic)(Midpoint 4)** Identifies impacts of migration on **national** population structure and/or implications for the balance between population and resources. Points made are simple and random. Regional/local **only** scale. **Level 2 (Clear)(Midpoint 10)** Begins to discuss impact of migration on **national** population structure and/or implications for the balance between population and resources. Describes impacts of migration on population structure and/or implications. Points are supported in places. **Level 3 (Detailed)(Midpoint 14)** Discussion is to fore and clear comments are made on the impact of migration on **national** population structure and implications for the balance between population and resources.. Description is specific and targeted to the question. Points are supported and developed. **CMI+ comments** L1 Identifies impacts L1 Generic impacts L2 Begins to discuss one/both aspects L2 Some support L3 Discussion to the fore L3 Addresses both aspects L3 Clear specific support	**[1–6 marks]** **[7-12 marks]** **[13-15 marks]**
	Total for this question:	**30 marks**

Question 6: Food Supply Issues

6(a)	Likely to answer either by categories in key or those reasons on vertical axis. The lowest percentage is found in the 'always' category – with the buy local having the highest percentage at 10 of consumers being influenced to buy local produce. The 'often' category had the highest percentages for two categories – buy local and buy seasonal, with over 40% often considered climate change and 36% avoiding air freighted produce, with about 30% with regard to organic. The 'rarely' category was highest for organic with 18%, whilst only 7% were in the rarely category for buy local and seasonal. It is these two decisions and avoiding air freighted produce that appear to be of most concern to consumers and influence purchasing decisions. Never is the highest category for avoid air-freighted and buy organic, whilst still being relatively high for buy seasonal and buy local. Reserve1 mark for an overview relating to lack of concern in context of response. **Maximum of 2 marks on any of categories – buy local, buy seasonal, avoid air-freighted, buy organic.** **Maximum of 1 mark on figures relating to always, often, rarely, never.** 4 x 1	**[4 marks]**
6(b)	The article raises a number of issues – we consider 'local' to be produced from the immediate area surrounding a place – but there are huge variations in what certain organisations class as 'local' and many we would see as regional – e.g the 50km radius suggested by National Association of Farmers Markets – still a good half hour drive and London Farmers Markets adopts 160km of M25 – this is an hour and a half's drive and a 100 miles from the outer areas of London – which seems a generous interpretation of local. Other interpretations consider the nature of production – with regard to concern for the environment, giving producers a fair price etc. **Level 1 (Basic)(Midpoint 2)** Defines 'local' differently. Relies heavily on the extract. Ideas are separate. **Level 2 (Basic)(Midpoint 4)** Has an overview of the issue(s) on 'what is local'**.** Uses Figure 8 effectively – and displays a clear understanding of the issue(s). **CMI+ comments** L1 Different definitions identified L1 Relies heavily on Figure 8 L2 Aware of issue(s) L2 Uses Figure 8	**[5 marks]** **[1-3 marks]** **[4-5 marks]**

6(c)	Subsidies are monies paid to farmers/producers to make the cost of production lower than they would otherwise be. This help was designed to encourage farmers to grow certain types of crops – where production of such produce was low and imports needed – such as oilseed rape. Subsequent changes have meant they are paid for land in cultivation – irrespective of what is growing and for environmentally friendly methods – in this way more responsible production is encouraged as well as increasing production (of certain crops initially) and reducing imports. Tariffs – add to the price of goods that are imported – thus making them cost more than they otherwise would and making imports unattractive. The tariffs have the effect of raising the world market price up to the EU target price – e.g. in 2004 import tariffs on brown rice were set at 64 Euros and on milled rice 175 Euros per tonne thus helping EU producers. **Level 1 (Basic)(Midpoint 3)** Defines subsidies and/or tariffs. Describes food production – and idea of amount/nature. Ideas are separate. Begins to explain or explained one only **Level 2 (Basic)(Midpoint 5)** Clearly explains how subsidies and tariffs controls food production – may be imbalance. Is aware of how one or both of these links to level and nature of food production. Offers some support. **CMI+ comments** L1 Defines terms L1 Separate ideas L1 Explains one aspect L2 Links ideas to production L2 Clear explanation	**[6 marks]** **[1-4 marks]** **[5-6 marks]**
6(d)	Positive aspects of the role of TNCs may refer to their importance in production – with key TNCs guaranteeing a market for produce and a limited number of supermarket retailers dominate processing and distribution. Three coffee companies are responsible for 90% of production – indicative of their importance in maintaining levels of supplies. Many companies are also responsible for shipping and therefore distribution – the company Cagill is largest grain exporter in the US and is involved in production of grain, handling at terminals for export and in producing fertilisers – and so clearly has an important role. Many key retailers have indicated an environmentally friendly approach – with sustainable sourcing of foodstuffs – such as fish at Tesco and use of energy such as M & S – indicating a positive role in a	**[15 marks]**

	wider sense. However, there are negatives – such as the sheer scale and dominance of a small number of companies leading to a control of prices – a fair price? Encouraging cash crop in poorer countries – leading to 'ghost acres'. Global rather than local sourcing of food and environmental impacts of food miles and of fertiliser/pesticide use on environment; the 'clout' of these companies who have their own interests at heart. **Level 1 (Basic)(Midpoint 4)** Describe features of TNCs and/or global food supply. Points made are simple and in a random sequence. **Level 2 (Clear)(Midpoint 10)** Tentative/implicit view. Begins to target information to purpose – considers positive and/or negatives. Begins to link to global food supply. Intermittent support. **Level 3 (Detailed)(Midpoint 14)** Explicit/clear view. Clear, purposeful response with a focus on both positives and negatives. Clear links to global food supply. Support is given throughout. **CMI+ comments** L1 Describes one or both aspects L1 Simple points L2 Tentative/implicit twe L2 Positive and/or negative addressed L2 Some support L3 Explicit twe L3 Positive and negative addressed L3 Support present	**[1–6 marks]** **[7-12 marks]** **[13-15 marks]**
	Total for this question:	**30 marks**

Question 7: Energy Issues

7(a)	Most nuclear power stations appear to be coastal – with the exception of Trawsfynydd in Wales. They appear to be in clusters - such as Hinckley Point and Dungeness. A substantial number especially in the west have already been shut down – and these appear to be the smaller ones with a capacity of <500. Those still operational or recently closed seem to be larger and are sometimes isolated such as Hartlepool and sometimes part of a cluster such as Sizewell or Heysham. The larger capacity ones are due for later shutdowns – such as Sizewell B and Dungeness B. 4 x 1	**[4 marks]**
7(b)	There are a number of issues that can be considered from the article – such as whether nuclear power stations should be built in earthquake prone zones; whether the power station was too old to be allowed to continue to operate in such a zone as the equipment was out of date and couldn't keep cooling water flowing; the scale of the disaster and the impact on people – with regard to evacuation and environment with regard to contamination. **Level 1 (Basic)(Midpoint 2)** Describes events. Relies heavily on the extract. Ideas are separate. Tentative comment. **Level 2 (Basic)(Midpoint 4)** Clear explicit comment. Has an overview of the issue(s). Uses Figure 10 effectively – and gives displays a clear understanding of issue(s). Links ideas. **CMI+ comments** L1 Describes events L1 Relies on Figure 10 L2 Clear comments L2 Sees issue(s) L2 Uses Figure 10	**[5 marks]** **[1-3 marks]** **[4-5 marks]**
7(c)	The fossil fuels are likely to be identified as coal, oil and natural gas. They are non-renewable so cannot be formed on a timescale useful to people and are being constantly used by people to meet demand for energy. Stocks are therefore being depleted and the likelihood of further discoveries is limited. The use of coal, oil and natural gas involves well tried technology and this is often cheaper than the alternative equivalents and more efficient in producing electricity for example and thus more popular. Similarly, oil is essential for transportation for similar reasons currently.	**[6 marks]**

	Level 1 (Basic)(Midpoint 3) Identifies fossil fuels. Recognises simple reason(s) why they may run out. Ideas are separate. **Level 2 (Clear)(Midpoint 5)** Is aware why fossil fuels may run out. Clear explanation of reason(s) in sequential/linked statements. **CMI+ comments** L1 Simple reasons L1 Separate ideas L2 Clear explanation L2 Links ideas	**[1-4 marks]** **[5-6 marks]**
7(d)	TNCs are large organisations that have operations in more than one country. Often their headquarters are in richer areas – and there are many that have a role in providing and distributing energy – such as Esso/Exxon/Mobil, BP, Royal Dutch/Shell. These companies generate very high levels of revenue which gives major opportunities for investment. They are heavily involved in all aspects of production from initial exploration to extraction to refining and often retailing. BP is used in one book to consider the scale of exploration – in areas ranging from the Gulf of Mexico to Azerbijan; they have huge reserves – 18.3 billion barrels of oil in 2005 and is working partnership with a Russian company – TNK. BP has its own pipelines for distribution and has helped to fund a pipeline linked to deepwater drilling in the Gulf of Mexico. Oil is then refined in BP's own refineries – 7 of which are in Europe. Here, it has thousands of outlets being the second biggest fuel retailer. Thus, TNCs do have a significant role to play. The question could be interpreted differently and content may refer to the role of the state owned Russian company Gazprom and its influence or to sources such as fuelwood or electricity produced from coal where TNCs have less of a role to play – there are a number of ways in which the question can be considered depending on which energy sources are considered – this will influence the view the candidate comes to. **Level 1 (Basic)(Midpoint 4)** Describe features of TNCs and/or global energy production and distribution. Points made are simple and in a random sequence. **Level 2 (Clear)(Midpoint 10)** Tentative/implicit view. Begins to target information to purpose – begins to address the role of TNCs in global energy production and distribution. Intermittent support. **Level 3 (Detailed)(Midpoint 14)** Explicit/clear view.	**[15 marks]** **[1–6 marks]** **[7-12 marks]** **[13-15 marks]**

	Clear, purposeful response with a focus on addressing the key role of TNCs in global production and distribution. Support is given throughout. **CMI+ comments** L1 Describes one or both aspects L1 Simple points L2 Tentative/implicit twe L2 Begins to address role L2 Some support L3 Explicit twe L3 Addresses role in both aspects L3 Support present	
	Total for this question:	**30 marks**

Question 8: Health Issues

8(a)	The initial trend in all countries was for life expectancy to increase – although the levels varied – increasingly by 9 years between 1975 and 1990 in Botswana and from 50 to 51 between 1975 and 1985 in Zambia. In all, there was a subsequent decline in life expectancy – to varying levels with Botswana dropping from 64 in 1995 to 37 in 2005 and Zambia from 51 to 38 between 1985 and 2000. In all countries, there has recently been a reduction in the decline – all except Zambia where there has been a slight increase in life expectancy. 4 x 1	**[4 marks]**
8(b)	HIV had a peak in1992 with approx. 13% of the population 15 – 49 with HIV; prior to thi rates had been high – over 12%. Between 1992 and 2005,rates of infection with HIV have fallen – very steeply between 1994 and 1999 where it has almost halved from the peak/fallen by 6%. Subsequent reductions have been slower and showing smaller and smaller reductions between 2000 and 2004, when rates stabilise temporarily. Rates reached a low in 2004 and 2005 and have since begun to increase slightly – by 1% overall from 2005. The increase has been steady, but levelled off in 2011- 2012. Comment may note such rates of change; equally reasons for initial reduction may be suggested such as increased education and use of condoms, increased use of (anti-retroviral) drugs, greater discussion about infection; funding and availability from other countries and pharmaceutical companies and recent increase – infection of married women who have non-protected sex outside marriage and anti-gay legislation driving gay sex underground and out of reach of health workers. **Level 1 (Basic)(Midpoint 2)** Describes Figure 12 – maybe detailed and step-by-step. Ideas are separate. Tentative comment. **Level 2 (Basic)(Midpoint 4)** Clear explicit comment. Use Figure 12 effectively – and has clear overview of changes in occurrence of HIV. Links ideas **CMI+ comments** L1 Describes Figure 12 L1 Separate points L2 Clear explicit comment L2 Clear overview of changes	**[5 marks]** **[1-3 marks]** **[4-5 marks]**

8(c)	May consider with reference to different counties or different regions but must address variation within UK. Reasons likely to relate to levels of wealth/deprivation; access to health care; type of diet and prevalence of things such as obesity; level of education, age structure; type of jobs; access to facilities such as gyms, leisure centres; different attempts to encourage healthy lifestyles. Regions once identified can be illustrated by smaller areas within. **Level 1 (Basic)(Midpoint 3)** Describes variation in health. Simple reasons noted. Points made are simple and in random sequence. Small scale such as town or village or North-South division. **Level 2 (Clear)(Midpoint 5)** Begins to target information to purpose – offers explanation that links to different regions/counties of the UK, such as Cornwall, Merseyside. Intermittent support. **CMI+ comments** L1 Describes variations L1 Separate reasons L2 Clear explanation L2 Some support	**[6 marks]** **[1-4 marks]** **[5-6 marks]**
8(d)	Despite the wording of the question, it is likely that candidates will focus on negative aspects first – these are likely to relate to adverse impact on health with regard to a high incidence of lung cancer; impacts of occurrence of strokes and CHD. 6 million deaths worldwide per year are linked to smoking and it has a debilitating impact on many others – with huge implications for healthcare and its cost. Globally the number of smokers is increasing as companies target markets in poorer areas of the world – so in India as a result of marketing by British American Tobacco, 55000 children begin smoking each day. Production of cigarettes is big business and whilst there may be significant health issues, there are also economic incentives – especially in poor countries when tobacco TNCs employ many people in the manufacture of products and farmers are given opportunities for cash crop farming by growing tobacco – with 17000 farmers contracted in Kenya. RJ Reynolds has a factory in Vietnam and Damon has and office – indicative of the economic potential offered. The TNCs are keen to indicate that they farm sustainably, care for the environment, offer choice and work within legal guidelines and have given shareholders good returns – 26% per year compared to 7 for the FTSE according to BAT website. Ideally these aspects should be linked to health matters. **Level 1 (Basic)(Midpoint 4)** Describe features of TNCs and/or health matters in a globalising world economy. Points made are simple and in a random sequence.	**[15 marks]** **[1–6 marks]**

	Level 2 (Clear)(Midpoint 10) Begins to discuss. Begins to target information to purpose – consider positives and/or negatives with some discussion. Begins to link health matters in a global world economy. Intermittent support. **Level 3 (Detailed)(Midpoint 14)** Clear, purposeful discussion. Clear, purposeful response with a focus on both positives and negatives – discusses. Clear links to health matters in a global world economy. Support is given throughout. **CMI+ comments** L1 Describes features L1 Simple points L2 Begins to discuss L2 Positive and/or negative addressed L2 Some support L3 Clear, purposeful discussion L3 Positive and negative addressed L3 Support present	**[7-12 marks]** **[13-15 marks]**
	Total for this question:	**30 marks**