National
Qualifications
SPECIMEN ONLY

SQ20/H/01 Geography

Date — Not applicable

Duration — 2 hours and 15 minutes

Total marks — 60

SECTION 1 — PHYSICAL ENVIRONMENTS — 15 marks

Attempt ALL questions.

SECTION 2 — HUMAN ENVIRONMENTS — 15 marks

Attempt ALL questions.

SECTION 3 — GLOBAL ISSUES — 20 marks

Attempt TWO questions.

SECTION 4 — APPLICATION OF GEOGRAPHICAL SKILLS — 10 marks

Attempt the question.

Credit will be given for appropriately labelled sketch maps and diagrams.

Write your answers clearly in the answer booklet provided. In the answer booklet you must clearly identify the question number you are attempting.

Use **blue** or **black** ink.

Before leaving the examination room you must give your answer booklet to the Invigilator; if you do not you may lose all the marks for this paper.

MARKS

SECTION 1: PHYSICAL ENVIRONMENTS — 15 marks

Attempt ALL questions

Question 1

Corries are landscape features present in glaciated upland areas.

Explain the conditions and processes involved in the formation of a corrie.

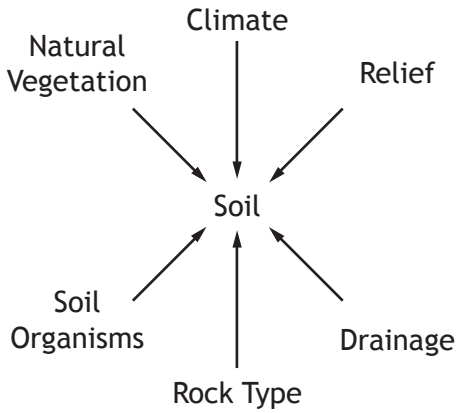
You may wish to use an annotated diagram or diagrams. **5**

Question 2

Look at Diagram Q2.

Explain how factors such as those shown in the diagram affect the formation of a brown earth soil. **6**

Diagram Q2: Main factors affecting soil formation



Question 3

Explain why there is a surplus of solar energy in the tropical latitudes and a deficit of solar energy towards the poles.

You may wish to use an annotated diagram or diagrams. **4**

MARKS

SECTION 2: HUMAN ENVIRONMENTS — 15 marks

Attempt ALL questions

Question 1

> Nigeria conducted a population census in 2006. However, the chairperson of the National Population Commission stated in 2012 that 'Nigeria has no data. People can't really tell you precisely what the population is'. Another census will be conducted in 2016.

Explain the problems of collecting accurate population data in developing countries. **6**

Question 2

> 2012 saw a significant increase in Germany's population. This was not due to a sudden baby boom, but to the many immigrants moving to the country. Experts point out this could result in both benefits and problems.

Referring to a named case study, analyse the impact of migration on **either** the donor country **or** the receiving country. **5**

Question 3

Referring to **either** a named rainforest **or** a named semi-arid area, explain the techniques used to combat rural land degradation. **4**

SECTION 3: GLOBAL ISSUES — 20 marks

Attempt TWO questions

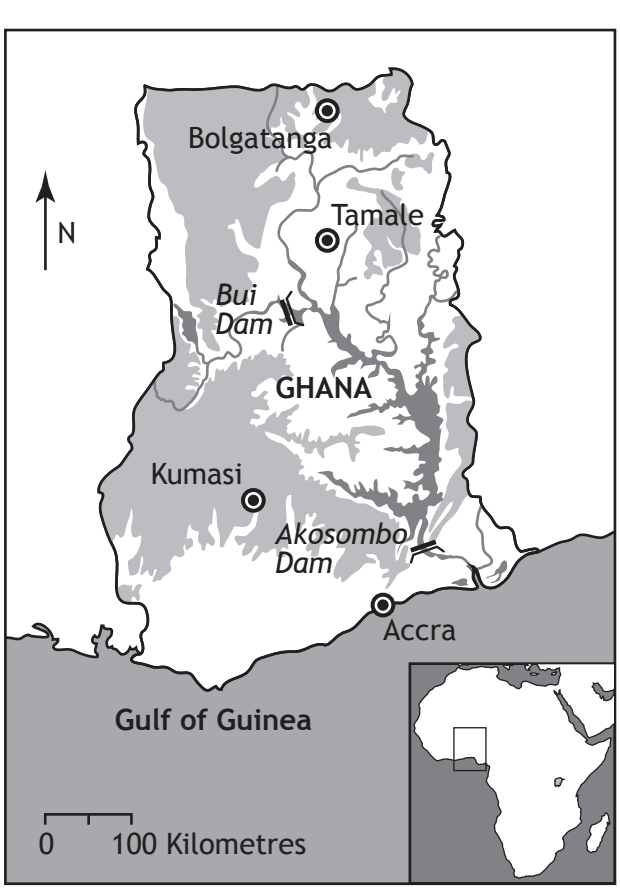
MARKS

Question 1 — River Basin Management

(a) Study Map/Data Q7 and Table Q7

Explain why there is a need for water management in Ghana. **5**

Map/Data Q7



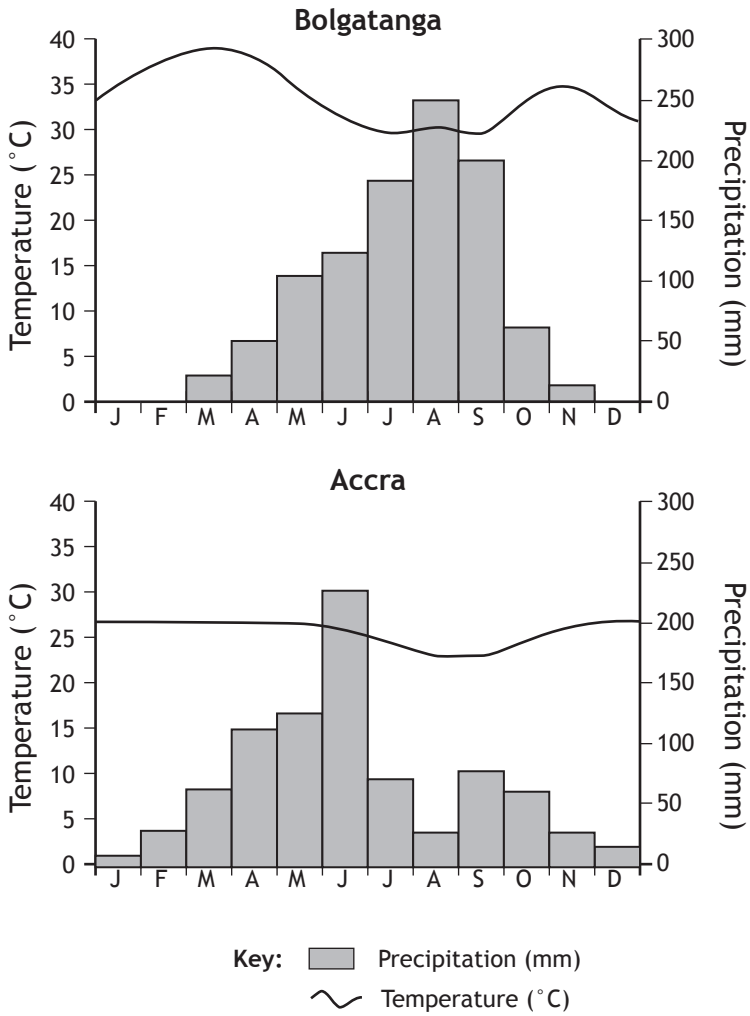


Table Q7: Ghana Development Data

Current population	24·28 million
Projected population by 2040	35·8 million
Labour force by occupation	56% in agriculture 15% in industry 29% in services
% of population with access to electricity	45%

(b) Explain the negative impacts of any named water management project.

In your answer you must refer to socio-economic **and** environmental impacts. **5**

MARKS

Question 2 — Development and Health

For malaria or any other water-related disease that you have studied:

(a) explain the methods used to try and control the spread of the disease; **and**

(b) evaluate the effectiveness of these methods. **10**

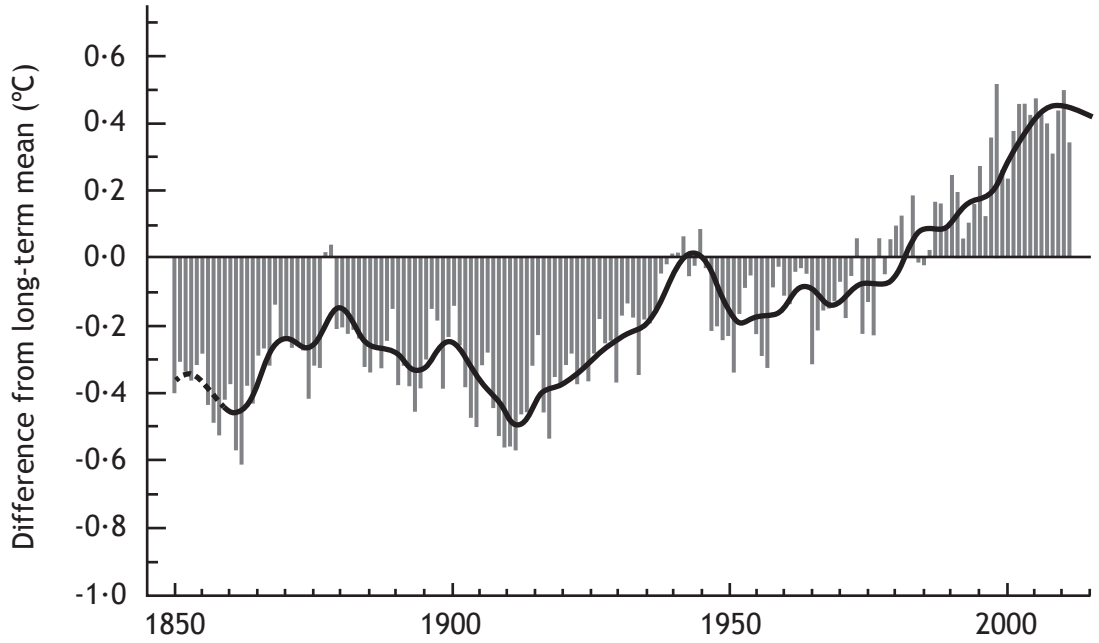
MARKS

Question 3 — Global Climate Change

Look at Diagrams Q9a and Q9b.

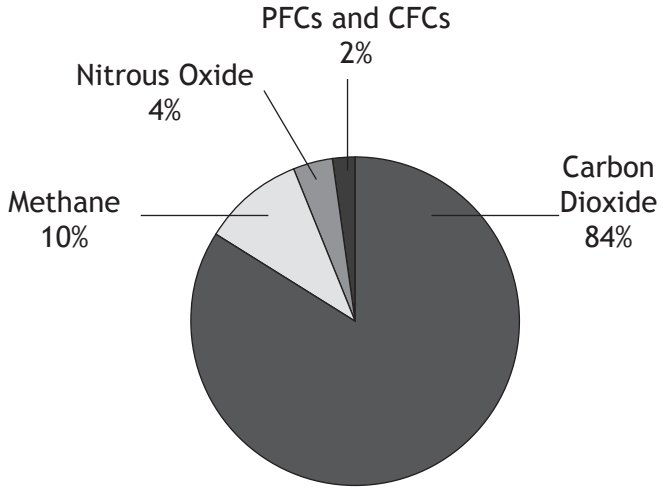
(a) Explain the human activities which have contributed to the changes in global air temperatures. **5**

Diagram Q9a: Global air temperatures 1850—2011



(b) Discuss the possible impacts of global warming throughout the world. **5**

Diagram Q9b: Greenhouse gases, emissions by type



MARKS

Question 4 — Trade, Aid and Geopolitics

(a) Study Table Q10.

Suggest reasons for the inequalities in trade shown in the table below. **5**

Table Q10: Selected development indicators

		Germany	Thailand	Kenya
Trade statistics (million US$, 2012)	Exports	1,492,000	226,200	5,942
	Imports	1,276,000	217,800	14,390
	Balance of trade	216,000	8,400	–8,448
Economic Indicators (2012)	GDP per capita (US$) (PPP*)	39,100	1,800	10,300
	% employed in agriculture	2%	38%	75%
	% employed in manufacturing	24%	14%	10%
	% employed in services	74%	48%	5%
	Main exports	Motor vehicles, machinery, chemicals, computer and electronic products	Electronics, computer parts, automobiles and parts, electrical appliances, machinery and equipment, textiles	Tea, horticultural products, coffee, petroleum products, fish

PPP* = purchasing power parity

(b) Explain the strategies used to reduce inequalities in world trade. **5**

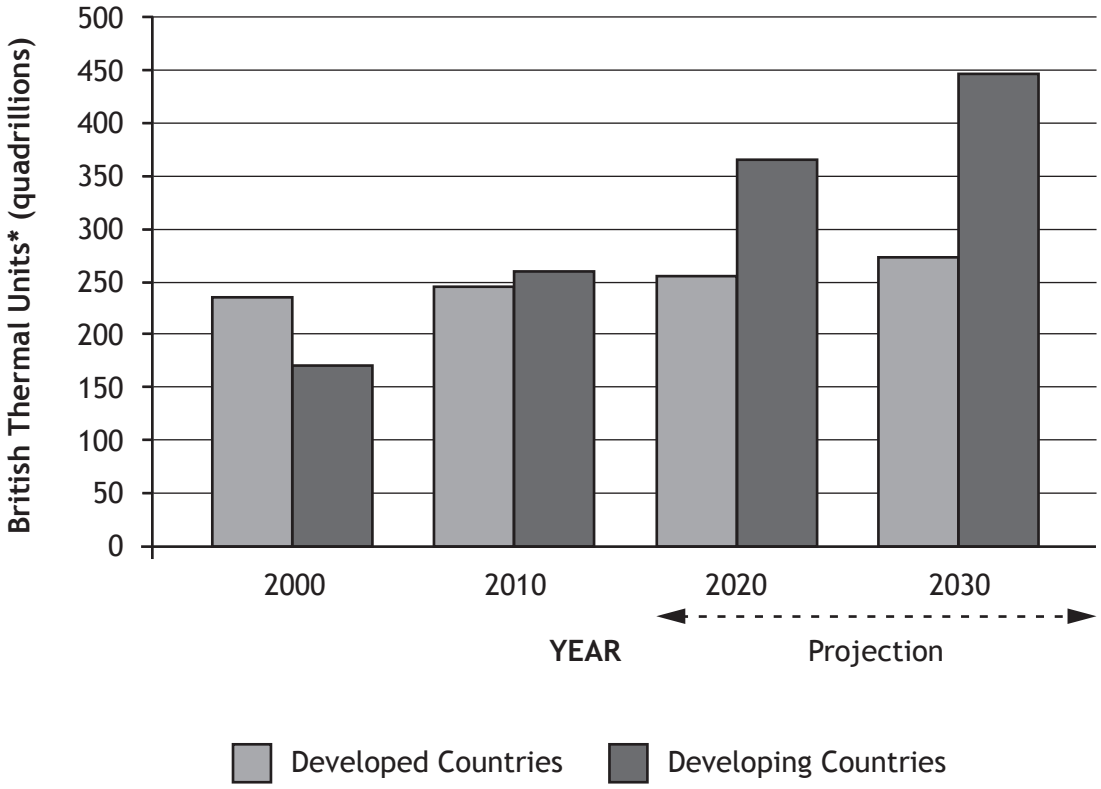
MARKS

Question 5 — Energy

(a) Look at Graph Q11.

Explain the differences in energy consumption between developed and developing countries. **4**

Graph Q11: World energy consumption



(b) Referring to different countries, evaluate the suitability of renewable approaches to generating energy. **6**

MARKS

SECTION 4: APPLICATION OF GEOGRAPHICAL SKILLS — 10 marks

Attempt the question

Question 1

The city of Lincoln has decided to hold a 10 k race. Working to the brief below, a route has been proposed.

Brief for Lincoln 10 k race

The route should:

- be suitable for all participants
- cause minimum disruption to people and business in the local area
- promote business in the local area
- have a suitable start/finish line
- be scenic/interesting for participants.

Study Map Q12: Proposed 10 k Route; OS Map (Extract 1349/EXP272: Lincoln); Diagram Q12; and Graph Q12.

Referring to map evidence and other information from the sources, evaluate the suitability of the proposed route (Map Q12) in relation to the brief for the 10 k race.

You should suggest possible improvements to the route. **10**

Map Q12: Proposed 10 k route

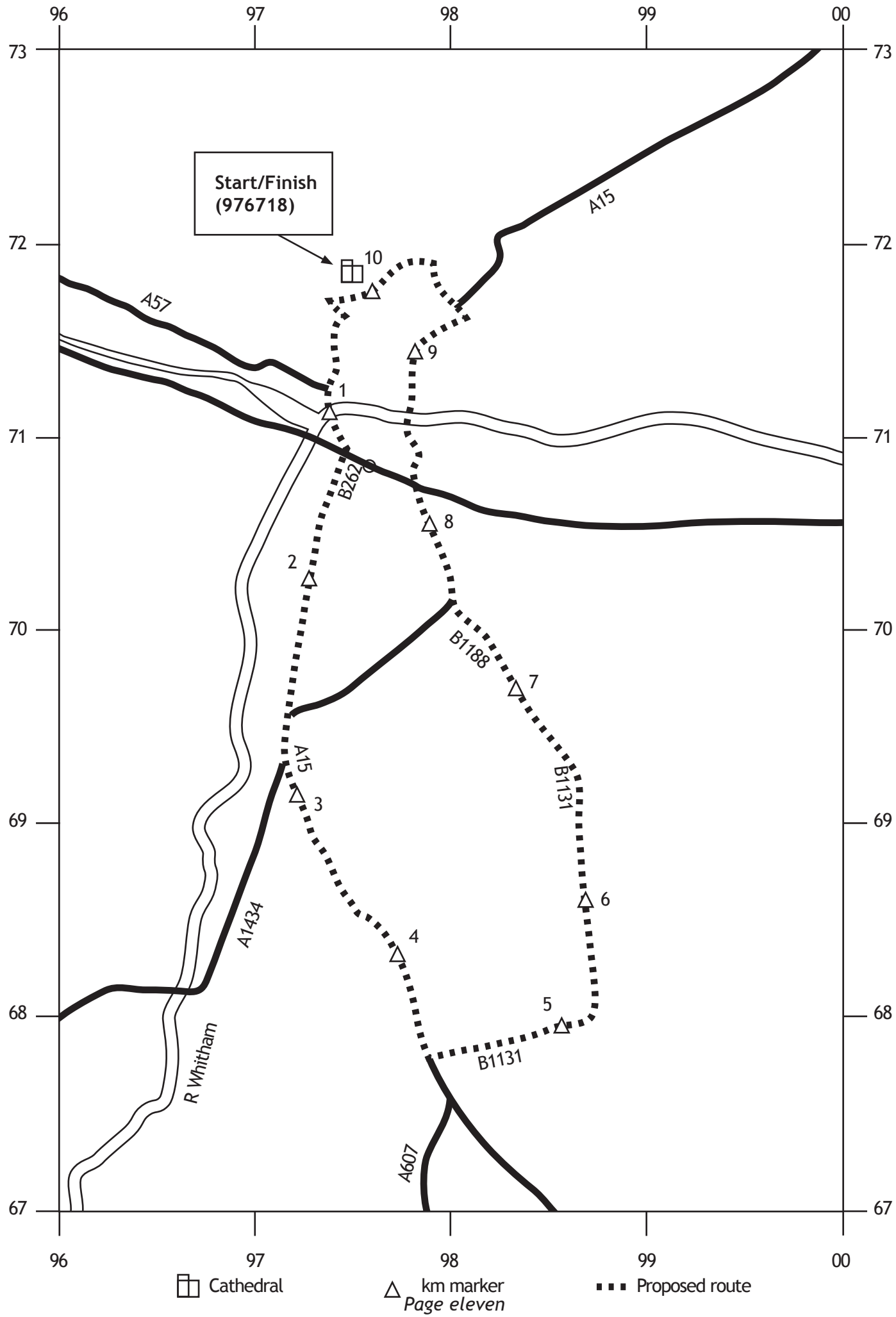


Diagram Q12

Lincoln 10 k Run
Sunday 16th February

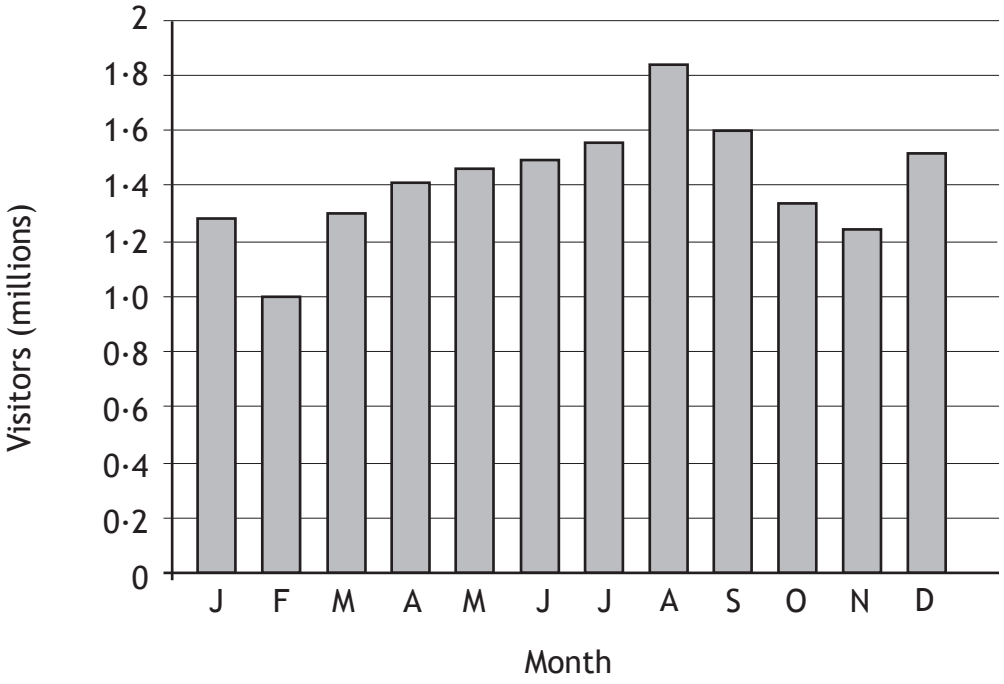
Join over 5,000 people taking part

Live music from local bands

Safe route along closed roads

For further information on the race and nearby accommodation go to:
www.visitlincoln.co.uk

Graph Q12: Visitor numbers to Lincoln



[END OF SPECIMEN QUESTION PAPER]

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Questions 1 Diagram Q12 Image from Peter R Foster IDMA/Shutterstock.com

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SQ20/H/01 Geography

Marking Instructions

These Marking Instructions have been provided to show how SQA would mark this Specimen Question Paper.

General Marking Principles for Higher Geography
This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the detailed marking instructions, which identify the key features required in candidate responses.

a) Marks for each candidate response must always be assigned in line with these General Marking Principles and the Detailed Marking Instructions for this assessment.
b) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.
c) Where the candidate violates the rubric of the paper and answers two parts in one section, both responses should be marked and the better mark recorded.
d) Marking must be consistent. Never make a hasty judgement on a response based on length, quality of hand writing or a confused start.
e) Use the full range of marks available for each question.
f) The Detailed Marking Instructions are not an exhaustive list. Other relevant points should be credited.
g) For credit to be given, points must relate to the question asked. Where candidates give points of knowledge without specifying the context, these should be rewarded unless it is clear that they do not refer to the context of the question.
h) For knowledge/understanding marks to be awarded, points must be:
    a. relevant to the issue in the question
    b. developed (by providing additional detail, exemplification, reasons or evidence)
    c. used to respond to the demands of the question (ie evaluate, analyse, etc)

Marking principles for each question type
There are a range of types of question which could be asked within this question paper. For each, the following provides an overview of marking principles, and an example for each.

Explain
Questions which ask candidates to explain or suggest reasons for the cause or impact of something, or require them to refer to causal connections and relationships: candidates must do more than describe to gain credit here.

Where this occurs in a question asking about a landscape feature, candidates should refer to the processes leading to landscape formation.

Where candidates are provided with sources, they should make use of these and refer to them within their answer for full marks.

Where candidates provide a purely descriptive answer, or one where development is limited, no more than half marks should be awarded for the question.

Other questions look for higher-order skills to be demonstrated and will use command words such as analyse, evaluate, to what extent does, discuss.

Analyse
Analysis involves identifying parts, the relationship between them, and their relationships with the whole. It can also involve drawing out and relating implications.

An analysis mark should be awarded where a candidate uses their knowledge and understanding/a source, to identify relevant components (eg of an idea, theory, argument, etc) and clearly show at least one of the following:

- links between different components
- links between component(s) and the whole
- links between component(s) and related concepts
- similarities and contradictions
- consistency and inconsistency
- different views/interpretations
- possible consequences/implications
- the relative importance of components
- understanding of underlying order or structure

Where candidates are asked to analyse they should identify parts of a topic or issue and refer to the interrelationships between, or impacts of, various factors, eg analyse the soil-forming properties which lead to the formation of a gley soil. Candidates would be expected to refer to how the various soil formatting properties contributed to the formation.

Evaluate
Where candidates are asked to evaluate, they should be making a judgement of the success, failure, or impact of something based on criteria. Candidates would be expected to briefly describe the strategy/project being evaluated before offering an evidenced conclusion.

Account for
Where candidates are being asked to account for, they are required to give reasons, often (but not exclusively) from a resource, eg for a change in trade figures, a need for water management, or differences in development between contrasting developing countries.

Discuss
These questions are looking for candidates to explore ideas about a project, or the impact of a change. Candidates will be expected to consider different views on an issue/argument. This might not be a balanced argument, but there should be a range of impacts or ideas within the answer.

To what extent
This asks candidates to consider the impact of a management strategy or strategies they have explored. Candidates would be expected to briefly describe the strategy/project being evaluated before offering an evidenced conclusion. Candidates do not need to offer an overall opinion based on a variety of strategies, but should assess each separately.

Detailed Marking Instructions for each question

SECTION 1: Physical Environments

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
1		Check any diagram(s) for relevant points not present in the text and award accordingly. Well-annotated diagrams that explain conditions and processes can gain full marks. Maximum of 1 mark for undeveloped conditions and 1 mark for undeveloped processes. Award a maximum of 2 marks for fully developed processes. Answers must have conditions and processes to gain maximum marks. Answers which are purely descriptive, or do not develop any processes or conditions, should achieve no more than 2 marks in total. **1 mark** Limited explanation — the use of the names of at least two processes with no development of these. **2 marks** The use of the names of at least two processes/conditions with development of these, but no other reference to conditions. *Or*	**5**	Possible answers might include: • Snow accumulates in mountain hollows when more snow falls in winter than melts in the summer. (1 mark) • North/north-east facing slopes are more shaded so snow lies longer (1 mark), with accumulated snow compressed into neve and eventually ice. (1 mark) • Plucking, when ice freezes on to bedrock, pulling loose rocks away from the backwall, making it steeper. (1 mark) • Abrasion, when the angular rock embedded in the ice grinds the hollow, making it deeper. (1 mark) • Frost shattering continues to steepen the sides of the hollow when water in cracks in the rock turns to ice when temperatures drop below freezing; expansion and contraction weakens the rock until fragments break off. (1 mark) • Rotational sliding further deepens the central part of the hollow floor as gravity causes the ice to move. (1 mark) • Friction causes the ice to slow down at the front edge of the corrie, allowing a rock lip to form, which traps water as ice melts, leaving a lochan or tarn. (1 mark) • During spring/summer, thawing takes place, allowing water to penetrate cracks in the rocks at the base of the hollow. (1 mark) The broken fragments build up over time and are removed by meltwater, further enlarging the hollow. (1 mark) Frost shattering on the backwall supplies further abrasion material as loose scree falls down the bergschrund. (1 mark) This is a large

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
		Limited use of the names of at least two processes/conditions, with at least two descriptive points about the landscape formation. **3 marks** The use of the processes of at least two conditions with development of these, or two developed processes with limited explanation of how the feature forms over time. Limited use of the names of at least three processes/conditions, with at least three descriptive points about the landscape formation. **4 marks** The use of the processes of at least three processes/conditions with development of these, or two developed processes, with two further statements explaining the formation of the feature. **5 marks** The use of the processes of at least three processes/conditions with development of these, or three developed processes, with three further statements explaining the formation of the feature, including a named example.		• crevasse separating moving ice from the ice still attached to the backwall. (1 mark) A weaker answer may take the form of descriptive points such as: • A corrie forms when a glacier forms in a hollow and moves downhill, eroding an armchair shape. (1 mark) Plucking, abrasion and frost shattering help to erode the corrie. (1 mark) The ice steeped the back wall and deepens the hollow.(1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
2		Candidates need not refer to all factors in diagram for full marks — at least two factors are expected. "Explain" questions should make reference to *causal* relationships. Marks may be awarded as follows: • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 3 marks should be awarded for answers entirely consisting of limited descriptive/explanatory points.	**6**	Possible answers might include: • Natural vegetation — deciduous forest vegetation provides deep leaf litter, which is broken down rapidly in mild/warm climate. (1 mark) • Trees have roots which penetrate deep into the soil, ensuring the recycling of minerals back to the vegetation. (1 mark) • Soil organisms — soil biota break down leaf litter producing mildly acidic mull humus. They also ensure the mixing of the soil, aerating it and preventing the formation of distinct layers within the soil. (1 mark) • Climate — precipitation slightly exceeds evaporation, giving downward leaching of the most soluble minerals and the possibility of an iron pan forming, impeding drainage. (1 mark) • Rock type — determines the rate of weathering, with hard rocks such as schist taking longer to weather, producing thinner soils. Softer rocks, eg shale, weather more quickly. (1 mark) • Relief — greater altitude results in temperatures and the growing season being reduced and an increase in precipitation. (1 mark) Steeper slopes tend to produce thinner soils due to gravity. (1 mark) • Drainage — well drained with throughflow and little accumulation of excess water collecting, producing limited leaching. (1 mark) Candidates may give a developed explanations with interactions between factors, for example: • The A horizon is rich in nutrients, caused by the relatively quick decomposition of the litter of deciduous leaves and grasses in a mild climate. (1 mark) • This produces a mull humus, well mixed with the soil minerals thanks to the activity of organisms such as worms. (1 mark) • Soil colour varies from black humus to dark brown in A horizon to lighter brown in B horizon where humus content is less obvious. Texture is loamy and well-aerated in the A horizon but lighter in the B horizon. (1 mark) • The C horizon is derived from a range of parent material, with limestone producing lighter-coloured alkaline soils. (1 mark) • South-facing slopes with a greater amount of sunshine and higher temperatures increase the rate of humus production. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
3		Check any diagram(s) for relevant points not present in the text and award accordingly. Well-annotated diagrams, explaining reasons, can gain full marks. • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers entirely consisting of limited descriptive/explanatory points.	**4**	Possible answers might include: • Sun's angle in the sky decreases towards the poles due to the curvature of the Earth, which spreads heat energy over a larger surface area. (1 mark) • Sun's rays are concentrated on tropical latitudes as the intensity of insolation is greatest where rays strike vertically. (1 mark) • Sun's rays have less atmosphere to pass through at the tropics, so less energy is lost through absorption and reflection by clouds, gas and dust. (1 mark) • Albedo rates differ from the darker forest surfaces at the tropics absorbing radiation, in contrast to the ice-/snow-covered polar areas reflecting radiation. (1 mark) • Tilt of the axis results in the Sun being higher in the sky between the tropics throughout the year, focusing energy. (1 mark) • No solar insolation at the winter solstices at the poles producing 24-hour darkness, whereas the tropics receive insolation throughout the year. (1 mark)

SECTION 2: Human Environments

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
1		Candidates must explain the problems of collecting accurate population data in developing countries. No marks for description. Marks may be awarded as follows: • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Detail may include relevant exemplification of a problem. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 3 marks should be awarded for answers entirely consisting of limited descriptive/explanatory points.	**6**	Possible answers might include: • Large numbers of migrants, eg the Tuareg or Fulani in West Africa, and the shifting cultivators of the Amazon, may lead to people being missed or counted twice. (1 mark) • Countries with large numbers of homeless people or large numbers of rural-to-urban migrants living in shanty towns, eg Makoko in Lagos, Nigeria, have no official address for an enumerator to visit. (1 mark) • Poor communication links and difficult terrain, eg in the Amazon Rainforest, may make it difficult for enumerators to reach isolated villages. (1 mark) • The variety of languages spoken in many countries (eg over 500 in Nigeria) make it difficult to provide forms that everyone can complete. (1 mark) • The considerable costs involved in printing, training enumerators, distributing forms and analysing the results can make conducting a census impossible, especially when the country may have more pressing problems like housing and education. (1 mark) • In countries with high levels of illiteracy, mistakes may be made and more enumerators will be needed to help. (1 mark) • People may be suspicious of why the census is being conducted, and may lie. (1 mark) • Ethnic tensions and internal political rivalries may lead to inaccuracies, eg northern Nigeria was reported to have inflated its population figures to secure increased political representation. (1 mark) • Under-registration may occur for social, religious and political reasons, eg China's one-child policy may have reduced the registration of baby girls. (1 mark) • In countries suffering from war, eg Afghanistan, it may be dangerous for enumerators to enter regions and data will quickly become dated. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
2		Candidates should analyse the impact of the migration on either the donor or the recipient country. Advantages and disadvantages must be included for full credit. Markers should take care not to credit reversed points. Answers will depend on the case study described by the candidate. Marks may be awarded as follows: • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Detail may include relevant exemplification of a problem. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers entirely consisting of limited descriptive/explanatory points. A maximum of 2 marks should be awarded for answers which are vague or over-generalised.	**5**	Possible answers might include: **Donor country**, eg Greece, Spain or Bulgaria: **Advantages** • Pressure on local services such as education, healthcare and housing is reduced. (1 mark) • Pressure on jobs is reduced therefore levels of unemployment will fall. (1 mark) • The birth rate is lowered so population growth rates will slow. (1 mark) • Money sent home by the migrants will boost the local economy. (1 mark) • Migrants will learn new skills and may then return to their home country. (1 mark) **Disadvantages** • Active and most educated population left, known as the 'brain drain', which resulted in a skills shortage in donor countries. (1 mark) • Families were divided and the death rates may increase due to the ageing population. (1 mark) • Family members remaining in the country of origin may become dependent on remittances being sent home by migrant workers. (1 mark) **Recipient country**, eg Germany: **Advantages** • The short-term gap in labour is filled. Many migrants are highly skilled, eg engineers and academics. (1 mark) • Migrants will take jobs that locals did not want and will work for lower, more competitive wages, thus reducing labour costs. (1 mark) • Migrants will enrich the culture of the area that they move to with language, food and music. (1 mark) • The increased population will result in an increase in the tax paid to the government, which can be invested in improving local services. (1 mark) **Disadvantages** • Migrant workers may feel discriminated against. Unemployment rises for local

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
				people. (1 mark) • Ghettos may develop in parts of cities and there may be a shortage of affordable housing. (1 mark) • Cost of providing services for migrant population and their families will increase, eg for schooling, healthcare, etc. (1 mark)
3		Answers will depend on the case study referenced by the candidate. Marks may be awarded as follows: • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Detail may include relevant exemplification of a problem. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers entirely consisting of limited descriptive/explanatory points. A maximum of 2 marks should be awarded for answers which are vague or over-generalised.	**4**	Possible answers might include: **Eden Foundation in Nigeria:** • Educated farmers to grow perennial plants to protect the soil against heavy rain. (1 mark) • They prevent rainsplash from dislodging fine particles and bind the loose soil. (1 mark) • Farmers produced twice as much millet (drought-tolerant crop) as those who did not use this technique. (1 mark) • Undisturbed by ploughing, the soil structure will remain intact. (1 mark) Organic matter holds the soil particles together. • Stone lines are commonly used in Burkina Faso and Niger, to trap soil and water, and slow run-off. (1 mark) • Instead, water will sink into the soil through the cracks and pours, preventing erosion. (1 mark) • Strips of vegetation can also be used in a similar way, and can provide fodder for animals (eg Makarikari grass) or a cash crop of pumpkins could be grown. (1 mark) • Build wells to allow effective irrigation. (1 mark) • Contour ridges slow run-off and catch sediment before it is washed away. (1 mark) **Afforestation** • To prevent soil erosion as roots will bind the soil and hold it in place. (1 mark) • Fanya juu terraces (popular in Makanya in north-eastern Tanzania) can be made by digging a drainage channel and throwing soil uphill to make a ridge. In drier areas, trees can be planted in the ditch, and in wetter areas on the ridge. (1 mark) • In Makanya, maize is grown between the trenches. Maize crops have increased from 1.5 tonnes per hectare to 2.4 tonnes per hectare. (1 mark)

SECTION 3: Global Issues

River Basin Management

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
1	a	Candidates must explain the need for water management in Ghana using the relevant prompts from the resources. No marks should be awarded for purely descriptive points, eg 'very low rainfall in Ghana during the winter months'. **Marks may be awarded as follows:** • For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. • Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers which are purely descriptive.	**5**	Acceptable reasons might include: • Very low rainfall in the north of Ghana from November to March means that water management is needed to ensure that people have water for washing/drinking, etc, all year round. (1 mark) • High rainfall in the summer months throughout Ghana shows that flooding is a threat. Building dams to allow flood control is required. (1 mark) • The rapid population growth predicted in the future for Ghana suggests that demand for water from the growing population will be high and increasing (for all the usual uses of water), and this means water management is required. (1 mark) • Most people in Ghana (56%) are employed in agriculture and this shows that water management is important for irrigation purposes. (1 mark) • Only 45% of people in Ghana have access to electricity, and as their respective population grows the importance of hydroelectric power is evident. (1 mark) • Ghana's capital city of Accra is not situated on the main river (the Volta) and so it needs to be managed to allow it to benefit from domestic and industrial water use. (1 mark)
1	b	Answers must discuss the possible negative consequences. No marks should be awarded for positive consequences. Although no mark is to be awarded for the named water management project,	**5**	Answers will depend on the water management project chosen, but for Ghana, possible answers might include: **Environmental consequences could include:** • Flooding of animal habitat, eg 21% of the Bui National Park has been flooded, with fears that the rare black hippopotamus may have been

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
		vague/generic answers that do not relate to a specific named water management project should get a maximum of 4 marks. Candidates who only deal with socio-economic or environmental impacts should be awarded a maximum of 4 marks. For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers which are purely descriptive. 1 mark can be awarded where candidates refer to **two** specific named examples *within* the case study area.		threatened due to insufficient suitable habitats near the inundated area. (1 mark) • The moderation of river flow downstream of the dams could adversely affect fish habitats – 46 species of fish could be adversely affected by the Bui Dam changing the water flow, temperature and turbidity and blocking migration routes. (1 mark) • Rotting vegetation in the new lakes may release greenhouse gases, which could increase climate change. (1 mark) **Socio-economic consequences could include:** • The forcible displacing of people. In building the Akosombo Dam an estimated 80,000 people were displaced and relocated into resettlement villages (1 mark) but many of these villages were not capable of providing to the same level of income as villages previously had (with poorer soils). (1 mark) • The increased spread of diseases (eg Schistosomiasis and malaria), which have been linked to the creation of the stagnant lake. (1 mark) In addition to this, there has been an increase in the incidence of AIDS in the Volta Basin communities, linked to the increased ease of migration since the creation of Lake Volta. (1 mark) • A decline in agricultural productivity in the area surrounding Lake Volta as the soils here are less fertile than the soils now submerged under the lake. (1 mark) In addition, without the natural river floods to replace nutrients, there has been increased chemical use and the lake is now suffering from eutrophication. (1 mark) This invasion of river weeds is making fishing and navigation by motor boat across Lake Volta more difficult. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
2		Candidates may choose to answer parts (a) and (b) separately or together. Award a maximum of 6 marks for either section. Candidates must explain how each method actually helps to control the disease and not just describe or list different methods, eg releasing natural predators into the environment, such as Nile tilapia which eat the larvae. Evaluation points should also be developed points for a mark to be awarded, eg is relatively cheap, therefore affordable for developing world countries. Each evaluation should only be credited once — ie candidates should be credited for, eg, cost only once. Care should be taken not to credit reversals. For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers which are purely descriptive.	**10**	Possible answers for methods might include: • The female anopheles mosquito acts as a vector for the transmission of malaria, so one method used was to spray pesticides/insecticides such as DDT in an attempt to kill the mosquitoes by destroying their nervous systems. (1 mark) • Breeding genetically modified sterile mosquitoes and mercenary male mosquitoes were also attempts to kill off the mosquito for good, and so stop the spreading of the disease. (1 mark) • Another method was to use specially designed mosquito traps, which mimic animals and humans by emitting a small amount of carbon dioxide in order to lure the mosquitoes into the trap where they are killed. (1 mark) • BTI bacteria can be artificially grown in coconuts and then, when the coconuts are split open and placed in a stagnant pond, the larvae eat the bacteria which destroy the larvae stomach lining, killing them. (1 mark) • Putting larvae-eating fish such as the muddy loach into stagnant ponds or paddi fields can also help to reduce the larvae as the fish eat the larvae. (1 mark) • Other methods were aimed at getting rid of the stagnant water required for mosquitoes to lay their eggs, eg draining stagnant ponds or swamps every seven days as it takes longer than this period of time for the larvae to develop into adult mosquitoes. (1 mark) • Planting eucalyptus trees, which soak up excess moisture in marshy areas, was also an attempt to prevent the formation of stagnant pools. (1 mark) • Covering water storage cans/small ponds was also used as an attempt to stop mosquitoes from reproducing successfully. (1 mark) • The increased use of insecticide-coated mosquito nets at night was an attempt to stop the mosquitoes from biting people and passing on the disease as they slept. (1 mark) • Attempts were also made to cure people once they had contracted the disease by killing the plasmodium parasite once people had been contaminated with it. Drugs like Quinine, Chloroquine, Larium and Malarone were all developed in an attempt to kill the parasite. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
		1 mark can be awarded where candidates refer to **two** specific named examples *within* the case study area, up to a maximum of 2 marks.		• A drug developed from the Chinese herb Artemisia, and an artificial version of this called 'Oz', appears to work in some parts of the world at least, by reacting violently with the iron in the parasite and killing it before the parasite can adapt. (1 mark) Possible comments on the effectiveness might include: • Insecticides to kill the mosquito were effective at first and helped to eradicate the disease in Southern Europe and Florida, however the mosquito became resistant to DDT and alternative insecticides are often too expensive for developing countries. (1 mark) • Mosquito traps have been effective at a small scale, but mosquitoes breed so quickly that it is impossible to trap them all. (1 mark) • The approaches aimed at killing the mosquito larvae have had only limited success (and only at a local scale) and have been criticised for causing pollution/changing the ecosystem of water courses. (1 mark) • The BTI bacteria in coconuts is a cheap and environmentally friendly solution, with 2/3 coconuts clearing a typical pond of mosquito larvae for 45 days. (1 mark) • Draining stagnant ponds is impossible to be effective on a large-scale, especially in tropical climates where it can rain heavily most days. (1 mark) • Using mosquito nets at night/covering up exposed skin is effective as mosquitoes are often most active during dusk and dawn. (1 mark) • Drugs to kill the parasite once inside humans have been effective for a spell, but the parasite often adapts and becomes resistant — this is true even of the Artemisia-based drugs in SE Asia. (1 mark) • Anti-malarial drugs often have unpleasant side-effects such as nausea, headaches and in some cases hallucinations. (1 mark) • They are also expensive to research, develop and produce, making them often too expensive for people living in developing countries. (1 mark) • Attempts are ongoing to develop a vaccine that could eradicate malaria for good, but so far this has not been successful. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
3	a	Award a maximum of 1 mark for an explanation of the greenhouse effect. 1 mark should be awarded for a source along with an explanation of why it is increasing, eg methane is released from cattle's digestive system and beef is increasingly in demand across the world. A maximum of 2 marks should be awarded for a list of sources of individual gases.	**5**	Possible answers might include: • Carbon dioxide from burning fossil fuels — road transport, power stations, heating systems, cement production — and from deforestation, particularly in the rainforests where more carbon dioxide is present in the atmosphere and less being recycled in photosynthesis (1 mark) and peat bog reclamation/development (particularly in Ireland and Scotland for wind farms). (1 mark) • CFCs: disused refrigerators release CFCs when the foam insulation inside them is shredded. (1 mark) The coolants used in fridges and air conditioning systems create CFCs which are safe in a closed system, but can be released if appliances are not disposed of correctly. (1 mark) • Methane: from rice paddies to feed rapidly increasing populations in Asian countries such as India and China (1 mark), belching cows to meet increasing global demand for beef. (1 mark) Methane released from permafrost melting in Arctic areas due to global warming. (1 mark) • Nitrous oxides: from vehicle exhausts and power stations. (1 mark) • Sulphate aerosol particles and aircraft contrails: global 'dimming' — increase in cloud formation increases reflection/absorption in the atmosphere and therefore cooling. (1 mark)
3	b	For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers which are purely descriptive.	**5**	Possible answers might include: • Rise in sea levels caused by an expansion of the sea as it becomes warmer and also by the melting of glaciers and ice caps in Greenland, Antarctica, etc. (1 mark) • Low-lying coastal areas, eg Bangladesh affected with large-scale displacement of people and loss of land for farming and destruction of property. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
		1 mark can be awarded where candidates refer to **two** specific named examples (species, ocean currents, or use of numeracy) *within* the case study area.		• More extreme and more variable weather, including floods, droughts, hurricanes, tornadoes becoming more frequent and intense. (1 mark) • Globally, an increase in precipitation, particularly in the winter in northern countries such as Scotland, but some areas like the USA Great Plains may experience drier conditions. (1 mark) • Increase in extent of tropical diseases, eg yellow fever as warmer areas expand, possibly up to 40 million more in Africa being exposed to risk of contracting malaria. (1 mark) • Longer growing seasons in many areas in northern Europe for example, increasing food production and range of crops being grown. (1 mark) • Impact on wildlife, eg extinction of at least 10% of land species and coral reefs suffer 80% bleaching. (1 mark) • Changes to ocean current circulation, eg in the Atlantic the thermohaline circulation starts to lose impact on north-western Europe, resulting in considerably colder winters. (1 mark) • Changes in atmospheric patterns linking to monsoon, El Nino, La Nina, etc. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
4	a	Candidates should explain the inequalities in world trade patterns. For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 3 marks should be awarded for answers which are purely descriptive.	**5**	Possible answers might include: • Developing countries often sell primary products at low value, therefore profits are limited. (1 mark) • Often, many countries are producing the same raw material, which keeps prices low. (1 mark) • However, developed countries manufacture products, which adds value and provides increased profits. (1 mark) • Developing countries are prevented from setting up coffee processing plants as high import taxes would be placed on processed coffee, whilst developed countries import coffee beans. (1 mark) • Patterns established during colonial times have been difficult to break. (1 mark) • Limits and quotas are also enforced, eg Kenya's export of coffee to the European Union is subject to a tariff of 9%, whilst other countries are subject to a 3.1% tariff. (1 mark) • Developing countries are often very dependent on one or two products, eg bananas, sugar or copper. (1 mark) • Developed countries set the prices for raw materials through trading on commodity exchanges around the world, eg the New York Mercantile Exchange. (1 mark)
4	b	Candidates should explain the effectiveness of strategies to reduce inequalities in world trade. For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 2 marks should be awarded for answers which are purely descriptive.	**5**	Possible answers might include: • The World Trade Organisation, established in 1996, settles trade disputes and continues to promote free trade and the removal of tariffs and quotas. (1 mark) • The removal of trade barriers means that developing countries will have access to lucrative markets in the developed world. (1 mark) • Some countries, eg in the Caribbean, are attempting to diversify their trade by developing non-traditional exports such as new crops or manufactured goods. Others are pursuing new markets. (1 mark) • The creation of trade alliances: the Caribbean Community and Common Market (CARICOM) was established to promote trade between Caribbean

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
		1 mark can be awarded where candidates refer to **two** specific named examples *within* the case study area.		countries. (1 mark) • Customs duties between member states were removed, thus even the smallest Caribbean countries have access to a regional market. (1 mark) • Member countries are encouraged to purchase raw materials from other CARICOM countries. This has spread the benefits of industrialisation and has encouraged industries to locate in the smaller countries. (1 mark) • Within CARICOM, the Organisation of Eastern Caribbean States (OECS) has been established, which groups together the seven smallest countries in terms of their population. (1 mark) • OECS has created a single currency which makes trade between OECS countries much easier as money is not lost in transactions. (1 mark) • The OECS developed a common agricultural policy to subsidise farmers and removed controls on the movement of workers, allowing skilled workers to migrate. (1 mark) • Fairtrade guarantees a fair price for produce which always covers the cost of production regardless of the market price. (1 mark). • Five-year rolling contracts can be given which allows long-term planning to take place for investment in farm machinery, education, etc. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
5	a	No marks for describing the differences – candidates must account for the differences.	**4**	Although at present the amount of energy used by 'developed countries' is slightly higher than the amount used by 'developing countries', this is forecast to change. In the next 20 years the energy use in 'developing countries' is expected to increase at a much faster rate, whereas the 'developed countries' rate is expected to be stable, only rising slowly. Why is this? Possible answers might include: • Most of the global economic and population growth is happening in the 'developing' countries. (1 mark) This is causing an increase in demand from: ○ **Residential use** – with increased prosperity comes an increase in the standards of living for billions of people. Electricity for lighting and appliances such as televisions, washing machines, air conditioning, etc, will all cause energy use to increase. (1 mark) ○ **Industrial use** – unlike in 'developed' countries, much of the economic growth in 'developing' countries is based on energy-hungry manufacturing industries. This accounts for some of the increased energy use here. (1 mark) ○ **Transport** – in a global economy many of the manufactured products are sold to 'developed' countries, and therefore need to be transported around the world – using energy. (1 mark) As people in 'developing' countries become more prosperous, car ownership rates will also increase, causing more energy use. (1 mark) • In 'developed' countries the population growth rates are more stable (or even declining), and so there is not any great increase in demand for energy. (1 mark) New products and technologies are also increasingly more energy-efficient which keeps energy consumption here more steady. (1 mark)

Question		General marking principles for this type of Question	Max Mark	Specific Marking Instructions for this question
5	b	Candidates must comment on the suitability of each renewable approach discussed. Care should be taken not to credit reverse statements twice (eg solar energy is effective in Spain because it has long hours of sunshine, whereas it is less effective in Scotland where there are fewer hours of sunshine). For 1 mark, candidates may give one detailed explanation, or a limited description/explanation of two factors. Candidate responses may be a mixture of the two styles of writing, but a maximum of 3 marks should be awarded for answers which are purely descriptive. 1 mark can be awarded where candidates refer to **two** specific named relevant examples.	**6**	Possible answers might include: • **Hydroelectric power** is more effective where there is high rainfall to ensure that reservoirs are always at capacity (1 mark), and suitable underlying geology (impermeable rock) to ensure water is not lost from the reservoirs through seepage. (1 mark) Hanging valleys often make ideal sites for effective hydroelectric power because they allow the vertical drop of water needed to power turbines. (1 mark) Hydroelectric pump storage schemes allow electricity production to be instantly produced as required, and are currently being used to meet periods of peak demand in Scotland. (1 mark) • **Wind power** is most effective where there are no barriers to the prevailing wind to allow regular and reliable movement of air to turn the turbines. (1 mark) Concerns have been raised about how to bridge the energy gap when the wind turbines are not generating electricity on calm days, because it is difficult to store the electricity produced from wind turbines. (1 mark) Other drawbacks to this approach, for developing countries, focus on the initial high costs of construction, but after this the energy produced is cheap. (1 mark) • **Wave power** approaches are currently being developed, and are most effective in areas such as the Pentland Firth where the fetch is large giving powerful waves, and in areas such as Cornwall. • **Tidal power** is used in areas where there is a large tidal range to create tidal currents which can be used to turn turbines, eg in the Pentland Firth or Bay of Fundi. • **Solar energy** is most effective where there are long hours of intense sunshine (eg in Spain) to power the solar panels. (1 mark) • **Geothermal energy** is most effective in tectonically active zones (such as Iceland), where there is a heat source (from magma) closer to the surface of the Earth, which can be used to generate steam. (1 mark) It is a reliable source of energy and can be used as needed. (1 mark)

Question		General marking principles for this type of Question	Max Mark	Specific Marking Instructions for this question
				• **Biomass energy and biofuels** can provide continuous energy as required by the burning of plant matter. (1 mark) Drawbacks include concerns about air pollution to the local area increasing, and using land that is needed for crops production in developing countries. (1 mark) As carbon dioxide released equals what the plants recently took in, biomass energy does not add new greenhouse gasses, and so is more environmentally friendly than burning fossil fuels. (1 mark)

Section 4: Application of Geographical Skills

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
1		Candidates should make reference to all sources, including the OS map to evaluate the suitability of the route in relation to the brief. For 1 mark, candidates should refer to the resource and offer an explanation with reference to the brief, *or* a limited description/explanation of two factors. A maximum of 5 marks should be awarded for answers consisting solely of limited descriptive points. A maximum of 4 marks should be awarded for candidates who give vague over-generalised answers which make **no** reference to the map. There are a variety of ways for candidates to give map evidence including descriptions, grid references and place names. A maximum of 4 marks should be awarded for answers which make no evaluation of the plan.	**10**	Possible answers might include: **Suitable for all levels of runners:** • The roads and streets are narrower here, causing a 'bunch' start for the runners which may cause problems. (1 mark) • While the steep uphill section on the A15 and even steeper downhill section on the B1188 may cause some difficultly for runners (1 mark), the generally flat nature of the route is likely to allow for a quick time, encouraging runners. (1 mark) • The exposed area between the 4km and 7km marks may cause some difficulties with the weather conditions/wind. (1 mark) **Cause minimum disruption to people and business in the local area:** • In grid square 9769 and 9770 the route goes through a residential area – local people may be unhappy with the lack of access by road. (1 mark) • The litter/noise levels (bands on the run) from runners/spectators may also cause disruption in residential areas. (1 mark) • The route uses the A57 (dual carriageway), a major road – closure will cause increased congestion and disruption. (1 mark) • Having the run on a Sunday will minimise this disruption as the area/businesses are likely to be quieter. (1 mark) **Promote business in local area:** • The route starts and finishes in the CBD/historic centre of Lincoln, promoting the local area to runners/supporters. (1 mark) • The estimated number of runners with extra supporters could be beneficial for some shops near to the start/finish line. (1 mark) • Hotels and camp/caravan sites will have extra business due to the increase in visitors. (1 mark) • Holding the run in February would bring in visitors at a time when trade is traditionally low. (1 mark)

Question		General marking principles for this type of question	Max mark	Specific Marking Instructions for this question
				Provide access for runners to start line: • Car parking and transport to the start line may be problematic due to the lack of space in the CBD. (1 mark) • The start/finish of the route is near to the train and bus station allowing for some of the runners to get there by public transport and avoid parking. (1 mark) **Scenic/interesting for runners:** • The start/finish is in the historic centre of Lincoln (Castle/Cathedral), which may be of interest to the runners. (1 mark) • There is a varied landscape going through rural and urban environments, which may be more scenic for the runners. (1 mark) **Improvements may include:** • Starting the race in Hartsholme country park/West Common race course is likely to allow for easier access by car/parking. (1 mark) Hartsholme country park would be more scenic, as there is more green space and lakes. Having the run in the summer months may attract a bigger number of runners/spectators and boost trade. (1 mark)

[END OF SPECIMEN MARKING INSTRUCTIONS]