

GEOGRAPHY

Paper 0460/11
Paper 11

Key messages

In order for candidates to perform well on this paper they needed to be able to:

- ensure that the examination rubric is followed correctly, answering three questions, one from each section
- select the three questions with care. Read them all through and study the resources provided with them before making a choice
- answer all parts of the three chosen questions and ensure that sub-sections are not missed
- read the questions carefully. If it helps to do so, underline command words and words which indicate the context of the question
- have the correct equipment for the examination including a ruler and a calculator
- respond in the correct way to command words used in questions – for example, ‘describe’; ‘suggest reasons’; ‘explain’
- identify the correct focus specified in the question stem – for example, causes or impacts; problems or strategies; local, national or global; environmental or social
- ensure that they respond correctly to key words and learn the meanings of geographical words and phrases in order to be able to define and accurately use geographical terminology. When defining words or phrases, candidates should not simply repeat a word or words as part of their definition.
- use the mark allocations and answer space provided in the question and answer booklet as a guide to the length of answer required and the number of clear points that need to be made
- write as clearly and precisely as possible avoiding vague, general statements
- write in full wherever possible, especially in the final two parts of each question, ensuring that ideas are developed with the correct focus
- perform basic skills using population pyramids, graphs, data tables, photographs, text, diagrams and maps of various types, referring to them in an appropriate way to support ideas rather than directly lifting material from them without any interpretation. Ensure that evidence is given where required to support an answer and that best use is made of the information provided, such as the compass, scale and key on maps. Practise the skill of describing the features or characteristics from a photograph.
- if the rubric of a question instructs candidates to base their answer only on the information in a given figure, then answers that do not relate to that resource should not be included as they will not gain credit
- have a range of case studies so that appropriate ones can be chosen for the topics tested
- ensure that each case study used is at the correct scale. The syllabus identifies the scale required for each case study
- avoid writing a long introduction to any question (for example, to provide locational information) at the expense of answering it in detail
- develop points and link ideas wherever possible in case studies and include place detail
- ensure that comparative language and phrases are used where a question requires a candidate to compare
- ensure knowledge of physical processes and an ability to explain a process, using key terms and clearly sequenced ideas
- write in detail and develop ideas in five mark questions where development marks are available
- when using the extra pages at the back of the question and answer booklet indicate that the answer is continued and clearly show the number of the question on the extra page. Candidates should continue answers on the specified continuation pages rather than inside the answer booklet or on extra sheets of paper

General comments:

The examination was considered appropriate for the age and ability range of candidates and it differentiated effectively. Weaker responses showed evidence of misinterpretation of questions and writing irrelevant answers. Candidates seemed to have sufficient time to complete the paper. However, the final parts of the later questions were not always completed. The omission of other sections earlier in the paper however, suggested that lack of time was not an issue.

Most candidates followed the rubric by selecting a question from each section as required. Occasional rubric errors were still seen and a reminder to candidates to answer one question from each section is always helpful. Where candidates answer every question, this compromises the time available for each question and disadvantages them.

Questions 1 and 3 were the most popular questions within the first two sections. Responses to **Questions 5 and 6** were quite balanced. There were good answers seen to all questions, including those requiring extended writing. The case study questions that were answered most successfully were about the impacts of overpopulation and the environmental risks of an economic activity (**1(c)** and **6(c)**). High quality answers in these case studies were characterized by developed ideas, with some clear place detail. Weaker responses tended to be generic developments of ideas with little place detail to support them, whilst other responses were characterised by the use of simple, brief statements. In some cases a significant amount of detail included by candidates was not relevant to the question being asked, and sometimes long introductions occupied much of the answer space. An area for improvement for some candidates would be maximizing the marks scored on the part **(c)** questions.

Case studies require place specific information to allow candidates to access the highest level. This requirement can vary between questions – for example: a country (**Question 1**) or an urban area (**Question 2**), a volcano (**Question 3**) or a river (**Question 4**). Candidates should carefully consider their choice for each question ensuring that they select an appropriate example and also that they have included appropriate place specific detail.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres better prepare their candidates for future examinations.

Comments on specific questions

Question 1

This was much more popular than **Question 2** with the vast majority of candidates attempting this question.

- (a) (i) The majority of candidates were able to correctly interpret the population pyramid and answered this correctly. Occasionally, candidates made an error by adding up the male and female bars.
 - (ii) Most candidates were able to identify that the total population would decrease. Far fewer candidates were able to interpret the population pyramid to give accurate statistics to show the change and therefore did not go on to gain the second mark. Some candidates did not refer to the total population.
 - (iii) This was mostly answered correctly. Occasionally, candidates did not score because they did not give the idea of the change in the population structure of each of the named population groups.
 - (iv) Most candidates were able to achieve some success with this question. The full range of marks was seen. The most common answers seen to explain the change in young dependents were improvements in contraception and role of women. Improvements in healthcare were usually given as a response to explain the change in old dependents. On the whole, candidates seemed less confident with the second part of the question despite a wide range of mark scheme ideas. Some candidates did not gain credit because they did not give reasons to explain the changes. Others did not include sufficient detail – for example writing about improved education rather than improved education for women or education about the disadvantages of larger families.
- (b) (i) Most candidates were able to correctly construct the divided bar graph using the data table provided. Candidates mostly recognised the cumulative nature of the graph. Marks were lost here occasionally due to a lack of accuracy in the completion of the graph or because candidates failed

to complete the question. The majority of candidates made correct use of the key to complete the shading of the graph.

- (ii) This question differentiated well and there were some high scoring answers which accessed the full range of mark scheme points. There were also good examples of development seen and candidates were clearly well prepared for this question. However, there were some weaker responses that did not go much beyond more money being needed to support the elderly.
- (c) Candidates found this a relatively straightforward case study and it achieved the full range of marks. The strongest candidates were able to make three well developed points – usually relating to employment, housing, education or food supply – and added some place specific detail, often of a statistical nature. Most candidates correctly identified the country focus. Weaker candidates gave simple, undeveloped and often generic ideas and sometimes focused incorrectly on the causes rather than the impacts of overpopulation. Many candidates chose China and wrote about the One Child Policy – providing detail of the strategies used to manage overpopulation rather than the impacts that it has.

Question 2

Only a very small number of candidates answered this question and it was far less popular than **Question 1**.

- (a) (i) Most candidates made appropriate use of bar graph and answered this correctly.
- (ii) Most candidates correctly identified that the population would increase and many went on to add the correct statistic for the second mark.
- (iii) Candidates found this question difficult and responses showed a misunderstanding of the concept that urbanisation had already occurred in North America. Where candidates did gain credit, it was for the idea that many people work in factories in North America or on farms in Africa. Common errors were to talk about pull factors.
- (iv) On the whole, candidates were able to identify that they needed to write about rural push or urban pull factors. There were full mark answers seen. However, a significant number of candidates did not go much beyond the employment idea – or even failing to make some of the simpler mark scheme points. There seems to be a lack of understanding of the term ‘urbanisation’.
- (b) (i) Responses to this question were mixed. Some candidates made effective use of the photograph and made good observations about the obvious problems faced by migrants. However, weaker responses did not make effective use of the photograph and listed generic ideas about problems that could not be observed such as education and healthcare.
- (ii) This question was not well answered despite a wide range of mark scheme ideas. Candidates did not always pick up on the rural context. There were a few strong answers. Most candidates who were able to interpret the question correctly did not give more than one or two mark scheme points. Some answers were extreme – making reference to the fact that there would be no workers at all or all schools would close.
- (c) This question discriminated well. Many candidates made simple reference to strategies but failed to develop these ideas so did not go beyond Level 1. Often, answers were generic. Some candidates, however, did develop ideas (relating to both rural and urban areas) and stronger responses were set in the clear context of a named city.

Question 3

This was a popular question and was answered by a significant number of candidates.

- (a) (i) There were mixed responses to this question. Whilst divergent was the most common response given, a surprising number of candidates did not answer this correctly. There is a need for candidates to learn the meaning of key terms more carefully.
- (ii) Again, responses to this question were mixed. Some candidates gained full marks because they were able to clearly identify that divergence would create a gap and that magma would rise to fill this gap. However, there were some vague answers with weak use of key terms that were not worthy of credit. The processes occurring at each type of plate margin (in relation to volcanoes and earthquakes) is a topic which needs to be fully understood.
- (iii) There seemed to be some confusion here and few candidates were able to give a clear sequence, with appropriate key terms, to gain full marks. Responses to question such as this should try to explain processes, such as those at plate boundaries, in a clear, step by step sequence with accurate use of key terms.
- (iv) This question was slightly better answered than (iii). Stronger responses were able to access full marks with carefully sequenced answers. Some gained credit because they correctly picked up on the ideas of pressure build up and release. However, there were still many responses that did not show sufficient understanding of processes and failed to gain credit as a result.
- (b) (i) Most candidates correctly interpreted the text to identify three appropriate hazards. Occasionally, candidates wrote about the impacts of the hazards rather than identifying the hazards themselves.
- (ii) This question differentiated well. On the whole, it was better answered than the previous questions relating to plate margin processes. Most candidates clearly understood the question and were able to access a range of mark scheme points. There was also some good development seen from the strongest candidates.
- (c) Most candidates named appropriate examples although some gave a country rather than naming a volcano. The most common answers seen related to fertile soils and tourism and some also included geothermal power. Many answers remained at Level 1 because candidates made simple points and did not develop their ideas. There were some good examples of development seen but rarely did the Level 2 answers contain sufficient developed ideas and the place specific detail required in order to access Level 3.

Question 4

This question was less popular than **Question 3**.

- (a) (i) Most candidates answered this correctly although some reversed the compass points.
- (ii) Some candidates failed to respond to this question but many achieved both marks here. Some, however, did not gain credit because they did not understand the terms or were not sufficiently accurate with their plots. Most followed the instruction to use S and X.
- (iii) There was a lack of understanding of this question. There were many answers which failed to score. Some candidates wrote valid ideas, however they did not compare and therefore did not gain credit.
- (iv) This question was better answered than (iii) and most candidates were able to make at least one point here with many scoring high marks. Housing, transport and farmland featured in many answers, although sometimes the context of Shalford as a MEDC was missed.
- (b) (i) Most candidates were able to identify that flow was higher in March than September and give figures to back up this idea to gain two marks. However, very few recognised that the flow fluctuated more in March and was more regular in September. Statistics, when given, were generally correct.

- (ii) Candidates found this question challenging and it differentiated well. Weaker responses did not go much beyond the rainfall idea and struggled to explain the idea of variation. Stronger responses referred to a variety of mark scheme ideas including temperature, evaporation, snow melt and saturation.
- (c) There was similar performance to **Question 3(c)** with many candidates making simple points and achieving marks within Level 1. Most candidates did show some understanding and were able to score some marks, albeit within Level 1. On the whole, appropriate examples were given. More development of ideas, within a place specific context, is required. Stronger candidates were able to develop appropriate ideas but answers often lacked specific place detail.

Question 5

This question was answered by a significant number of candidates.

- (a) (i) Responses were mixed – candidates were not all able to give clear and precise definitions of the term.
- (ii) There was sometimes some confusion over Belfast as the main source of labour. Most candidates correctly identified the UK as the main market.
- (iii) This was generally answered well and a number of candidates gained full credit here. The main issue was that some answers did not compare – not making effective use of both diagrams to give the idea of change.
- (iv) On the whole, this question was poorly understood and a significant number of candidates failed to score any marks. Where candidates did gain credit, it was usually for ideas relating to tradition and cost of moving.
- (b) (i) Most candidates were able to make use of the photograph and make references to packaging and labelling to gain two marks.
- (ii) Many candidates described the changes rather than offering reasons for them. There was little explanation beyond the idea of machines replacing people in farms and then in factories. The increase in services idea was not linked to the growing wealth of the country.
- (c) There was good use made of appropriate examples in this case study question. Candidates showed an awareness of the positive impacts such as employment but again, many answers were simple and not developed and therefore, did not go beyond Level 1.

Question 6

- (a) (i) There was lots of variation seen in the quality of definitions here – again, weaker answers were characterised by a lack of precision and accuracy.
- (ii) Responses were variable. Where candidates gained credit, it was usually for the idea that both reservoirs have a dam and the difference in their height.
- (iii) Some candidates made use of the photograph to give ideas relating to the lack of industrial pollution and the fact that the area was not built up. However, simple points were not always picked up in responses, such as the valley site and large catchment area.
- (b) (i) This was generally well answered and many candidates gained full credit. If they lost credit, it was generally because they repeated the point relating to industry or did not understand domestic use of water.
- (ii) Candidates found this question challenging and many were not able to offer reasons why water shortages cause more problems in LEDCs than MEDCs. Many responses were often vague and as a result did not gain credit. Stronger responses included references to reservoirs, the significance of farming to the community and the subsequent ability to provide food during water shortages.

- (iii) This question was answered well by many candidates with many mark scheme ideas seen. There was not much development of ideas but candidates did show a good knowledge of the methods that can be used to supply safe water and most gained marks.
- (c) Many different examples were seen and most of these were valid. However, deforestation was often given as an example of an economic activity rather than naming the activity that had caused the deforestation. Where candidates mentioned this later in their answer, they were able to gain credit. Most did name an appropriate area although sometimes a country was given instead which limited responses to five marks. Most understood the concept of environmental risks and referred to ideas such as habitat loss, flooding and atmospheric pollution/acid rain/global warming. Ideas at any scale were credited. Some tourism answers scored well, as long as the emphasis was on the natural environment rather than people. Weaker responses wrote simple points at Level 1 although, on the whole, greater development and linking of ideas was seen in response to this question than previous ones.

GEOGRAPHY

Paper 0460/12
Paper 12

Key messages

In order for candidates to perform well on this paper they needed to be able to:

- ensure that the examination rubric is followed correctly, answering three questions, one from each section
- select the three questions with care. Read them all through and study the resources provided with them before making a choice
- answer all parts of the three chosen questions and ensure that sub-sections are not missed
- read the questions carefully. If it helps to do so, underline command words and words which indicate the context of the question
- have the correct equipment for the examination, including a ruler and a calculator
- respond in the correct way to command words used in questions – for example, ‘describe’; ‘suggest reasons’; ‘explain’
- identify the correct focus specified in the question stem – for example, causes or impacts; problems or strategies; local, national or global; environmental or social
- ensure that they respond correctly to key words and learn the meanings of geographical words and phrases in order to be able to define and accurately use geographical terminology. When defining words or phrases, candidates should not simply repeat a word or words as part of their definition
- use the mark allocations and answer space provided in the question and answer booklet as a guide to the length of answer required and the number of clear points that need to be made
- write as clearly and precisely as possible avoiding vague, general statements
- write in full wherever possible, especially in the final two parts of each question, ensuring that ideas are developed with the correct focus
- perform basic skills using population pyramids, graphs, data tables, photographs, text, diagrams and maps of various types, referring to them in an appropriate way to support ideas rather than directly lifting material from them without any interpretation. Ensure that evidence is given where required to support an answer and that best use is made of the information provided, such as the compass, scale and key on maps. Practise the skill of describing the features or characteristics from a photograph
- if the rubric of a question instructs candidates to base their answer only on the information in a given figure, then answers that do not relate to that resource should not be included as they will not gain credit
- have a range of case studies so that appropriate ones can be chosen for the topics tested
- ensure that each case study used is at the correct scale. The syllabus identifies the scale required for each case study
- avoid writing a long introduction to any question (e.g. to provide locational information) at the expense of answering it in detail
- develop points and link ideas wherever possible in case studies and include place detail
- ensure that comparative language and phrases are used where a question requires a candidate to compare
- ensure knowledge of physical processes and an ability to explain a process, using key terms and clearly sequenced ideas
- write in detail and develop ideas in five mark questions where development marks are available
- when using the extra pages at the back of the question and answer booklet indicate that the answer is continued and clearly show the number of the question on the extra page. Candidates should continue answers on the specified continuation pages rather than inside the answer booklet or on extra sheets of paper

General comments

The examination was considered appropriate for the age and ability range of candidates and it differentiated effectively between candidates of all ability levels. The stronger candidates performed well across the paper and a number of excellent scripts were seen. Weaker responses were characterised by not interpreting questions correctly and write relevant answers. Candidates seemed to have sufficient time to complete the paper, however the final parts of the later questions were not always completed. The omission of other sections earlier in the paper however, suggested that lack of time was not an issue.

Most candidates followed the rubric by selecting a question from each section as required. Occasional rubric errors were still seen and a reminder to candidates to answer one question from each section is always helpful. Where candidates answer every question, this compromises the time available for each question and disadvantages them.

The presentation of answers from candidates was variable, though almost all were legible.

Questions 1, 4 and 6 were the most popular questions. There were good answers seen to all questions, including those requiring extended writing. The case study questions that were answered the most successfully were about the problems of an increase in the dependent population and the characteristics of an area of tropical rainforest (**1(c)** and **4(c)**). High quality answers in these case studies were characterized by developed ideas, with some clear place detail. Weaker responses tended to be generic developments of ideas with little place detail to support them, whilst other weak responses were characterized by the use of simple, brief statements. In some cases a significant amount of detail included by candidates was not relevant to the question being asked, and sometimes long introductions occupied much of the answer space. An area for improvement for some candidates would be maximizing the marks scored on the part (**c**) questions.

Case studies usually require place specific information to allow candidates to access the highest level. This requirement can vary between questions – for example: a country (**Question 1**) or an urban area (**Question 2**), an area (**Question 4** and **Question 6**). Candidates should carefully consider their choice for each question ensuring that they select an appropriate example and also that they have included appropriate place specific detail.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres better prepare their candidates for future examinations.

Comments on specific questions

Question 1

This was far more popular than **Question 2** with the vast majority of candidates attempting this question.

- (a) (i) Some candidates did correctly interpret the graph, however many added numbers for male and female resulting in answers of 12 000+. There were also many who did not read the scale accurately enough, giving answers such as 6200 or answers using the wrong units such as 6.4, 6 or 0.64.
- (ii) Most candidates recognised that there were more young dependents in Bihar, although a small number ignored the scale and put this the wrong way round. Lots of candidates gave statistics and lots of candidates made references to differences between males and females, neither of which were required. Where candidates did try to make references to the contrast in the balance of the age groups of young dependents, they were not always precise enough for the second mark.
- (iii) Most candidates recognised the wide base for the first mark. Rural depopulation was less well interpreted and many candidates made reference to old dependents here. Some referred to the shape of the pyramid, but often these were vague references such as 'gets thin at the top'. Most candidates recognised that there were more males, though some clearly did not know the word 'imbalance'. Some candidates gave reasons for high birth rate, rural depopulation and the gender imbalance without making any reference to the evidence in the population pyramid.

- (iv) Most candidates were able to achieve some success with this question and many answered it well, giving a wide range of reasons. The full range of marks was seen. The most common answers seen to explain the high birth rates were lack of contraception and/or education about it. Some candidates did not include sufficient detail – for example writing about ‘improved education’ rather than improved education for women or education about the disadvantages of larger families, or simply wrote words such as ‘tradition’ and ‘religion’ without any elaboration.
- (b) (i) Dependency ratio is calculated by adding together young and old dependents, dividing that by the economically active, then multiplying by 100 so the ratio is expressed as the number of ‘dependents’ per 100 people.
- This was a challenging question, although some candidates did correctly address the subject of dependency ratio and a few were able to make accurate calculations. However many candidates only made a simple comparison of numbers of young and old dependents, using statistics or words like ‘increase’ and ‘decrease’. Only one mark was available for this approach unless it addressed dependency ratio directly. In the case of Bihar the overall dependency is likely to fall by 2050 according to the data in Fig. 1.3.
- (ii) This question differentiated well and there were some high scoring answers which accessed the full range of mark scheme points. There were also good examples of development seen and some candidates were clearly well prepared for this question. However, there were many weaker responses that did not show understanding. A significant number simply wrote about the current young and economically active populations growing older without any reasoning which could be credited.
- (c) Responses to this cases study were good and indicate that it was one candidates found relatively straightforward.. There was a variety of case studies, but the most popular and successful examples used were Japan and Italy. The stronger responses were able to make three well developed points - usually relating to pensions, health care or the workforce – and added some place specific detail, often of a statistical nature. Weaker responses gave simple, undeveloped and often generic ideas and sometimes focused incorrectly on overpopulation rather than an increase in the dependent population. Some tried to adapt their China ‘one child policy’ case studies to this question, usually with limited success. Better candidates focussed on old or young dependents, usually old, and described the problems associated with catering for an increased proportion of them.

Question 2

Only a very small number of candidates answered this question and it was far less popular than **Question 1**.

- (a) (i) Most candidates identified the correct features.
- (ii) Most candidates correctly identified the two urban areas.
- (iii) This question was well answered and most candidates identified Calgary, justifying their choice using information from Fig. 2.1. A few simply quoted statistics without the required interpretation, i.e. ‘lowest unemployment’.
- (iv) Answers varied in quality. Common acceptable answers included lack of housing, traffic congestion and unemployment. Many weaker answers included reference to problems such as disease, food shortage and the growth of squatter settlements rather than problems resulting from the growth of an urban area in an MEDC, along with vague references to crime and living standards.
- (b) (i) Responses to this question were mixed. Many candidates referred to accidents, angry drivers and lateness, however others relied on just one of these ideas.
- (ii) This question was not well answered despite a wide range of ideas being possible. Candidates did not always pick up on the ‘public transport’ context. There were a few strong answers which tended to refer to developments in the bus and rail network, however most candidates who were able to interpret the question correctly did not give more than one or two mark scheme points, with few developing their ideas. Many candidates who missed the required focus on public transport wrote about ways to reduce traffic congestion, such as road improvements.

- (c) Whilst a small number of high quality answers were seen, in general the question was not well answered. There were few developed answers which contained place specific information even though many candidates chose cities familiar to them, perhaps where they lived or at least within their own country. Many candidates did not clearly describe a change in land use by referring to the land use before and after (e.g. the destruction of housing to build a factory, the demolition of a factory to build a shopping mall). In addition many answers were vague and included conflicts, or more likely problems, relating to the natural environment, especially in rural areas rather than within an urban area.

Question 3

This was a less popular question than **Question 4**.

- (a) (i) There were mixed responses to this question. Whilst 'spit' was the most common response given, a large number of candidates did not answer this correctly, a significant number choosing both distracters. There is a need for candidates to learn the names of landform types and be able to recognise them on maps and in photographs.
- (ii) Again, responses to this question were mixed. Some candidates full marks both marks because they were able to give accurate distances and directions, others were not able to demonstrate these simple skills.
- (iii) There seemed to be some confusion here and few candidates were able to give a clear sequence, with appropriate key terms, to gain full credit. Many responses focussed on erosion and failed to score. Candidates should be taught to explain processes, such as longshore drift, in a clear, step by step sequence with accurate use of key terms.
- (iv) The question differentiated well. Good answers gave logical explanations of the stages in dune formation with weaker responses being vague, referring only in very brief terms to the build-up of sand. Significant numbers of candidates confused wind and wave action and wrote about swash and backwash.
- (b) (i) Most candidates used the images well to identify three different opportunities, though some focussed on one idea only, particularly tourism.
- (ii) This question differentiated well. Stronger responses described problems under appropriate headings without repetition, most candidates gaining credit for one or more ideas based on injury or death, destruction of houses or businesses, and loss of farming land or its impact on farmers. Weak answers tended to be vague or repetitive, however there was also some good development seen from the strongest candidates.
- (c) Whilst a small number of excellent answers were seen the process was not well explained by many candidates. It was rare to see an answer which included explanation of erosional processes and a logical sequence of processes leading to the formation of the wave-cut platform. Many candidates focussed only on cliff collapse, often following the hard and soft rock sequence which was not wanted. Other answers provided the cave, arch and stack sequence but with no reference to cliff erosion or the resulting wave-cut platform, and some candidates wrote about rivers, waterfalls and plunge pools.

Most candidates included diagrams, but only a few were of good quality, helping to show understanding of the formation of the features

Question 4

This question was chosen by many candidates.

- (a) (i) Some candidates failed to answer this question however many did correctly shade the required area. A significant number of candidates confused the Tropic of Capricorn with the international boundary so only shaded up to the dashed line. Others missed the 0–50 mm area or the area above 200 mm in their shading.

- (ii) This question asked about the desert 'climate' however many candidates described other characteristics of a desert, such as its vegetation. Those who correctly interpreted the question typically scored marked for reference to the high daytime temperatures and low temperatures at night.
 - (iii) Responses to this question were characterised by a lack of understanding of how the factors explain the presence of a desert in Namibia. Some mentioned the Tropic of Capricorn or its significance, however many referred wrongly to the Equator or used inappropriate terminology such as 'below the Tropic of Capricorn'. Few responses showed an understanding of the significance of the wind direction (i.e. it blows overland to the deserts) and many did not appear to be familiar with the impact of a cold ocean current on climate.
 - (iv) There were some good answers which explained the rain shadow effect logically and fully, scoring maximum credit. However, most answers contained misconceptions such as the mountains 'block the rain', lack of vegetation prevents it, or strangely that a desert is the result of plate movement.
- (b) (i) Many candidates scored three marks by correctly identifying three links in the food web. Some candidates however only repeated the words 'depend on' and so gained no credit as they did not describe how they were dependent (eg for a food supply). Other candidates repeated the same idea three times using different animals.
- (ii) This differentiated well as many candidates referred to aspects of roots, leaves/cuticles and thorns. Some gave named examples and some gave explanations, neither of which were required as the command word was simply 'describe'. The stronger responses described a number of features, some of which they developed, however weaker answers tended to focus on one or two features, especially the leaves, and included irrelevant explanation.
- (c) Most candidates named the Amazon but there was little place detail to take them to level 3. Where candidates linked a characteristic with a simple explanation they scored well, typically for emergents, buttress roots and drip tips. Weaker responses described at length but did not give clear explanations of how the vegetation adapted to the climate. Some answers included irrelevant details about human effects on the tropical rainforest whilst others continued to write about the vegetation in deserts.

Question 5

This question was answered by a significant number of candidates but was less popular than **Question 6**.

- (a) (i) Most candidates identified a primary industry.
 - (ii) Generally answered correctly although some choices for manufacturing were incorrect or too vague, e.g. 'factory'.
 - (iii) This was generally answered well and a significant number of candidates scored full credit here. The main issue was that some answers did not compare or simply quoted statistics without any interpretation.
 - (iv) On the whole, this question was poorly understood and a significant number of candidates scored low marks. Where candidates did gain credit, it was typically for ideas relating to mechanization and/or improved skills/education. High quality answers were relatively few and they were characterized by reference to a range of different ideas in the mark scheme, some of which were developed.
- (b) (i) Generally this was not well answered as many candidates used the vague phrase 'near to' for each locating factor rather than using distance or direction correctly. When describing a location a mark can be gained for reference to each of the correct distance and direction from any named feature but not for words like 'near' or 'close'. Some candidates here gave reasons for the choice of location instead of just describing the location itself. Unfortunately, where candidates did give reasons in (i) some didn't then go on to give the same reasons where they would have been relevant in (ii).

- (ii) This was a challenging question but it discriminated well. Stronger responses linked the factor with a benefit or developed reason, with answers usually focussing on raw materials, transport of products and workforce. Weaker responses wrote in general terms about location factors rather than relating their answer to the named industries or the specific example shown.
- (c) Common case studies were Germany, Iceland, USA, and China. Many candidates seemed to struggle with the reference to 'importance' and included explanation at the expense of description. Many could list energy sources and give place specific references however this did not provide the development required to progress beyond level 1. Some were able to provide statistics, such as percentages of energy produced by different sources, the latter assisting them to describe their relative importance and raise the quality of their answers.

Question 6

This question was chosen by many candidates.

- (a) (i) There was lots of variation seen in the quality of definitions here – many were precise and accurate however others defined 'migrant' or omitted the 'leisure/vacation' element of visiting a location.
- (ii) Most candidates managed this well with only a few inaccurately plotted points or missing lines.
- (iii) Many candidates made good use of Fig. 6.1 to identify an increase in numbers, some elaborating by accurately quoting statistics and referring to the rapid rate of increase. Significant numbers referred to air travel or attempted to compare which was not required as the command word was 'describe'.
- (b) (i) Many candidates suggested jobs, whilst others included benefits such as increased sales or revenue from businesses (or examples), road improvements and cultural preservation. Significant numbers suggested foreign currency, development or benefits to the economy but did not say how this would benefit people. A common error was to give three examples of different jobs (or businesses from which earnings will increase) rather than considering different ways in which people will benefit as required by the question.
- (ii) This question allowed good discrimination. Problems for people were better answered than for the environment though many responses were vague (i.e. crime, drugs, overcrowding, shortage of resources) and did not elaborate sufficiently for any credit. Stronger responses typically referred to noise, traffic congestion and loss of living/farming space. A lot of candidates used the words 'natural environment' instead of stating exactly what aspect of it they were referring to (i.e. 'natural environment will be ruined'). Correct answers typically referred to deforestation and water pollution. Littering was frequently referenced in this section but no impact on the environment was suggested.
- (iii) This question was answered quite well by many candidates with many mark scheme ideas seen from candidates who made effective use of the various sources. Some lacked specific detail, including lots of value judgements instead, such as 'beautiful' 'amazing' 'idyllic' 'incredible' and 'breathtaking'. There were also many irrelevant references to transport features such as roads and airports, which are unlikely in themselves to attract visitors to the island.
- (c) Many different examples were seen and most of these were valid except those who named an entire country. Common locations which were suggested included the Great Barrier Reef and Victoria Falls. Despite the focus on management in the question many candidates focussed on the impacts of tourism and seemed to refer to management as an afterthought, usually simple ideas such as litter bins and fines for dropping litter at level 1. Stronger responses, included ideas about restricting access to areas, establishing nature reserves and educating tourists about how to conduct themselves, some attempting to develop them more fully.

GEOGRAPHY

Paper 0460/13
Paper 13

Key messages

In order for candidates to perform well on this paper they needed to be able to:

- ensure that the examination rubric is followed correctly, answering three questions, one from each section.
- select the three questions with care. Read them all through and study the resources provided with them before making a choice.
- answer all parts of the three chosen questions and ensure that sub-sections are not missed.
- read the questions carefully. If it helps to do so, underline command words and words which indicate the context of the question.
- have the correct equipment for the examination including a ruler and a calculator.
- respond in the correct way to command words used in questions – for example, ‘describe’; ‘suggest reasons’; ‘explain’.
- identify the correct focus specified in the question stem – for example, causes or impacts; problems or strategies; local, national or global; environmental or social.
- ensure that they respond correctly to key words and learn the meanings of geographical words and phrases in order to be able to define and accurately use geographical terminology. When defining words or phrases, candidates should not simply repeat a word or words as part of their definition.
- use the mark allocations and answer space provided in the question and answer booklet as a guide to the length of answer required and the number of clear points that need to be made.
- write as clearly and precisely as possible avoiding vague, general statements.
- write in full wherever possible, especially in the final two parts of each question, ensuring that ideas are developed with the correct focus.
- perform basic skills using population pyramids, graphs, data tables, photographs, text, diagrams and maps of various types, referring to them in an appropriate way to support ideas rather than directly lifting material from them without any interpretation. Ensure that evidence is given where required to support an answer and that best use is made of the information provided, such as the compass, scale and key on maps. Practise the skill of describing the features or characteristics from a photograph.
- if the rubric of a question instructs candidates to base their answer only on the information in a given figure, then answers that do not relate to that resource should not be included as they will not gain credit.
- have a range of case studies so that appropriate ones can be chosen for the topics tested.
- ensure that each case study used is at the correct scale. The syllabus identifies the scale required for each case study.
- avoid writing a long introduction to any question (e.g. to provide locational information) at the expense of answering it in detail.
- develop points and link ideas wherever possible in case studies and include place detail.
- ensure that comparative language and phrases are used where a question requires a candidate to compare.
- ensure knowledge of physical processes and an ability to explain a process, using key terms and clearly sequenced ideas.
- write in detail and develop ideas in 5 mark questions where development marks are available.
- when using the extra pages at the back of the question and answer booklet indicate that the answer is continued and clearly show the number of the question on the extra page. Candidates should continue answers on the specified continuation pages rather than inside the answer booklet or on extra sheets of paper.

General comments

The examination was considered appropriate for the age and ability range of candidates and it differentiated effectively between candidates of all ability levels. Candidates seemed to have sufficient time to complete the paper; however the final parts of the later questions were not always completed. The omission of other sections earlier in the paper however, suggested that lack of time was not an issue.

Most candidates followed the rubric by selecting a question from each section as required. Occasional rubric errors were still seen and a reminder to candidates to answer one question from each section is always helpful. Where candidates answer every question, this compromises the time available for each question and disadvantages them.

The presentation of answers from candidates was variable, though almost all were legible.

Questions 1 and 3 were the most popular questions within the first two sections. Responses to **Question 5** and **6** were quite balanced. There were good answers seen to all questions, including those requiring extended writing. The case study questions that were answered the most successfully were about the reasons for high natural population growth rate and the advantages and disadvantages of TNCs for their country of location (**1(c)** and **5(c)**). High quality answers in these case studies were characterised by developed ideas with some clear place detail. Weaker responses tended to be generic developments of ideas with little place detail to support them, whilst other responses were characterised by the use of simple, brief statements. In some cases a significant amount of detail included by candidates was not relevant to the question being asked, and sometimes long introductions occupied much of the answer space. An area for improvement for some candidates would be maximizing the marks scored on the part **(c)** questions.

Case studies require place specific information to allow candidates to access the highest level. This requirement can vary between questions – for example: a country (**Question 1**) or an urban area (**Question 2**), a river (**Question 3**) or an area of coast (**Question 4**). Candidates should carefully consider their choice for each question ensuring that they select an appropriate example and also that they have included appropriate place specific detail.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres better prepare their candidates for future examinations.

Comments on specific questions

Question 1

This was generally more popular than **Question 2** with more candidates attempting this question.

- (a) (i) The majority of candidates were able to correctly define population density, however a significant number of candidates incorrectly chose the statement that it was how large the population is.
- (ii) Most candidates were able to correctly calculate the population density of St. Lucia and also showed their calculations.
- (iii) This was mostly answered correctly. Occasionally candidates incorrectly stated that Trinidad and Tobago had the highest total population or was the largest island, and did not perhaps look at the whole of the map.
- (iv) This question was not well answered and candidates gave a whole range of answers, many incorrectly focussing on reasons for high natural population increase. The strongest responses were able to achieve some success with this question and considered factors such as variations in relief and economic opportunities. The full range of marks was seen.

- (b)(i) This question was not well answered with many candidates listing individual countries such as Canada or whole continents such as North America rather than stating regions such as the North of North America. Latitude was often weakly described with candidates stating that areas were above or below the tropics which did not gain credit. Few candidates identified that the distribution was unevenly spread or that there were many areas in high latitudes or polar areas. Some candidates gave reasons for the distribution rather than describing it and so gained no credit.
- (ii) This question differentiated well and there were some high scoring answers which accessed the full range of mark scheme points. Many candidates referred to types of climate which would restrict crop growth, such as cold or dry climates. Some candidates however simply referred to harsh or extreme climates without stating what made the climate harsh, or did not develop their explanations of how cold or dry climates limit human activity.
- (c) This question was well answered, and candidates found this a straightforward case study and it achieved the full range of marks. The strongest responses selected a suitable LEDC case study, made three well developed points as to why birth rates are high and/or death rates are low or falling and included some place specific detail, often relevant statistics. Weaker responses gave simple, undeveloped and often generic ideas, often naming MEDCs which do not have high natural growth rates or incorrectly tried to apply their knowledge of China's one Child Policy which gained little if any credit.

Question 2

This question was slightly less popular than **Question 1**.

- (a)(i) The majority of candidates correctly identified the feature typical of urban areas.
- (ii) The majority of candidates put the names of the countries in the correct rank order.
- (iii) Where candidates correctly identified the distributions they were comparing they answered this well. This question was better answered than **Question 1(b)(i)**. Candidates however need to be aware that Australia is a country whilst Australasia or Oceania is the continent, as the distribution should refer to continents or parts of continents rather than countries.
- (iv) This question was not well answered by most candidates. Responses did not show an understanding of the concept that urbanisation has already occurred in MEDCs and so the idea of rural-urban migration and the push or pull factors responsible for this are not relevant. Where candidates did gain credit it was for the idea that many people work in agriculture in LEDCs and so are in rural areas, or the concentration of tertiary industries is in urban areas in MEDCs.
- (b)(i) The majority of candidates correctly identified the urban services in the photographs.
- (ii) Most candidates gave a whole range of relevant problems faced by new migrants to urban areas in LEDCS. Some candidates however incorrectly considered international migration and so ideas such as language problems would not be relevant. Candidates need to be aware that ideas such as air pollution need to be developed to explain the problem it causes the migrants, such as breathing problems or asthma. Ideas such as no food were also not credited, as it is the lack of money to pay for the food rather than a shortage of food in the city as a whole.
- (c) This question discriminated well. Stronger responses referred to self-help schemes or sites and services schemes in the clear context of a named LEDC city. Many candidates however only made simple reference to strategies such as improving water or electricity supplies without a clear explanation of how this was done and so did not go beyond Level 1.

Question 3

This was a popular question and was answered by a significant number of candidates.

- (a) (i) There were mixed responses to this question. Whilst many candidates were able to give a clear definition, a surprising number of candidates did not answer this correctly. There is a need for candidates to learn the meaning of key terms more carefully.
- (ii) Again, responses to this question were mixed. Many candidates correctly stated that wind direction is measured by a wind vane, however many were unable to explain that it indicates the direction that the wind is blowing from rather than to.
- (iii) Most candidates correctly identified that a barometer measures air pressure and a thermometer measures temperature however many did not know that an anemometer measures wind speed.
- (iv) This question required candidates to describe the differences in the weather on two dates. Whilst a significant number did this well there were some candidates who simply gave the data for the two dates but did not describe the differences in words and so did not gain credit. A number of candidates were unable to state the wind direction as WSW on the 29th March. Candidates should be able to use the sixteen points of a compass.
- (b) (i) Some candidates gained full marks using accurate compass directions to describe the location of the highest rainfall isohyet. However many candidates were unable to describe the location accurately and used simple descriptions such as near Suva which did not gain credit.
- (ii) This question differentiated well and some high scoring answers were seen. Most candidates understood the question and were able to make some relevant points. Some candidates simply described the rain gauge rather than how it is used, though many correctly stated relevant siting factors.
- (c) Most candidates named appropriate examples and some detailed local knowledge was also demonstrated. Many candidates were able to make developed points about damage to homes and impacts on farmland and where good place specific detail was given they achieved full marks. However a significant number of answers remained at level 1 as most ideas were simple such as loss of homes and death or injury to people or farm animals.

Question 4

This question was less popular than **Question 3**.

- (a) (i) Many candidates were able to define the term coastal erosion, however some were unable to define erosion as the breaking away or wearing down of the land. Candidates need to be able to use terms other than the words in the key term to fully illustrate their understanding.
- (ii) Some candidates gained both marks here, however many correctly identified that Y was protected or sheltered by land but did not state that X was exposed to wind or waves. Few candidates considered the impact of the fetch on the coastline.
- (iii) Many candidates used the photograph well and gave valid descriptive points such as the colour or layering or steepness, however a significant number of candidates instead explained the formation of the landform and so did not gain credit.
- (iv) Responses to this question were mixed. Whilst there were some good answers with relevant erosional processes and the idea of the notch cut at the base and subsequent collapse and retreat of the cliff, it was clear that many candidates did not understand the sequence which resulted in the formation of wave cut platforms. Candidates should be taught to explain the formation of features such as wave cut platforms in a clear, step by step sequence with accurate use of key terms.
- (b) (i) Most candidates explained how the different methods of coastal protection worked rather than giving a description of the materials, structure and location and so did not gain credit here.
- (ii) Candidates found this question challenging and it differentiated well. Some candidates were able to identify how their chosen method of coastal protection would work and its advantages and

disadvantages with comparisons with other methods. Weaker candidates did not go much beyond a simple description of their chosen method.

- (c) There was similar performance to **Question 3(c)** with many candidates making simple points and achieving marks within Level 1. Most candidates did show some understanding of the dangers arising from a coastal location but few were able to describe the risk in detail using valid locational detail to support their answer.

Question 5

Responses to **Questions 5** and **6** were quite balanced in terms of numbers of candidates answering them.

- (a) (i) The majority of candidates correctly identified the HDI of Uruguay from the maps.
- (ii) Again the vast majority of candidates used the maps well and answered this question correctly.
- (iii) This was generally answered well and many candidates gained all three marks here.
- (iv) This question differentiated well. This question could be approached with reference to the indicators of development included in HDI, or an explanation of how this might be achieved. Weaker candidates struggled and referred to for example better schools or better health care with no suggestion as to how this could be achieved, such as building more schools or having more doctors and nurses.
- (b) (i) Most candidates were able to describe the relationship and referred to the GDP and energy use of two contrasting exemplar countries. Fewer candidates were able to identify that this is a positive relationship or correlation, or to state that the relationship is not a perfect one.
- (ii) This question discriminated well with some excellent answers referring to a variety of mark scheme ideas, some of which were developed, for example transport or power in the home. Weaker responses tended to simply consider the idea of being able to afford energy or giving a whole list of electrical appliances without developing their ideas sufficiently well.
- (c) Where candidates understood that the question was about impacts on the host country rather than the TNC they made a variety of valid developed points such as employment, economic growth and tax receipts and considered issues such as the exploitation of labour. Answers which were solely from the perspective of the TNC rarely gained any credit. Little place detail was seen, apart from general statistics which were often not convincing enough for credit.

Question 6

- (a) (i) A large number of candidates answered this correctly although some candidates were possibly unfamiliar with triangular graphs and did not attempt to answer this question.
- (ii) Well answered with a wide variety of exemplar occupations.
- (iii) Most candidates answered this well using comparative wording such as higher or lower, however some candidates simply quoted figures which did not gain credit as there was no comparison made between the two countries beyond the repetition of data.
- (iv) Answers were varied and the question discriminated well. References to differences in education and skills, technology or farming were common correct responses, with weaker candidates just focussing on one of these ideas. Candidates need to be able to consider other ideas such as the exhaustion of raw materials leading to a decline in primary industry, or a lack of money to set up factories in some LEDCs.
- (b) (i) Many candidates gained one or two marks here, with most understanding that components are put together rather than raw materials being processed. Use of the word 'assemble' or 'assembly line' was not credited as candidates need to be able to use other words in their definitions to demonstrate their understanding.
- (ii) A variety of answers was seen. Most candidates were able to explain that industries need to transport raw materials and also finished goods, however they often did not name the actual

locational factors such as near roads, railways, ports or airports. Few gave a full explanation referring to transport costs, bulk and perishability.

- (c) Many different examples were seen and most of these were valid. However, deforestation was often given as an example of an economic activity rather than naming the economic activity that had caused the deforestation. Where candidates mentioned this later in their answer they were able to gain credit. Most did name an appropriate area although sometimes a country was given which limited responses to five marks. Most understood the concept of environmental risks and referred to ideas such as habitat loss, soil erosion and global warming. To gain full marks candidates needed to consider both local and global impacts. Weaker responses described the economic activity in detail rather than considering the environmental risks and many considered the impacts on people rather than the environmental risks.

GEOGRAPHY

Paper 0460/21
Paper 21

Key messages

- Generally, candidates made good use of the data resources provided and studied them carefully before responding.
- The best answers were usually concise. Where only one or two lines are provided for an answer, this is an indication of the length of answer required.
- Candidates often failed to use the cardinal directions when referring to locations or positions on maps. Those answers which described map locations using words such as *left*, *right*, *above* and *below* gained no credit.
- The definitions of key geographical terms were sometimes confused. This includes *relief*, *drainage*, *settlement* and *land use*.
- Many candidates found the skill of drawing and interpreting cross-sections difficult.

General comments

The range of marks was similar to last year. There were some excellent scripts seen and a similar number of weaker ones. Questions which required a longer response were generally well written. Most candidates were able to complete the paper in the allotted time.

Question 1

- (a) Most candidates scored high marks in this section and made careful reference to the map key. Almost all candidates attempted part (iv), but only a few correctly identified the contour height as 1 000 m, instead giving the height of a neighbouring trigonometric point or spot elevation.
- (b) There were some high scoring responses in this section with most candidates attempting to answer the question using map evidence. The best answers considered different types of evidence including, for example, *flat and gentle land*, the presence of the *railway*, *bridges*, *industry*, *tourism* and the *river for water supply*. Some lengthy answers were repetitive with too much emphasis on tourism evidence such as camp sites, hotels and restaurants.
- (c) Some candidates achieved all the available credit in parts (i), (ii) and (iii) for *footpath*, *Nordaa* and *private road*. However, many struggled to locate these features, often only gaining credit for *Nordaa* in part (ii). There was a variable response to part (iv), with many candidates finding this difficult. A significant number of candidates failed to attempt it.
- (d) In part (i) many candidates understood the meaning of *relief* and referred to the *steep slopes*, *V-shaped valley* and gave appropriate *heights in metres*. Only a handful described the *winding* nature of the valley and its *convex* sides. Other candidates described the features and characteristics of the river itself, as well as the land use, which did not gain credit. Responses to parts (ii) and (iii) were mixed, with some candidates not understanding what was required. It was necessary to consider the whole distribution over the defined area and not just describe the locations of individual areas of cultivation. Candidates gained marks identifying the links between the areas of cultivation and the roads, settlements and less steep land.

Question 2

- (a) Most candidates scored the mark here for *Bulgaria*. The UK was also frequently and incorrectly given, probably because it had the highest positive value. In part (ii) many candidates quickly recognised the *increase in the west* and the *decrease in the east* and gave concise answers. Some answers listed figures for individual countries and failed to describe the overall pattern. Others referred to the migration figures on **Fig. 2.1** which were not relevant. Candidates who described the pattern using the words right and left gained no credit. In part (iii) there was some confusion between migration and population change, as shown on **Fig. 2.1**. Since both migration streams shown were towards Europe, they must cause the population to increase.
- (b) A high percentage of candidates gave correct answer of 2700 km for the distance between Khartoum to Benghazi. Using the scale line is to be encouraged as this is more likely to result in a correct answer than mathematical calculations. In part (ii) there were some excellent and carefully described answers and most candidates scored at least 2 marks. Some, however, did not take into account the sea route via the Canary Islands.

Question 3

- (a) Few candidates gained full credit in this section for a mangrove swamp **C** and a coral reef **A**. A huge variety of responses was offered.
- (b) Most candidates recognised that the coral reefs lay along the *north coast* of Australia, with some further stating that they are also commonly found along *the north west and north east coasts* as well, with *few in the south*. Whilst candidates also linked the distribution with the Tropic of Capricorn, few gained marks for this as stating “above and below the Tropic of Capricorn” did not gain credit. Few candidates recognised that the reason for the distribution was that coral needs warm water.
- (c) Candidates found giving a difference between the coral and mangrove distributions difficult. Some scored the mark, usually for noting that the mangrove swamps tend to be found further south in comparison with the coral reefs. Some candidates were confused by the ocean currents shown on **Fig. 3.2**. Of those who scored marks, almost all identified that the warm current led to 13 or more species of mangrove whilst the cold current led to fewer species.

Question 4

- (a) The best candidates identified the small bushes which were scattered over the area and located the green grass on the distant flat land. Some also noted the vegetation growing in the cracks in the rocks. Some found this section difficult and concentrated their efforts on describing the rocks, climate and soil rather than the vegetation, and did not gain marks. Some candidates referred to features of vegetation which could not be seen on the photograph, such as long plant roots, which were not given credit.
- (b) In general, candidates found this section easier than part (a) and gained more marks. Most recognised the dense nature of the forest with its large variety of species, whilst some recognised the palms and emergents. Many gave more than the required four valid points and scored full marks.

Question 5

- (a) Almost all candidates scored three marks here. Some candidates lost time by adding extra examples to the table that were not required.
- (b) The large majority of candidates were able to plot the additional information accurately on **Fig. 5.2**. Almost always, where errors were made, candidates plotted the amount as 16 000 GDP. Most candidates recognised the importance of sheep to farms in Group B as *very important* or the *second most important* with just a handful offering a correct numerical answer of *about a third of income*.
- (c) Most candidates gave the correct answer of 586 GBP per hectare for the average income for farms in Group A, with just a small number not understanding the necessary mathematical calculation

required. Whilst most candidates correctly stated that sheep were more important to Group B farms, few were able to back this up with the appropriate statistical evidence.

Question 6

- (a) All combinations of answers were offered in this section, with few candidates correctly stating both *it uses a non-renewable fuel source* and *it uses sea water for cooling*. Many candidates seemed to be uncertain about the nature of a coal-fired power station, often ticking *it uses a renewable fuel source*.
- (b) Many candidates gave a general description of energy conservation, rather than using **Fig. 6.1** to give examples of the power station's links with other industries to help conserve energy. They needed to recognise heat and steam as examples of energy and then link these with the houses, fish farm, oil refinery and pharmaceutical factory.
- (c) Most candidates scored higher marks in this section than in part (b), and many noted that water was being recycled. Examples quoted were water from the sea returned to the sea and water from the oil refinery being returned as steam to the refinery.

GEOGRAPHY

Paper 0460/22
Paper 22

Key messages

- When answering questions on photographs, candidate should focus on what they can see in the photograph and avoid giving background information which is not required by the question. This was an issue in **Question 3**.
- Questions often use the geographical terms *relief* and *drainage*. These terms have precise meanings which candidates need to know to be able to answer the questions. This was an issue in **Question 1** where candidates often wrote irrelevant answers.
- When giving figures in answers (e.g. altitudes, distances, temperatures), candidates should always quote the correct units. This was not always evident in **Questions 1** and **Question 5**. This was also commented on in 2017.
- Paper 22 is a skills paper with only 6 out of 60 marks for knowledge. Candidates should be aware of this and note the need to answer using the information provided in the question. This is particularly so when candidates are given the brief to answer “Using information from Fig. Xx.....”

General comments

Many candidates performed very well on all of the questions. Only the final part of **Question 6** proved difficult for large numbers of candidates. Some candidates found the physical geography questions (**Question 4** and **Question 5**) difficult, which indicated a slightly weaker knowledge of the weather, and earthquakes and volcanoes sections of the syllabus. The vast majority of candidates completed the paper in the time available and few needed to use the additional pages 17 and 18.

Question 1

- (a) Candidates generally identified the land use at **A** as *forest* and the type of land at **B** as *marsh*. The height above sea level at spot height **C** was usually given as *1236 m* but many candidates found it more difficult to give the height above sea level of the contour at **D**. The correct answer was *1200 m*, however many candidates gave answers which were not round numbers and could not be contour heights. In part (v), most candidates correctly identified the flow direction of the Glitra river as *south west then south* and the distance along the river in part (vi) as *8½ kilometres*.
- (b) Many candidates gained full marks on this part of the question, choosing services shown in blue or red in the map key. There was no particular pattern to the incorrect answers.
- (c) Many candidates correctly identified the feature at **X** as a *marked ski trail* and the feature at **Y** as a *marked footpath*. There was a definite improvement in cross section completion compared with 2017. Examiners looked for a profile starting just below 1400 m and at a height of 1300 m 16 – 20 mm along from the left hand side of the cross section.
- (d) There were many irrelevant answers to both parts of the question. Not only was description of drainage included in the relief section and vice versa, but also answers contained much irrelevant information about roads, land use and settlement.

The relief was generally *steep*, although many candidates thought that it was gentle. Many commented on the *mountainous* nature of the relief and gave the height of the highest point as *1602 m*, although some candidates failed to give the units. Surprisingly few mentioned the *valley* which was a prominent feature of the area. Additional marks could have been gained by noting its *V-shape*, *straight path* and that the *east was steeper than the west*.

Answers on the drainage were generally better. Candidates often noted the main *store Ula* river *flowing south west*, its *tributaries*, the *marsh* and *small ponds*. It was encouraging to see that very few candidates described the tributaries as flowing out of the river which has been the case in the past.

Question 2

- (a) Most candidates identified the type of graph most suitable to show the data as a *bar graph*. There was no particular pattern to the incorrect answers.
- (b) Most candidates noted that *Greece* was expected to have a population decrease in 2030.
- (c) Many candidates noted that *France* had the smallest population decrease between 1970 and 2012.
- (d) The difference in life expectancy between the two groups of countries was generally identified as *9 years*.
- (e) This was generally well answered with most candidates noting that population growth rates were *lower in the north* and that growth rates were expected to *decrease* in both north and south. Occasionally candidates confused north and south, possible because of the order in which they appeared in Table 2.1.
- (f) Most candidates noted that birth rates were *lower in the north* and that they had *decreased* in both north and south.

Question 3

- (a) Those candidates who followed the instruction in the question to “Describe the residential area shown in Fig. 3.1” performed well. They mentioned such points as the *shanty* settlement, *small, single storey* houses, *few windows*, *flat roofs*, *rocks on roofs*, *metal sheets*, *plastic sheets*, *high density*, the *fence* and the *electricity poles or wires*. Details that could not be seen in the photograph were not given credit. These included the income level of the people, their employment status, their journeys to work or the incidence of disease.
- (b) This part of the question also required candidates to answer “Using evidence from the photographs.....”. Answers commonly given credit included: the *space to cultivate*, *space for cars*, *space for drying clothes*, *space for privacy*, *toilets*, *windows* and the *more substantial buildings*.

Question 4

- (a) Most candidates completed the graph accurately and used the key given in the question. Most knew that the date with the greatest range of temperature was the *3rd*, however there were many incorrect answers to the meaning of the units mb, with about half of the candidates correctly answering *millibars*.
- (b) Answers to this part of the question were often weaker, despite similar questions appearing on various past paper. Most candidates correctly stated the wet bulb temperature as *21 °C* and the dry bulb temperature as *28 °C*, however some candidates failed to give the units. The depression of the wet bulb was often incorrect and sometimes the units were given as % and not °C. In part (iii), Examiners awarded one mark for the correct figure (53) and one mark for the correct units (%).

Question 5

- (a) Most candidates correctly identified plate margin **A** as *constructive* or *divergent* and plate margin **B** as *destructive* or *convergent*.
- (b) This was also generally well answered, with those candidates who were unable to identify the plate margins in part (a), often able to give two correct pairs of answers in part (b). Some candidates failed to put arrows on one or both diagrams.
- (c) Candidates frequently explained why the Atlantic Ocean is getting wider by describing the processes happening at plate margin **A**. They said that the *divergence of the plates* would allow *magma to rise* from the magma chamber to fill the gap, *creating new plate* and leading to *sea floor*

spreading. Very few candidates mentioned the lack of destructive margins in much of the Atlantic as being a contributory factor.

- (d) Answers were very variable. Many candidates identified the process of *subduction* at **Y** but fewer identified *volcanoes* as the feature at **X**.

Question 6

- (a) Most candidates identified the two correct statements as increased carbon dioxide in the atmosphere will increase global warming, and global warming is a result of an increase in the greenhouse effect. There was a wide range of incorrect answers.
- (b) Most candidates plotted the graph accurately, in the correct space and used the key correctly to label it. In part (ii), the graph interpretation was good, with many candidates referring to a 60% decrease in maize yields and a 6% rise in soya bean yields. Most remembered to give the units (%).
- (c) Candidates found this the most demanding part of the whole paper and very few candidates scored full credit. The emphasis in the question was on the changes that farmers might implement as a result of global warming and this meant that those candidates who simply quoted predicted changes in yields from Fig. 6.2 failed to score any marks. The question also instructed candidates to answer “Using information from Fig. 6.2 only,....” therefore references to irrigation and other farming practices were not given credit.

Based on the information in Fig. 6.2, farmers in temperate areas might grow *more wheat if temperature increases were low* (1 °C/2 °C) but grow *more maize if temperature increases were high* (3 °C).

Farmers in tropical areas might generally grow more rice and less wheat and maize. However, if temperature increases were low (1 °C) they might grow more rice and wheat.

GEOGRAPHY

Paper 0460/23
Paper 23

Key messages

- **Question 1(b)** was frequently omitted or responses were relatively weak, indicating room for improvement in interpreting and plotting cross sections.
- When identifying a feature on survey maps, candidates should name a specific feature and not write out a whole line from the key giving a list of features.
- The best answers were usually concise. Where only one or two lines are provided for an answer, this is an indication of the length of answer required.
- Paper 23 is a skills paper with only 6 out of 60 marks for knowledge. Candidates should be aware of this and note the need to answer using the information provided in the question. This is particularly so when candidates are given the brief to answer “Using information from Fig. Xx.....”

General comments

Many candidates found the paper demanding, in particular **Question 4**. However, the other questions all contained easier sections, enabling weaker candidates to attempt them. Candidates performed well on structured questions like **Question 1** and on questions requiring extended writing, such as **Question 2(a)(iii)**.

Question 1

- (a) When identifying the features on Fig. 1.1, **A** (cultural building) and **C** (historical site) were usually correct, however candidates found **B** (tunnel), **D** (400 m) and **E** (forest) proved more difficult. For the contour height candidates still commonly quoted the 428 metre spot height or the 486 metre trigonometric point.
- (b) Fig. 1.2 was an incomplete cross section, along northing 13, and candidates were asked to complete the western end. Moving west from 954130, the height decreased gently, then steeply, then more gently again, down to sea level at 0 metres.
- Candidates then had to mark the positions of a power line (**P**) and an area of cultivation (**C**). An unmarked footpath had already been labelled as an example of how they should do this. Candidates tended to get both parts of the question correct or neither.
- (c) Candidates were then asked to describe the distribution of built-up areas north of northing 14. These were on the flatter, lower land, adjacent to the coast and could be described as linear to the coast. They also appeared to be fairly regularly spaced. Responses needed to focus on the built-up areas, indicated by the shading, rather than the individual farms and houses.
- (d) There were two marks available for the grid reference, which enabled many to score at least one mark for identifying the right square (9914). The correct six-figure grid reference was either 996140 or 996141.
- (e) Candidates are often asked to describe relief and drainage of an area and do not always know what to include in their answer. Thus, the paragraph provided for completion, in part (e), will be a useful example when preparing future candidates. The highest point was between 400 metres and 460 metres. The hilltop slopes were more gentle or flatter than the lower slopes. Three small streams drained the area, with two towards the east, or south-east or the lake and one towards the south. Common errors included assuming that the spot height of 356 metres was on the highest point and assuming that the three green dots were in some way connected to the drainage.

- (f) Square 9613 contained a farm, while 9813 did not. Both squares contained an area of marsh. Most candidates found this relatively easy and many scored both marks.

Question 2

- (a) Photograph 2.1 was of a volcano in the Canary Islands and candidates were asked to name the type of volcano. Many had decided that this was a shield volcano, even though they had noted the steep slopes in part (a)(ii). However, the steep sides, the gap in the crater wall and the parasitic cone were all indicative of a strato-volcano. Others tried to name the volcano, based on frequency of eruption, as dormant or extinct. It was not possible to deduce this from the photograph, so this was not given credit.

In part (iii) candidates were asked to explain why it was important to give warnings of possible eruptions, and this was answered well. The photograph showed evidence of people living in the area. They would need warning in order to evacuate and escape the various hazards produced by the volcano. Warnings would also prevent people using the road to enter the area. Some candidates also noticed the lower crater wall on the side facing the town which might cause the blast and the outflow of lava to focus in that direction. Many candidates scored three marks.

- (b) Fig. 2.2 showed the readings from some instruments monitoring volcanic activity. The seismic activity was most likely to have been caused by an earthquake, while the gas showing the highest reading was sulphur dioxide (SO₂). Most candidates got at least one of these correct.

Candidates were then asked to explain why the volcano slope sometimes deforms just before the volcano erupts. The key word here was “before” with many candidates instead writing about how the slope of the volcano would change as a result of lava flow and other volcanic deposits. Instead they should have written about magma or gas pressure building up and changing the shape of the exterior slope from beneath. Some candidates did write about pressure but did not say what was causing it. Relatively few scored the mark here.

Question 3

- (a) The photograph in Fig. 3.1 showed a rural settlement in Lesotho and candidates were asked how relief, accessibility and water supply had influenced the location. The settlement was located on the *lower ground, next to the hill*, which could provide *shelter* from the wind. It was also built on the more *gently sloping land*, where *building and cultivation were both easier*. Various *roads* or tracks crossed the area, with *intersections* at the settlement, and *water supply* was available from the *pond* or reservoir and streams, such as indicated by the lines of trees in the background, or the dried-up channels in the foreground. Those who scored well on this question went into some detail about the relief, though it was still necessary to score at least one mark from each of the other two sections. Some responses did not show an understanding of the term “accessibility”.
- (b) Most candidates realised that **E** would be the best place to visit to buy furniture and they pointed out that it was the largest settlement in the area, a town. For further credit they needed to point out why furniture would be found in a town. Relatively few noted that as a high order, comparison good, it would need a high threshold population, thus making a village too small to support a furniture shop. The most common incorrect answer in part (i) was **C**. Candidates chose this because it was the nearest place to **B** and at a road junction for easy transport of the furniture.

Question 4

- (a) This question again referred to the photograph in Fig. 3.1, now focussing on the farmland. Candidates were asked to give evidence of soil erosion from the photograph. Most commonly candidates noticed the lack of vegetation, resulting in bare soil. Many focused on the steep slope of the edge of the plateau. However, they wrote about the loose rocks on the slope, rather than bare rock being exposed by removal of soil. A few noticed the gullies in the foreground of the photograph and those who described these generally wrote the best answers.
- (b) Candidates were then asked to describe ways in which farmers were trying to reduce or prevent soil erosion. Most candidates mentioned planting of vegetation of some kind but relatively few gave enough detail as to how this would prevent soil erosion. Other ways, such as lines of trees to reduce the force of the wind, cover crops to bind the soil, hedges to prevent animal movements,

trees planted inside the gullies, terracing, contour ploughing or strip farming were rarely noted by candidates.

- (c) Candidates were then given further information about climate and farming practices and were asked to suggest why the people living in the area may have been unable to prevent soil erosion. Many wrote about the dry season and harvesting leaving the soil bare and some also noted that the heavy rain would wash away the soil, especially as the young crops would not have developed extensive root systems. However, relatively few candidates scored three marks, since they often relied too heavily on the wording in Fig. 4.1, copying out the phrases without linking them to show understanding. Other possible responses here included comments on the slope, lack of irrigation water, lack of capital or labour and population growth. Few mentioned any of these.

Question 5

- (a) Fig. 5.1 showed the mean monthly rainfall for Lagos and candidates were asked to describe the variations over the year. Candidates usually pointed out the peak rainfall period around June and the low point of December. Some gained full credit for also noticing the rise in the first half of the year, the second rise to October or the double peaked pattern.
- (b) Figs. 5.2 and 5.3 showed the position of the Intertropical Convergence Zone in June and December. With the help of this information, candidates were asked to explain the difference in rainfall amounts in June and December. Candidates generally found this to be quite straightforward. Most noted that in June Lagos was near the centre of the Intertropical Convergence Zone, and thus close to the line of heaviest rain, while in December Lagos was located right on the edge of the zone. The most common incorrect approach was to describe the Intertropical Convergence Zone in relation to the Tropic of Cancer and Tropic of Capricorn, without reference to Lagos.

The line of heaviest rain passed over Lagos twice in twelve months. Some candidates had the correct answer but there were also a wide range of incorrect guesses.

- (c) Candidates were then asked to describe two characteristics of cumulonimbus clouds that would help in their identification. These are *dark* clouds, with *great vertical extent*, from their *low* base to their flat, *anvil-shaped top*, and are associated with *thunder*, *lightning* and *hail*. Responses were often for descriptions of colour or saying “tall” but descriptions were often rather vague.

Question 6

- (a) Fig. 6.1 showed electricity production for an Asian country and candidates were asked to state the amount of hydroelectricity produced in 1993. Answers in the range 85 TWh to 90 TWh were acceptable and many had a correct response. Errors were usually the result of misreading the key and quoting a value for one of the other lines.

Candidates were then asked to compare the use of fossil fuels and nuclear. Most wrote in some detail and usually scored at least three marks, pointing out that both initially rose but from 1998 nuclear began to decrease, while fossil fuels continued to rise. Many noted the dramatic decrease in nuclear from 2010 and the rapid growth in fossil fuels at the same time. Some noticed that fossil fuels were always higher than nuclear and that both tended to fluctuate. There was also a mark available for data, awarded for correct figures for both sources of electricity production in any one year and most picked this up for either 1980 or 2013, where the lines met the axes of the graph. Lower scoring responses were those that had over generalised, with phrases such as “nuclear increased until 2010”. Some had described the trend in non-hydro renewable instead of nuclear.

- (b) Finally, candidates were asked to suggest reasons for the difference in use of fossil fuels and nuclear after 2010. Most had some good ideas here. Many wrote about the dangers of nuclear and they often cited examples of incidents at nuclear stations. Some also discussed the possibility of the discovery of new sources of fossil fuels, improvements in mining technology or simply the need to increase fossil fuel output to make up for the decrease in nuclear. Many compared the relative costs of the two fuels and some realised that the end of use of nuclear was probably a deliberate decision.

GEOGRAPHY

Paper 0460/03
Coursework

Key messages

The number of entries for the coursework option remained stable compared with November 2017. This consisted mainly, but not entirely, of Southern Hemisphere centres although, there has been a rise in the number of Italian centres.

Although this report includes points arising from the moderation of this series, they are equally applicable for centres that make their entries in March or in June.

It is beneficial that a proposal should be submitted in advance for approval by Cambridge, however, if this has not been done, then centres are urged to do so. It is the main opportunity for Cambridge to offer advice based on good practice as well as comment on proposals which may hinder a candidate. Provided suggestions are at an appropriate level for those studying IGCSE and the topic is on the IGCSE syllabus, then approval is nearly always forthcoming. There is no need to resubmit this year on year if the proposal remains unchanged.

For markers who are new to the coursework option or who have already marked this module but feel they need more practice in its application, it is advised that they attend the appropriate course operated by Cambridge in their country/region or that they access the online training which is also available. In addition, all centres should make sure they have a copy of the IGCSE Geography Coursework Handbook which will help in identifying the exact requirements of a piece of coursework. It contains examples of some coursework together with comments on how they were assessed.

It must be stressed that this report focuses on points where the moderation process could have been a little smoother or where candidates could improve their coursework in order to access the higher grades.

General comments

With only a very few exceptions all candidate's work followed the route to geographical enquiry. Whilst all studies were in line with the syllabus, there was a wide variation of topics. This session the topics were predominantly based on Human Geography, with tourism being the most popular, followed by shopping patterns and land-use within cities. Some others related to the provision of leisure facilities within a city, patterns of migration and the impacts of mining. Physical Geography topics concentrated on rivers and sand dunes. Where studies were similar to last year it was pleasing to see how centres have improved them in light of comments made on their coursework report.

Many centres appeared to have devoted a whole day (or more) to data collection. Their candidates had been well organised into groups, but used their initiative to collect the data they required, and demonstrated a good sense of purpose. It was noted that those undertaking their field work individually or as a small group did not end up with so much data as those where groups were part of a larger data collecting exercise in which the data was collated by staff. Clearly in the latter case access to more data generally had the potential to lead to a more in depth analysis.

The programme of work for the candidates at most centres was clearly well organised, yet it also allowed individual learners to express themselves. Many centres adopted one or two core hypotheses with another hypothesis or guiding question chosen by the candidate. This invariably produced a good variety and more evidence of individual work. Whilst Cambridge would by and large, expect data collection to be a collaborative effort, it was noted that in some cases relatively little individuality was displayed; all candidates using precisely the same aims and virtually the same graphs and diagrams. In addition, some candidates

targeted too many hypotheses and this often resulted in a 'watering down' of their analysis/explanations, thus denying them access to the higher marks.

Once again most candidates stuck to the word limit. Although at present there is no penalty for exceeding it, we would expect the word limit to be adhered to, give or take one hundred words or so. Writing well in excess of 2000 words often means that a candidate loses focus on the aims of the investigation or has attempted too many hypotheses. If this proves to be a problem, please encourage candidates to declare their word count in future submissions; this should help them to focus on the issue.

Comments overall

Each centre will receive a coursework report which will refer to both particular strengths, and weaknesses. Points that are common to several centres are reported below and are based on each of the assessment criteria in turn.

Markers are reminded that *Knowledge and Understanding* should be assessed throughout the study and not just in the introduction. There is often a failure to demonstrate that the theory can be applied, and in this scenario, this assessment criterion was a little overmarked. A higher level of understanding is demonstrated for instance when theory such as Butler's model is applied appropriately in the analysis and conclusion. In many cases the aims and objectives were clearly stated, and in the best accounts the hypotheses were justified using relevant theory together with statements of expected outcomes. Unfortunately, some candidates just wrote out the hypotheses they had been given without comment. Background information was sometimes disproportionately long and not always relevant. This was typically historical information about the study area or the local climate, which added little to the aims of the investigation. A glossary of geographical terms was also not necessary. In some cases geographical theory was almost totally absent

Candidates continue to score well in the *Observation and Collection of data* criterion and this was again marked accurately. More centres are making the effort to make sure enough primary data is collected from a variety of parameters. This enables candidates to select only data that is relevant to their hypotheses, but at the same time they are able to achieve an element of individuality. Most candidates have achieved the correct balance between primary and secondary data, with the latter only occupying a subsidiary role. Secondary data however, may be important for comparison purposes, for example for a study with an historical element. The methodology of the data collection is increasingly being written up in tabular form. This often includes some evaluation of the data collection methods. However, it can still occupy too many words, so where the data is part of a class data collecting exercise, it can be trimmed to only include methods relevant to the hypotheses being tested. Whilst each hypothesis is justified, there are still many candidates who do not justify each of the sites chosen for data collection, even if they were all chosen by the teacher in charge. This may also apply to sampling procedures, especially when candidates are carrying out a questionnaire and have struggled to find enough people to interview in the time allocated.

The criteria *Organisation and Presentation* tended to be a little undermarked but it is definitely improving year on year. Many candidates provided some elements of sophistication in their presentation which warranted the higher marks in Level 3 instead of the lower marks, or the top of Level 2. Radar graphs, choropleths, river cross-sections, flow lines, and bars or pie charts located on a base map would be examples here. Another might be a number of appropriate and well annotated photographs. A correctly worked example of Spearman's Rank Correlation, for instance, would also qualify as a complex technique. Candidates should be told however, that photographs need more than just a title, and cross sections of a river should be drawn to the same scale to facilitate comparison; it is one thing to use a complex technique but another to ensure that it effectively displays the data. Some candidates however, relied only on pie, line and bar graphs and thus were unable to access the highest marks. There could still be some improvement in basic presentation skills such as titles, keys, scales and the provision of north arrows, but this is variable both between and within centres. There is an overreliance on internet sourced maps or satellite images with often little or no customisation to the study location including a lack of a scale. Some scanned images are also barely legible and thus add little in value to the study. Most centres followed the recommended structure for their studies including tables of contents and page numbering. In some cases however, the page numbers did not match those in the former. Indeed, in some studies the page numbers were missing altogether. Most, but not all centres are encouraging their candidates to integrate their data presentation with their analysis. This helps to ensure candidates analyse the data shown by each graph/diagram/map in turn, in order that its relevance to the aims of the investigation can clearly be distinguished and conclusions drawn at the end. Finally, a map giving the location of each of the key data collection sites is important; many candidates opt for a map which is either too large a scale or too small a scale, and thus it is difficult to relate the position of one site to another.

The *Analysis* continues to be the weakest area of study for many candidates, and a criterion which is often slightly overmarked. It should take up more wordage than any other section. The *Analysis* should not only be descriptive, but explanations should be provided for each of the findings which are, on the whole, not speculative, but usually based on theory. Anomalies should be identified and explained. It is the depth of understanding demonstrated in the explanation of patterns/trends/anomalies which usually singles out the higher level candidates. Often, this section tended to be too superficial and largely descriptive. Some candidates used bullet points where continuous prose is needed in order to convey the detail needed to link the key data and explanation. As was the case last year some markers gave mid-Level 3 for purely descriptive accounts where no reasoned explanations existed. Those candidates who employed statistical techniques did not always demonstrate that they understood their purpose. To contribute to a higher level mark for this criterion, in most cases a worked example would be expected together with the use of significance testing. This is in addition to the interpretation showing the degree to which the hypothesis is supported or not

The criteria *Conclusion and Evaluation* was often overmarked. Conclusions with little or no supporting evidence should not score highly in L3, even if the evaluation was strong. Many conclusions are still too short. Candidates are now well versed at linking their conclusions back to, as well as giving a verdict on, each of their hypotheses. However, each conclusion should be backed up with key evidence and in an increased number of cases this was absent. This evidence is usually selected numerical data, although can be reference back to stated characteristics shown on figures such as graphs, maps or tables. Reference to theory linked to the hypotheses and which was outlined in the introduction, was rather limited, for instance some candidates place a resort at a particular stage of Butler's model, but reasons for this were scanty or even non-existent.

Most candidates made some positive attempts to identify issues and suggest possible remedies should their projects be repeated, and therefore it was the strongest part of their concluding section. This in particular, referred to the methodology, with some evaluation appearing in the last column of methodology tables as well as at the end of the study. Some however, made just brief statements e.g. 'We were not allowed enough time' or 'It was difficult to get enough people to interview'.

Administration

All the samples were sent in good time to Cambridge, some well before the deadline. Most of the paperwork was completed accurately and included with the sample. In most cases the sample included an appropriate number of scripts representing a fair cross section of the marks awarded (to include the top and bottom of the mark distribution).

All markers applied the generic mark scheme for coursework assessment found on page 35 of the syllabus document. Although marking was conscientiously carried out, it was quite often the case that the criteria of Analysis and Interpretation and Conclusion and Evaluation were a little overmarked, whilst Organisation and Presentation was undermarked. The biggest adjustments (if any) were usually made at the top end where the Level 3 criteria were not met.

The Moderation process nevertheless went relatively smoothly especially as the order of the candidates was correctly judged by the markers. It was helped by comments made by markers within the body of each individual script to justify the marks awarded for each of the assessment criteria. These used the wording/phrases in the generic mark scheme. Many thanks for this.

Where there is more than one marker an internal moderation is essential to ensure a uniformity of marking standards across the teaching sets. When this happened, changes made to the candidate's total mark, were not always reflected in changes to the marks awarded for each of the assessment criteria. These changes should be written on the Coursework Assessment Summary Sheet.

As stated last year, it is advisable that centres check the completed documentation before sending, because once again there were instances of errors in the paperwork. Sometimes there was a mathematical error in the addition of the five assessment criteria on the Coursework Assessment Summary form. There are also occasional transcription errors from the Coursework Assessment Summary form to the MS1 mark sheet. Centres must not rely on Moderators discovering all such errors, and thus double checking is essential.

CGEOGRAPHY

Paper 0460/41
Alternative to Coursework

SECTION 2

Key messages

Every examination is different but there are usually a few generic tips and key messages that need making that should improve candidate performance in future. Most of these have featured in previous reports but the same issues do recur. Here are a few key messages that the Examiners feel will benefit future candidates if they are passed on by teachers:

- When answering hypothesis questions that ask whether you agree or not, always give your opinion first before any supporting evidence. This will usually be Yes, No or Partially/To some extent. If you are asked to support your decision with data then statistics must be used from the resources referred to. Data is quantitative; evidence can be qualitative or quantitative. If you make an incorrect conclusion to the hypothesis you will gain no credit for the answer.
- When giving figures in an answer always give the units if they are not stated for you.
- Read questions carefully and identify the command word e.g. *Describe, Explain*.
- When asked to compare, make judgements e.g. *higher, lower*, rather than just list comparative statistics.
- If comparing statistics, it is important to use paired data rather than one set on its own.
- Check you are using the resources that a question refers you to, e.g. *Use evidence from Figs. 1.5 and 1.6 and Table 1.2 to support their conclusion*.
- Attempt all completion tasks on graphs, tables or diagrams – not all the answers are on lines and in writing. Many candidates are missing out on relatively easy marks by not attempting these questions.
- Take into account the marks awarded. Examiners do not expect you to be writing outside of the lines provided so do not write a paragraph when only two lines are given – this wastes time.
- If you have to write more than the lines allowed indicate this with a phrase such as (*continued on additional page*). This is very helpful to the Examiner in finding your answers.
- When completing graph work use a dark-coloured pencil or pen as scripts are scanned for marking and light colours do not always show up. Always shade bar graphs and pie charts accurately.
- When you think you have finished, check that you have not missed a question out. Some questions are hard to find if they are on pages with a lot of graphs or maps. Make sure you have answered the questions on every page. This applies specially to questions where you are asked to complete tables, diagrams, graphs or maps.

SECTION 3

General comments

Most candidates found this examination enabled them to demonstrate what they knew, understood and could do. The overall range of marks was similar to previous years – with weaker candidates scoring on the practical questions, such as drawing and interpreting graphs and tables, and candidates of higher ability scoring well on the more challenging sections requiring explanation and judgement especially regarding hypotheses. Most candidates answered **Question 1** more successfully than **Question 2**.

There is less general advice to be given for areas for improvement with this paper compared with others. As there are no choices to make, it is difficult to miss sections out, although some candidates omit graph completion questions which are usually 'easier' to answer. Most points for teachers to bear in mind, when preparing candidates for future Paper 41 questions relate to misunderstanding or ignoring command words, and to the use of appropriate fieldwork techniques and equipment. Particular questions where candidates did

not score well often related to them not carefully reading the question, for example **Question 1(a)(ii)** where some candidates suggested why the traffic count should be done throughout the day rather than focussing on why it should be done for ten minutes at a time.

Unlike previous years a significant percentage of candidates appeared to 'run out of steam' and failed to attempt many of the later sections in **Question 2**. This may have been due to lack of time although, as stated earlier, time management is not usually an issue on this paper.

Centres should be aware that, although this is an Alternative to Coursework examination, candidates will still be expected to show that they know how fieldwork equipment is used and appropriate fieldwork techniques even if they have only limited opportunity for fieldwork within the centre. For example, **Questions 1(a)(i), 1(d)(ii), 2(a)(iv) and 2(f)** focused on specific equipment and techniques commonly used in fieldwork. Centres are encouraged to carry out basic fieldwork with candidates, especially using simple techniques which can be done on the School site or in the local area.

SECTION 4

Comments on specific questions

Question 1

- (a) (i)** The focus of this question was on the method of doing a traffic count. Most candidates identified the correct features, especially the tally method for counting vehicles. The most popular distractor was the statement about recording the speed of vehicles.
- (ii)** Many candidates misinterpreted the question and wrote about why the count should be carried out for ten-minute intervals throughout the day. Many candidates suggested that candidates conducting the count would become bored or tired which is not an acceptable reason for dividing fieldwork methodology. Few candidates understood that a period of ten minutes would be an appropriate time to get reliable or representative results.
- (b) (i)** Most candidates correctly identified site 10 as the site where most vehicles were counted. The incorrect answer which was chosen was site 8.
- (ii)** Most candidates drew the two bars accurately.
- (iii)** Most candidates agreed that the hypothesis was correct and the question differentiated well in terms of how effectively candidates used the data to justify their conclusion. Candidates focused on highest and lowest traffic numbers and described the change in traffic totals during the day. Some referred to total numbers from all sites and others focused on sites 5 or 6. Both approaches were acceptable, Whilst better candidates interpreted the statistics, weaker candidates copied them out which restricted their mark on this question.
- (iv)** The most commonly identified influencing factors related to times of going to and from work and School and lunchtime. Some candidates also stated that traffic numbers would be more during a working day than a non-working day or holiday time.
- (c) (i)** Most candidates drew the flow line accurately pointing in the right direction. However, 7% of candidates did not attempt the question. Weaker candidates incorrectly drew a single thin arrow which did not indicate the number of vehicles.
- (ii)** Most candidates correctly suggested three vehicle categories for counting. A common mistake was to include pedestrians as a vehicle category. A few candidates did not understand the meaning of 'category' as listed aspects of a car such as colour or make of car.
- (d) (i)** Many candidates who attempted this question gave incorrect answers. Candidates generally have a poor knowledge and understanding of sampling techniques which are a fundamental aspect of fieldwork.
- (ii)** As in the previous question many candidates showed little understanding of the reasons to use a sampling technique. Candidates suggested that sampling was 'easy' or 'quick' or 'reliable' or 'fair' which on their own do not explain why sampling is used. Few candidates explained the sampling

removes the element of candidate choice of who to question and therefore removes the possibility of bias in the choice. Few candidates suggested that sampling would be quicker than asking everyone which is one reason why sampling is used. Weaker candidates focused incorrectly on the advantages of a questionnaire.

- (e) (i) Most candidates correctly plotted the dividing line at 62% and correctly shaded the two categories. Some candidates drew the dividing line at 61% or 63%, possibly because they misread the scale.
 - (ii) The question was quite challenging but many candidates showed their understanding of the general relationship between the results of the questionnaire and the traffic count. They identified the fact that the times of peak traffic and suggested congestion were the same. Weaker candidates did not show understanding of this relationship and just included statistics which did not indicate the required link.
 - (iii) Most candidates plotted the data in the pie graph accurately. Some candidates reversed the order of the sections and thus only gained credit if the segments were correctly shaded. Again this graph completion question had a high omission rate.
 - (iv) The question differentiated well. Better candidates used evidence from all three questions in the questionnaire. Most candidates focused on the number of days traffic congestion was suggested and supported their statement with statistics. Weaker candidates focused on one answer in the questionnaire, usually picking one response out of the number of days on which traffic congestion was reported.
- (f) The final section required candidates to suggest different ways to reduce traffic congestion. From a wide range of strategies could be chosen the most popular were number plate policies, police officers or traffic lights, car sharing and cycle lanes. However, many candidates suggested ideas such as 'encourage people to walk' or 'people use more public transport'. Such responses did not gain credit because they lack strategies to support them. Similarly phrases such as 'better public transport' or 'build more roads' are too vague to be credited.

Question 2

- (a) (i) A large majority of candidates correctly identified the time of the highest time in the forecast.
 - (ii) Many responses to this question did not show a clear understanding of what the tide is or how it differs between the times of high and low tide. Consequently many of these responses did not focus on safety or access to the beach whilst doing fieldwork.
 - (iii) Almost all candidates identified the correct time from the weather forecast.
 - (iv) Responses to this question showed that for some candidates there was a difficulty in relating the weather forecast to fieldwork. Many suggested that the weather forecast was important in determining longshore drift but this was the wrong focus. Stronger responses focused on preparations which could be made when planning to do fieldwork depending on the particular weather which was forecast.
- (b) Most candidates found this question challenging. Longshore drift is an important process in the formation of beaches but many answers were vague and lacked detail. Despite the information provided on the diagram few responses showed an understanding of the process. Often responses referred to elements shown on the diagram such as prevailing wind, swash and backwash but did not relate these to movement of material up and down or along the beach.
- (c) (i) The majority of candidates suggested that the pebbles were painted so that they could be recognised or identified from others on the beach, so that the distance they had moved could be measured.
 - (ii) Most candidates correctly plotted the bar. The main error was plotting at 20 rather than 21. Fewer candidates drew the line which showed the average length of the long axis accurately.
 - (iii) This question was another good discriminator. Many candidates realised that the pebbles had moved and that smaller pebbles moved further than larger ones. Stronger responses supported

these ideas with statistics to show the different distances moved in relation to size or number of pebbles being moved.

- (d)** Many descriptions of the groyne lacked detail. Candidates need to state that the groyne was made of wood and give some indication of its appearance, such as a barrier or fence. Many responses focussed on one or the other but relatively few did both. More candidates explained how the groyne reduced the effect of longshore drift. By trapping sand or reducing its movement along the beach. Weaker responses were incorrect in stating that the groyne stopped the waves moving.
- (e) (i)** Many responses did not show a clear understanding of what a bi-polar survey involves. A common error was to suggest that the candidates asked 'experts' or local people to validate their survey. Also some candidates referred to making the results of the questionnaire reliable. Only the stronger responses wrote about consulting as a group to agree a judgement or averaging out the results.
- (ii)** The question was completed well by most candidates. The correct total score was usually calculated correctly but shading the results diagram was more difficult for some candidates. Common errors were to repeat the ticks given in the scoring sheet rather than shade the boxes, and to shade the results incorrectly.
- (iii)** This was a challenging question but stronger responses were able to give an evaluation of the extent to which coastal defences had a positive impact. These candidates realised that the data supported the hypothesis to some extent and used the data well to justify their decision. They referred to the three defences with positive total scores and the two defences with negative totals. Some candidates did not consider the overall impact of the defences but just referred to how effective they were in reducing erosion. Weaker responses just gave advantages and disadvantages of different methods with no attempt to evaluate their success.
- (f)** This question also differentiated well. Candidates had to describe a common fieldwork method to measure wave frequency. Stronger responses did so successfully, giving details about how they would count and measure time. A common error was to refer to 'counting waves' but not explaining in detail how this would be done, such as the waves hitting a post or breaking on the beach. Only the stronger responses also included the idea of taking more counts and averaging them.

GEOGRAPHY

Paper 0460/42
Alternative to Coursework

Key messages

- When answering hypothesis questions that ask whether you agree or not, always give your opinion first before any supporting evidence. This will usually be *Yes*, *No* or *Partially / To some extent*. Make your decision after weighing up the evidence then state it at the start of your answer. If you agree with the hypothesis, do not just repeat the wording of the hypothesis; you need to make a decision about it and state it too. There is no credit for repeating the hypothesis as an answer.
- When giving figures in an answer always give the units if they are not stated for you.
- Take care when adding plots to graphs and use the key provided. Also take care when joining lines up between plots as marks are often awarded for this in addition to the plots. Any numerical answers should be clear, e.g. a 4 often looks like a 9; a 2 like a 5, a 0 like a 6, a 1 like a 7.
- Read questions carefully and identify the command word, e.g. *Describe*, *Explain...* and also the key words, for example if asked for *data* then statistics are required whereas being asked for *evidence* could involve description as well as statistics.
- When asked to compare, make judgements, e.g. *higher*, *lower*, rather than just list comparative statistics. If comparing statistics it is important to use paired data rather than one set on its own. It is also important to indicate which statistics relate to which sites if appropriate, e.g. if comparing pebble size and velocity in a river you should state the site number that goes with each pebble size and velocity rather than just write 'when' or 'where'. This was particularly relevant to **Question 2(d)(iii)**.
- Check you are using the resources that a question refers you to for evidence or data, e.g. Fig.2.4 and Table 2.1. Remember some resources will be in the insert not on the examination paper. If you are referred to a map or graph and a table, use statistics from the table rather than try and judge them from the map or graph.
- Attempt all completion tasks on graphs, tables or diagrams – not all the answers are on lines and in writing. Many candidates are missing out on relatively easy marks this way; in this session this was particularly the case with **Questions 1(f)(i), 1(g)(i), 2(c)(i), 2(d)(ii) and 2(e)(i)**. Note that where there is a completion task the instructions are now **emboldened** to try and avoid you missing them out.
- Use a protractor and a ruler to improve accuracy and presentation where required. This was particularly the case with the pie graph in **1(g)(i)**.
- When answering questions candidates should take into account the marks awarded to it. The number of lines allocated to a question for responses is a useful guide to the required response length. A paragraph is not required when two lines are given for the response.
- Ideally candidates should write in black, using a sharp pencil, and make sure any plotting and shading of graphs stands out clearly.
- If you have to write more than the lines allowed, there are additional lined pages at the back of the examination paper to use. Indicate this with a phrase such as (*continued on page 17*). This is very helpful to the examiner in finding the rest of your answers. Also make sure you have indicated the correct question number on extra pages.

General comments

Most candidates found this examination enabled them to demonstrate what they knew, understood and could do. Weaker candidates scored on the practical questions, such as drawing graphs, and stronger responses scoring well on the more challenging sections requiring explanation, comparison and judgement especially regarding hypotheses.

There is less general advice to be given for areas for improvement with this paper than with others. Most points for teachers to consider, when preparing candidates for future Paper 42 questions, relate to misunderstanding or ignoring command words and giving plenty of practice using past papers to ensure they read the instructions carefully and complete graphs and other practical activities within the time allowed. Particular questions where candidates do not score well often relate to them not taking time to thoroughly

read and understand the resources referred to. Such failings mean that some candidates do not obtain a mark in line with their geographical ability.

Apart from the ongoing issue of many candidates not attempting straightforward completion tasks on graphs and maps, this session was notable for the lack of knowledge displayed of the three sampling techniques – Random, Systematic and Stratified. All candidates should be confident in answering questions on any of these sampling methods. This is the most significant area for centres to work on.

Centres should be aware that, although this is an *Alternative to Coursework* examination, candidates will still be expected to show that they know how fieldwork equipment can be used and how fieldwork methodology, demonstrated in the *Route to Geographical Enquiry* in the syllabus, is implemented even if they have only limited opportunities to carry it out in and around the centre.

Question 1: This question was based in a rural area of Kenya and required skills in reading and completing a pie graph and a map, knowledge of sampling techniques, problems in carrying out a questionnaire in a farming area and some knowledge of solutions to water shortage problems for the farmers. As usual candidates had to make decisions on two hypotheses that needed support and evidence from provided resources. The areas of concern were questions related to carrying out a pilot study and sampling techniques i.e. **1(d)(i)** where candidates did not explain well why carrying out a pilot survey was a good fieldwork technique and **1(d)(iii)** where many either made no attempt or gave sampling techniques that were inappropriate or unknown; what was needed was a brief description of Systematic or Stratified sampling. **Questions 1(a)** and **1(b)(i)** were the best answered; **Question 1(f)(i)** was, by far, the sub-section with the highest *No Response* on the paper.

Question 2: This question was about investigating possible differences between a river meander and a straight section of a river. It required candidates to demonstrate their knowledge of erosional processes and the use of a flowmeter to measure velocity. Skills tested included completing scatter graphs, bar graphs and completing the shading of velocity on a cross-section. Candidates were provided with one hypothesis decision regarding the pattern of velocity across a meander compared to the straight section; they needed to provide evidence to prove it was correct however this did not stop many giving their own different decision and trying to justify that. They were required to make their own hypothesis decision on the second hypothesis related to pebble size and velocity. Finally there were sub-sections on the changing size of pebbles downstream and the causes of these changes. **Questions 2(c)(i)** and **2(e)(i)** were the best answered. Disappointing answers were seen in sub-sections **2(c)(ii)**, **2(d)(i)** and **2(e)(iii)**. **Questions 2(d)(i)** and **2(e)(i)** were questions with a high *No Response*.

Candidates found **Question 1** slightly more accessible than **Question 2** and there was a slight fall in the mean from 31.3 in 2017 to 29.4.

Comments on specific questions

Question 1

- (a)** Almost all candidates made a good start by explaining the meaning of the terms 'Commercial farming' and 'Subsistence farming'. A small number gave the meaning in reverse and a very small minority made no attempt at the question. The most common answers involved 'selling' and 'for the family.'
- (b)(i)** Again most candidates worked out the answer was 155 thousand tonnes. A few misread the vertical scale and gave 151. A small number gave figures for other crops than wheat.
- (ii)** The answer required a statement describing the change in tea production and maize production between 2011 and 2014 which most candidates did well, i.e. tea production had increased and maize production had decreased. However quite a few candidates decided to describe every trend for each year including giving statistics even though the question stated '*Do not use statistics*'. Some candidates substituted wheat for maize in their description maybe following the use of wheat in **(b)(i)**. The key to success here, as in other questions, was to read the question carefully before answering.

- (c) This question involved using map skills related to a distance scale and other locational clues such as where the village was in relation to the main road and the dry lowland area. The correct answer of Athi Kamunyuni (Athi or Kamunyuni were also accepted) was worked out by over three quarters of the candidates. Quite a few responses stated Darajani as the answer but that is less than 10 km from the main road.
- (d) (i) The best answers to this question referred to ideas such as testing the methodology, checking and amending the questions in the questionnaire and improving it, and doing the survey to save time when it came to the real fieldwork including how best to approach farmers who may not be keen to participate. Many thought the area being used was the actual fieldwork area so that it would be good to get used to it and while testing your equipment is a relevant answer in many pilot surveys, it was not credited here where the equipment consisted of a pencil and a questionnaire.
- (ii) Candidates did not always make clear which random sampling system they were referring to for the advantages and disadvantages to be judged by examiners. Most said that one advantage was that there was no bias but that sampling could lead to information being unrepresentative; others chose random sampling numbers which would have a disadvantage of taking time to organise but would be less biased than just picking anybody where students may then exercise bias. In teaching this there is a need to distinguish the difference between the 'pick the next person you meet' random system and the 'random numbers' technique as each has different advantages and disadvantages. Overall candidates were better at stating an advantage than a disadvantage of random sampling.
- (iii) Candidates should have studied random, systematic and stratified methods along with their advantages and disadvantages. Here one mark was given for stating Systematic or Stratified then two marks for describing that system in relation to choosing 'the farms.' Candidates needed to be aware that the question was specifically about applying the sampling method to the farms so, if they chose systematic - as most did - they could choose every fifth farmer or fifth farm they came across for example or they could put a grid over a map and choose a farm from every fifth square. What was not accepted, as quite a few suggested, was choosing a farm every five kilometres because, while this is a regular interval, it is an irrelevant technique as there just would not be a farm at such an even interval. Fewer candidates suggested Stratified sampling but then found it hard to describe it in the context of farming with references to equal male/females and a spread of age groups.
- (e) (i) Quite a few candidates referred to primary data as first-hand information or original data that was being collected for the first time by 'you' or 'yourselves'. Some were a little vague giving definitions that might have been equally true of secondary data, e.g. data collected by the student or collecting directly from a source. A few added to their vague statements that primary data was not collected from the internet or from books which indicated they knew what it was but could not easily define it.
- (ii) The question was about practical difficulties, not just difficulties, so candidates needed to think about the problems of carrying out the questionnaire in the countryside as opposed to urban areas where interviewees are ready to hand and the students can stand and wait. In this exercise the students would be interviewing the farmers, not dropping off questionnaires to be collected later, which is rarely successful in terms of returns plus the added burden of collecting them. Given this scenario, the difficulties could involve transport and access around the area to get to the farms, finding the farmers who may be busy away from the farm, finding cooperative farmers who would be willing to answer the questions and also give honest answers - candidates seemed to suspect that many farmers would lie or just not know the size of their farm for example. It was not accepted that farmers were illiterate or could not read or write as they were not filling in the questionnaire; language difficulties however could be possible and was accepted.
- (f) (i) While the vast majority of candidates did this well. The technique may be unusual but there were three diagrams completed for the other three villages and a grid was provided to place the 3×3 squares to shade in the 9 hectares of land use. Most did draw the 3×3 square grids and shaded any 4 hectares for crops and 5 hectares for animals (giving 9 squares) to gain full credit. Quite a number ignored the grid provided and drew their own, e.g. drawing $5 \times 2 = 10$ squares but then shading in 9 of the squares correctly. In these cases they did not get the grid mark but did get the mark for correct shading.

- (ii) Half of the candidates chose the correct answer in that the hypothesis was correct. Others claimed it was false because both north and south grew crops and animals so the land-use was similar. However they should have been looking for the degree to which the land-use was different to justify the hypothesis as there were clear differences between north and south. In the north a greater area was used for crops than in the south and also a greater area was used for animals than in the south. They could have also stated that the use of the area in the north for crops and animals was quite even compared to the south where the area for crops was much greater than the area for animals. Statistics to back these statements up needed to total the areas used in the two villages in each area, not to compare two separate village statistics. A few identified the more straightforward answer that more cattle were in the north and more goats in the south. The key to success in this answer was to make clear which answers related to the north and the south. Some just compared the size of farms between the north and south with no discussion of the land-use.
- (g) (i) One plot was needed at 80 per cent which involved no difficult judgements and the last two shadings in the key needed adding in correctly on a conventional pie chart that was plotted clockwise. While a high number of candidates did this well, there were still a large minority who did not attempt. Some of the 80 per cent plots were inaccurate; examiners expected an exact plot at 80 per cent here with no tolerance as it involved no judgement.
- (ii) Quite a few candidates did not seem to know what the word 'environmental' meant whereby they made the incorrect decision that the hypothesis was correct when the environmental factors totalled 45 per cent and were outweighed by the non-environmental factors at 55 per cent. Candidates needed to look at the six listed farming difficulties and decide which were environmental and which other factors were non-environmental, e.g. economic/financial. The first three were environmental factors adding to 45 per cent; the second three were non-environmental adding to 55 per cent making the hypothesis false. The best candidates disagreed with the hypothesis, identified the larger other difficulties as economic or financial referred to the 55/45 per cent statistics and noted that the two main highest difficulties were poor transport links (22 per cent) and lack of cheap loans (20 per cent). A few made the correct hypothesis decision but then allocated 'pests and diseases' to the non-environmental group so their statistical evidence was flawed.
- (h) Most candidates took the pragmatic view and suggested small-scale solutions to the problems of low rainfall such as creating boreholes or wells, creating an irrigation system and storing rainwater in tanks which were all credited. Many candidates however suggested large-scale schemes which the farmers themselves could not develop, e.g. dams, reservoirs, desalination, cloud seeding or lengthy pipelines to Nairobi or Mombasa. Some also suggested the farmers moved away to wetter areas which was a negative solution that was not credited. Only a few suggested transferring water from the wetter north area to the south; this was credited. A few suggested water-saving techniques such as taking showers rather than baths and using 'grey' water which were not credited in this question.

Question 2

- (a) (i) Just over half of the candidates correctly placed *Erosion* in the top box and *Deposition* in the bottom box.
- (ii) Although most candidates could name an 'oxbow lake' as the feature that may form if a meander was cut off by erosion, many gave other suggestions, e.g. waterfall, island, and cliff. Some just stated 'oxbow' which was credited.
- (b) (i) This was answered well despite a few candidates treating the flowmeter as a float and letting its speed be measured 10 metres down the river with a stopwatch. There were plenty of opportunities to gain credit here even if one aspect of the answer was incorrect, e.g. it was acceptable to put the flowmeter or propeller in the water but not the pole; it was correct if the propeller 'turned' 'rotated' or 'spun' but not if it was 'moved.' Most gained credit for stating the propeller was put in the water and the speed was read on the velocity display.

- (ii) The advantage of using a flowmeter was answered more correctly than the disadvantages in that most candidates recognised that it would be more accurate or faster than other methods yet it had disadvantages too. While many correctly stated that it could be affected by rocks or weeds which were credited, many thought that it was expensive or could malfunction, which were not credited. The latter was only accepted if it referred to the risk of batteries going flat. Some candidates focused on aspects of safety if using it in deep or fast flowing water which was not credited.
- (c) (i) This shading exercise was completed correctly by most candidates; it just required a cross-hatch shading of the 0.51–0.60 box to get the mark. Many candidates did not attempt this question despite this box being the only one not shaded on the page and the emboldened instruction ‘**Plot the result...**’ there as a clear guide as to what to do.
- (ii) Very few candidates looked for and identified any distinctive overall pattern comparing the meander with the straight section, e.g. meander velocity increasing towards the far bank whereas in the straight section the speed is highest in the centre then fell again. Most candidates just compared individual sites and their different velocities and compared the highest speeds at two sites; there was no reference to any overall pattern of any kind. These answers rarely received credit.
- (iii) Partly because of difficulties with **Question 2(c)(ii)**, many candidates struggled to identify two different results although a few made perceptive observations about the current meander having higher velocities than the previous readings and a few did recognise that the current meander had a higher range of velocities than the previous one. Some just listed differences in velocities at specific individual distances which gave no overall view of the results or the main differences required.
- (iv) As mentioned above, the difficulty with **Question 2(c)(i)** gave a few knock-on effects with the rest of part (c) but this sub-section was answered more correctly than (ii) or (iii) previously. Most realised that two different methods were being used or that it was possible for student errors in either method. Some referred to the weather or rainfall making a difference but did not specify to which meander this might apply.
- (d) (i) Candidates found this a difficult question to answer. Candidates were expected to refer to how callipers or a pebbleometer would be used to measure pebble size here. They should have explained how a pebble would be clamped/placed between two jaws and then the length/long axis of the pebble could be measured using a ruler/tape or a scale. This unfortunately was not how most candidates read the question. Many described how they would sample pebbles from the river bed by using sampling techniques or even a quadrat and then added how they would measure the size or even weight by weighing them in a container. Very few gave any detail as to how the size or long axis/length of a pebble would be measured on the right instrument.
- (ii) Some candidates thought that the two graphs were complete and made no attempt to plot the two points required. These were two straightforward plots for those that attempted them but a small number used the 0.2 and 0.4 horizontal labels to plot from instead of the velocity and average length statistics they were referred to in Table 2.1. Although most plotted the two points correctly, a few thought one small vertical square equalled one centimetre of length and plotted 8 and 17 too low as two squares on the vertical scale equalled one centimetre length.
- (iii) Splitting the two decisions regarding the hypothesis for the meander and the straight section helped many candidates focus on a manageable answer rather than looking for one overall answer that applied to both. While many candidates gave the correct answers (Meander – true; straight section- false) they did not always back this up with data as clearly stated in the hypothesis and question. A significant minority did not attempt this question.
- (e) (i) Almost all candidates could plot the two bars at 21 and 8 although a few misread the vertical scale and plotted their bars at 20.5 and 6.5 instead. Again a small percentage of candidates did not attempt this question.
- (ii) Most candidates recognised, with detailed statistics, that the size of pebbles and numbers changed; that there were an increased number of pebbles downstream and a decreased number of larger pebbles. Those that just made general statements without any firm statistical evidence were not credited but many gave good answers such as the ‘*number of pebbles 16–20 mm decreased further downstream from 5 pebbles to 2 pebbles*’. Just to state that there were smaller pebbles downstream echoed the question with no evidence from the data provided.

- (iii) It was important that candidates described any processes of erosion rather than just listed the usual ones of abrasion, attrition and solution. In answering such questions use of correct vocabulary does not gain credit; responses should show an understanding of what the terms means what these mean, e.g. some candidates stated attrition then described abrasion. Some candidates referred to the time that pebbles had been in the river, i.e. the longer time equated to more erosion and the heavier pebbles were deposited earlier so the light ones that travelled further downstream caused a subsequent smaller bedload in the lower course. One misconception that many candidates have is that the average velocity decreases in the lower reaches so pebbles cannot be carried and are therefore deposited. While looking at the long profile of a river and the fact that the gradient gets less steep lower down would suggest that the river is moving more slowly, it is not true as the Bradshaw model mentioned at the start of (e) makes clear. The average velocity of a river actually increases in the lower reaches partly due to more water arriving from tributaries and the increased depth reducing friction at the river bed. This misunderstanding affected candidate choices in (f). A significant number did not attempt this basic test of understanding of the erosional processes taking place in a river.
- (f) The correct answer was rows 2 and 4, i.e. 'channel depth increases downstream' and 'discharge increases downstream.' The other distractors should have been considered but were incorrect. The most popular wrong pair of answers was row 1 and 3, i.e. 'average velocity decreases downstream' and 'channel width decreases downstream.' While it was easier to understand the former incorrect choice, it was strange that candidates thought the width of a river was less downstream.

GEOGRAPHY

Paper 0460/43
Alternative to Coursework

SECTION 2

Key messages

Every examination is different but there are usually a few generic tips and key messages that need making that should improve candidate performance in future. Most of these have featured in previous reports but the same issues do keep coming up again despite the entry being a fresh batch of candidates with several new centres. Here are a few key messages that the Examiners feel will benefit future candidates if they are passed on by teachers:

- When answering hypothesis questions that ask whether you agree or not, always give your opinion first before any supporting evidence. This will usually be Yes, No or Partially/To some extent. If you are asked to support your decision with data then statistics must be used from the resources referred to. Data is quantitative; evidence can be qualitative or quantitative. If you make an incorrect conclusion to the hypothesis you will gain no credit for the answer.
- When giving figures in an answer always give the units if they are not stated for you.
- Read questions carefully and identify the command word e.g. *Describe*, *Explain*.
- When asked to compare, make judgements e.g. *higher*, *lower*, rather than just listing comparative statistics.
- If comparing statistics, it is important to use paired data rather than one set on its own.
- Check you are using the resources that a question refers you to, e.g. *Support your decision with evidence from Fig. 2.4 and Table 2.1*.
- Attempt all completion tasks on graphs, tables or diagrams – not all the answers are on lines and in writing. Many candidates are missing out on relatively easy marks by not attempting these questions.
- Take into account the marks awarded. Examiners do not expect you to be writing outside of the lines provided so do not write a paragraph when only two lines are given – this wastes time.
- If you have to write more than the lines allowed indicate this with a phrase such as (*continued on additional page*). This is very helpful to the Examiner.
- When completing graph work use a dark-coloured pencil or pen as scripts are scanned for marking and light colours do not always show up. Always shade bar graphs and pie charts accurately.
- When you think you have finished, check that you have not missed a question out. Some questions are hard to find if they are on pages with a lot of graphs or maps. Make sure you have answered the questions on every page. This applies specially to questions where you are asked to complete tables, diagrams, graphs or maps.

SECTION 3

General comments

Most candidates found this examination enabled them to demonstrate what they knew, understood and could do. The overall range of marks was similar to previous years – with weaker candidates scoring on the practical questions, such as drawing and interpreting graphs and tables, and candidates of higher ability scoring well on the more challenging sections requiring explanation and judgement especially regarding hypotheses. Most candidates answered **Questions 1** more successfully than **Question 2**.

There is less general advice to be given for areas for improvement with this paper compared with others. As there are no choices to make, it is difficult to miss sections out, although some candidates omit graph completion questions which are usually 'easier' to answer. This is an on-going problem from year to year despite it being highlighted in each report to centres. Although there were no significant reports of time issues some candidates do write too much in some sub-sections. Candidates should be encouraged to

answer more succinctly and perhaps give more thought to their answers. Most points for teachers to bear in mind when preparing candidates for future Paper 43 questions relate to misunderstanding or ignoring command words, and to the use of appropriate fieldwork techniques and equipment. Particular questions where candidates did not score well often related to them not carefully reading the question, for example **Questions 2(c)(iii)** and **2(d)(ii)** where some candidates ignored the hypothesis conclusion which was given and made their own conclusion, and **Question 2(c)(iv)** where some candidates wrote about variations in environmental quality in urban areas but did not focus on industrial areas. As in some previous papers **Questions 1(g)** and **2(f)** required candidates to suggest suitable investigations to extend their fieldwork. This type of question is frequently included on this paper and is an area which centres should practise with candidates. However, it is not good practice to develop a series of generic improvements or methodology which may apply to all fieldwork, as such suggestions tend to be vague and not worthy of credit.

Centres should be aware that, although this is an Alternative to Coursework examination, candidates will still be expected to show that they know how fieldwork equipment is used and know appropriate fieldwork techniques even if they have only limited opportunity for fieldwork within the centre. For example, **Questions 1(b)(i)**, **1(c)**, **2(b)(iii)** and **2(b)(iv)** focused on specific techniques commonly used in fieldwork. Centres are encouraged to carry out basic fieldwork with candidates, especially using simple techniques which can be done on the School site or in the local area.

SECTION 4

Comments on specific questions

Question 1

- (a) (i) Most candidates correctly identified 'source' as where the stream begins. Weaker responses suggested all distractors
- (ii) Again most candidates correctly identified 'confluence' as where the streams join. Tributary was most commonly chosen in error.
- (b) (i) Nearly all candidates correctly identified 'slippery surfaces' as the hazard posing the greatest risk.
- (ii) Whilst candidates suggested a variety of ways to manage the three hazards, some were more realistic than others. Many candidates wrote about wearing suitable footwear to avoid slipping, and not drinking river water to avoid catching disease. There were a few common suggestions for managing the danger of fast river currents including avoiding the part of the river where the fast current was, using a rope attached to a tree, and working with a partner who could give help if necessary. Some responses lacked relevance to the fieldwork and thus were not credited and these included not swimming in the river, wearing a life jacket, and taking medicines to avoid catching disease.
- (c) Nearly all candidates correctly matched the three photographs with the method shown. Weaker responses confused the photographs which illustrated the measurement of width and depth.
- (d) (i) Most candidates identified the correct method to calculate cross sectional area. The main error was the choice of depth minus width.
- (ii) Most of the candidates who did draw the bar scored one mark. Candidates need to plot bars on a graph with precision, as a small minority were too inaccurate in plotting above the 0.5 m line.
- (iii) The question was a good discriminator. Most candidates made the correct conclusion that the results partially supported the hypothesis. Some candidates did not make a general statement to explain why they had chosen 'partially' by considering the general pattern shown by all the sites. Many candidates identified the exceptions to the general pattern. Also most candidates gave examples to support the overall trend and to identify anomalies.
- (e) (i) Most candidates plotted the sinuosity score accurately and drew the correct dashed line. Again there was a relatively high omission rate.
- (ii) Like the other hypothesis conclusion, this question gave good differentiation. Most candidates correctly concluded that the hypothesis was true, although some candidates decided that the

hypothesis was partially correct because of the one anomaly at site 8. Candidates should not be persuaded that one exception breaks the overall pattern, as in these results where there was a clear pattern of increasing sinuosity downstream. Many candidates correctly supported their conclusion with average sinuosity scores from above and below the waterfall.

- (f) (i) Most responses did not explain why a river valley floor widens downstream. Although many of these suggested it was due to erosion, only better responses referred to lateral erosion or erosion of the banks. Weaker responses suggested that it was due to deposition or changes in the speed of flow or volume of the river.
- (ii) Most candidates correctly plotted the bar; although weaker responses did not use the scale correctly and plotted the bar at 7.4 m. Precision was required in plotting the bar so that it was below the 8.5 m line.
- (iii) Where candidates realised that comparative evidence was required from above and below the waterfall, they usually gained full credit. Some responses did not make the correct comparison and chose both sites from either above or below the waterfall.
- (g) This question required candidates to describe a fieldwork method to measure another river characteristic. Good discrimination was achieved with stronger responses writing a detailed description of how they would measure river velocity using floats or a flowmeter. Weaker responses typically wrote a slightly confused account of methodology to measure river speed. A minority of candidates described a method to measure gradient of the river bed. Answers varied from detailed accounts of how to use the poles and clinometer to vague ideas about 'measuring slope across the river'. Other characteristics which were referred to by small numbers of candidates included size and roundness of river load (the methods were often mixed up), pH measurements, use of indicator species and visual pollution. Generally these minority choices were described in less detail.
- (h) The question gave good differentiation. Stronger responses candidates gained full credit for a detailed explanation of the stages of waterfall formation, typically referring to bands of hard and soft rock, differential erosion, undercutting to produce an overhang of hard rock, and collapse of the hard rock layer. Many also included details about the plunge pool and types of erosion. In contrast weaker responses showed little understanding of the processes or their sequence and suggested only that the river wore away the bed of the river in some places more than in others.

Question 2

- (a) Most candidates plotted the two sites in the correct locations. Candidates found more difficulty in plotting the site to the east north east. Some candidates plotted the site in the correct direction but failed to plot the distance with sufficient accuracy.
- (b) (i) Nearly all candidates put the descriptions of traffic amounts in the correct order.
- (ii) The question was challenging for many candidates but most achieved some credit. The responses which were most frequently given referred to having a standard to refer to when giving a score and making the decision less subjective. Stronger responses also noted that the descriptions were quite specific and would provide a good basis for scoring. In contrast weaker candidates were typified by use of words such as 'quick', 'easy', 'reliable' and 'fair' without any supporting context.
- (iii) Whilst weaker responses only explained that conditions would be different during the day, better responses exemplified what would be different, such as noise or traffic.
- (iv) Many candidates suggested appropriate advice about safety, usually focussing on avoiding traffic accidents, working with other students not alone, and behaving in a way to reduce dangers such as not talking to strangers or going into possibly unsafe areas.
- (c) (i) Many candidates drew an appropriate results sheet. They included categories to look at, a place for scoring each category, and a space for the total environmental score. However, a significant number of candidates omitted a space for the total score.

- (ii) Most candidates plotted the individual score and the mean score accurately. Some candidates misread the vertical scale and assumed that each line represented one point on the environmental quality scale rather than 0.5. Thus both plots were inaccurate.
 - (iii) The question was generally well answered but also proved to be a good discriminator. Most candidates agreed with the hypothesis, though some weaker responses ignored the question statement and made their own conclusion of partly true or false. Average environmental scores for the categories were well used as supporting evidence along with descriptions of which categories were highest and lowest scoring.
 - (iv) This question was challenging for many candidates. The main reason for this was misinterpreting the question. Candidates tried to explain why there were differences in the quality of the environment between central and suburban locations but did not focus on industrial sites. Where weaker responses focused on industry, they failed to make any comparison between types or age of industry, and just listed problems of industrial sites such as noisy or polluted. Only stronger responses candidates referred to different examples of industries to explain why the environmental quality varied.
- (d) (i) The question had the highest omission rate. Candidates who attempted the question usually plotted the score accurately.
- (ii) The question was challenging but also proved to be a good discriminator. Most candidates accepted the conclusion that the hypothesis was false. Stronger responses explained why they agreed with the conclusion by stating that there was no relationship between the two variables or there was no pattern visible on the scatter graph. Most candidates identified two examples of scores and distances from the town centre to show that the hypothesis was false.
- (e) The question was another good discriminator. The stronger responses described specific actions which could be taken to improve various aspects of the environment. The most popular responses referred to litter bins, cleaning graffiti, laws about pollution, and planting trees or cutting grass. Answers about traffic were more general and sometimes too vague, such as 'build more roads'. However, valid suggestions included pedestrianising areas and creating car parks to reduce on-road parking. In contrast, weaker candidates were typified by responses such as 'improve the area' and 'give more money to the area'.
- (f) The final question focused on an extension task which could be used to investigate the opinions of local people about the environment at the various sites. Most candidates suggested a questionnaire or interview. The question differentiated well as better candidates included reference to ideas such as a technique to achieve an appropriate sample, questions to focus on in the questionnaire or interview, and how the fieldwork should be organised within the group of candidates. Candidates did not receive credit for reference to recording data or plotting scores as these are tasks to be undertaken after fieldwork has taken place.