GEOGRAPHY

Paper 0460/11

Paper 1

Key Messages

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

- ensure that examination rubric is followed correctly, answering three of the six questions only.
- read the question carefully – it is important to spend time doing this. If it helps, underline command words and words which indicate the context of the question.
- know the meaning of, and respond correctly to command words – e.g. know the difference between describe and explain, be able to compare.
- identify the correct focus specified in the question stem – e.g. causes or impacts, natural environment or people.
- be aware of the scale of the question – city or country or area? Candidates need to read the question carefully.
- 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 points to be made.
- develop ideas in the correct way, for example, development of impact rather than cause. Underline key words and key command words in the question to help identify this.
- perform basic skills such as interpreting graphs, photographs and maps of various types.
- know how to approach a question which asks for comparison.
- provide evidence or data from a source if the question asks for it in order to get full marks. Data needs to be used to support statements being made rather than just being lifted and presented in isolation as in **Question 2(b)(i)**.
- learn the meanings of key words in order to be able to define and accurately use geographical terminology. Key word glossaries for Centres to build up would be advantageous for candidates.
- write developed ideas wherever possible, especially where extended writing is required in the final two parts of each question.
- have a range of case studies so that appropriate ones can be chosen for the topics tested. Some seem to have too few case studies and try to apply them inappropriately.
- include place specific information in case studies; however, care needs to be taken that this is not done at the expense of answering the question. Place specific information was lacking this year.
- make it clear, when using the extra space at the back of the question and answer booklet, that the answer is continued and indicate the number of the question accurately. Many candidates do not indicate that the question is continued.

General Comments

The examination was considered appropriate for the age and ability range of candidates and it achieved widespread differentiation. As expected, the most perceptive and well prepared candidates performed superbly across the paper and some excellent geography was seen. Such candidates were familiar with, and able to cope with handling the wide variety of ways in which geographical data was presented to them, handled the skills involved and displayed a mature and sophisticated knowledge and understanding of the topics tested. Most candidates were able to make a genuine attempt at their chosen questions and attempted most sections; however, clearly weaker candidates found it difficult to interpret tasks and write effective responses to some or all questions. In such cases, it is difficult to determine whether their command of English hampered their performance or whether their geography was inadequate. Many candidates still confuse key terminology such as describe, explain, compare, changes/differences and natural (rather than human) environment. Likewise a comparative answer must be comparative to gain credit.

Case studies require specific place information in the example to allow access to the highest level. This requirement can vary between questions – country, town or city, area. Some candidates still do not carefully enough consider their choice, limiting their mark by inappropriate choices, for example choosing a country

rather than an area (**Question 6**, **Question 4**) or a continent rather than a country (**Question 1**), or a country rather than a settlement (**Question 2**).

As previously stated, many candidates still miss key words such as 'changes', 'local', and 'natural' environment which results in answers not gaining full credit. This is especially evident in case study responses and longer responses.

There were some good case study answers on the impacts of drought and high technology industry, although, on the whole, the other four case studies produced many weak responses. In some answers, where case studies contained developed ideas, they tended to be generic developments of ideas with little place detail to support them. This was especially true in **Questions 1(c)**, **2(c)** and **3(c)**.

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

(a) (i) The majority of candidates answered this correctly and gained the mark for 'Asia'.

(ii) Many correct answers were seen for the full two marks, although there were some errors in part **B**, particularly identifying South America rather than Asia.

(iii) In general, candidates answered this question well by simple references to reasons for high birth rate and/or decreasing death rate. Some candidates were sidetracked into irrelevant references to migration and/or internal migration, and there were some candidates who vaguely referred to Africa as being 'LEDCs' or similar.

(iv) Most candidates scored well here – overall there was a wide spread of responses seen. Some responses were vague citing overcrowding, pollution, more crime, etc. and a few wrote about the reasons for overpopulation rather than the problems caused by it. Such answers tended therefore to repeat whole or part of **(iii)** and scored poorly.

(b) (i) Most candidates seemed to understand what was required here by 'distribution'. Marks were usually awarded for reference to the capital city/Kampala and/or Lake Victoria. Common problems were the inability to describe using acceptable terminology (e.g. 'under/above the Equator' is not acceptable) and the lack of precision (e.g. 'sparsely populated near the border of the country/in the Centre, densely populated near water'); this may be true of some areas but not others, so more precise descriptions are needed. It was surprising to see so many candidates writing about parts of Uganda that were on the coast/inland.

(ii) This question differentiated well and there were some full mark answers focussing well on relief and climate, with good developed explanation. However, many answers were weak with simple statements (e.g. a 'bad climate', 'a good relief' and some including irrelevant details which suggested that 'physical factors' were not always well understood). Similarly, some candidates did not link population distribution and physical factors. Instead they listed physical factors but did not explain whether people lived here or not. A few mentioned natural hazards such as volcanoes as reasons not to live in a place, which did not get a mark.

(c) The focus here should have been on changes in population structure, but for many candidates it simply became changes in population size, reductions in an LEDC, for example, or in China as a response to the one child policy. China was an appropriate case study, providing candidates wrote about the resulting changes in structure, e.g. 'reduced birth rates led to a decrease in young dependents or a narrowing of the base of the population pyramid'. This would be a Level 2 response and Level 3 if accompanied by relevant data. Another example would be 'people are living longer which has led to a widening of the top of the population pyramid or increasing numbers in the elderly dependents'. However, many simply wrote about the policy and how that reduced growth rates. Any LEDC would have worked well here, with the focus on the impacts of reducing birth rate and death rate on the young and old dependents. Alternatively, most MEDCs could have been chosen, with the focus on ageing population. Relatively few candidates produced such high quality answers.

Question 2

(a) (i) Most candidates managed to identify an appropriate settlement to gain credit.

(ii) Generally, candidates were more successful defining urban settlement than dispersed rural settlement as they did not always define all words, sometimes trying to define by using a word they were supposed to be defining – 'settlement' or 'rural', for example. Linguistic issues sometimes cause problems for candidates defining terms, so it is particularly important that time is spent learning good/full definitions.

(iii) This was not well answered by the majority of candidates, with not enough focus on 'large' settlements. Many candidates wrote generally about siting factors for settlements and there were too many vague, simplistic references to houses, jobs, wages and 'resources'. Some candidates did manage to gain 1 or 2 marks for ideas such as 'migration, route Centre, commercial development or mining'.

(iv) Few candidates interpreted this question correctly, although there were some reasonable attempts seen from those who knew what a hierarchy was. Whilst some could say that it was typical of a hierarchy, they did not use the data in the figure correctly to explain why this was the case, by referring to number or spacing of settlements. Many candidates were not clear about the meaning of the word hierarchy. Most simply explained population density and proximity to roads and services or explained that high order settlements were at 'the top'.

(b) (i) For this question candidates were more successful where they used comparative statements. Whilst many stated that people travelled generally further for leisure than shopping, very few commented on the idea of distances for shopping being more varied. Many quoted distances and examples but made no real attempt to compare, hence limiting the number of marks gained.

(ii) There was a range of answers here and the question differentiated well. Top quality answers showed understanding of geographical ideas as per the mark scheme and used appropriate terminology; more simplistic responses tended to be weakly expressed but at least made one or two significant points such as 'travel further for high order goods' or ideas such as 'depends on the availability of the services', thus gaining credit.

(c) This question was poorly answered by many candidates who did not describe each of location and sphere of influence, sometimes not at all but often in very simplistic terms. Much irrelevant material was included instead by many candidates. Good responses would include a detailed location with the name of the road and connecting roads or reference to nearby settlements that the service was close to. For the sphere of influence, good answers would give the extent to which people were prepared to travel to take advantage of that particular service in terms of distance travelled and/or time taken with some reasons as to why it had a large or small sphere of influence. Some candidates named a country for settlement and some did not name a service until later in the answer, purely by chance as it would seem, showing a lack of understanding.

Question 3

(a) (i) Many, though not all, candidates could identify the wet and dry bulb thermometer or 'hygrometer'. Some candidates wrongly stated 'hydrometer'.

(ii) This question was not answered well with many candidates explaining how the instrument worked rather than how it is used.

(iii) This was generally answered well and many candidates scored 2 or 3 marks.

(iv) Whilst a reasonable number of candidates scored full marks for naming maximum and minimum thermometer and barometer and stating correctly what they measured, there were some strange guesses from others – wind vane, anemometer, rain gauge, for example, which was odd as some of these candidates had seemed to show a very good understanding in the previous question of what a Stevenson screen was and how it was used.

(b) (i) Many candidates interpreted the wind rose diagram correctly, the better answers being those which attempted to describe three clear differences rather than describing March and October in turn.

(ii) This question was better answered with most candidates knowing what the two instruments are; candidates could name them and show them in simple diagrams. Many candidates gained full marks. When candidates lost marks, this was mostly for not labelling their diagram and wrongly stating that the wind vane pointed to the direction the wind was blowing to as opposed to where it was blowing from.

(c) This question was answered well by some candidates and was the best case study answer for many. Developed statements and place detail were the keys to high marks; weaker responses tended to lack detail. Some candidates misinterpreted 'impacts' and included irrelevant material, for example on causes. Some candidates named desert areas as an example rather than a country or area which limited their marks to a maximum of 5.

Question 4

(a) (i) Many candidates could define erosion as wearing away or similar, but some were not able to give an appropriate alternative to 'marine', although a few named methods or described one, rather than giving an overarching definition. Many stated 'water erosion' which did not gain a mark. This is another example of the need for candidates to learn accurate definitions for key terminology.

(ii) Most candidates correctly identified the cave and arch, thereby gaining 2 marks.

(iii) Most candidates were able to draw and label an appropriate diagram to represent stage 3. Most explanations understood the importance of the roof collapsing.

(iv) Many candidates understood why some coastlines have headlands and bays and gave good answers referring to hard and soft rocks to score full marks. However, poor answers misunderstood and explained coastal processes instead.

(b) (i) As always with this type of question, common errors were to explain the formation of the cliff rather than focus on the obvious features of it which were visible in the photograph. Candidates should be encouraged to 'say what they see' in the photograph rather than trying to explain how the features were formed which gains no marks. This should be a simple skill but far too often many candidates struggle with it.

(ii) This was answered well by many candidates who named and described one or more erosional processes, thereby scoring full marks. Weaker candidates produced simplistic responses or introduced irrelevant details about weathering and acid rain, for example. Key terminology should be learned and used as appropriate in this type of question.

(c) Some candidates misinterpreted the wording of the question which asked for a description of the main features of the chosen coral reef and an explanation of its formation. Previous questions have been set on the conditions required for the development of coral reefs and a large number of candidates did that rather than answering the question set. The use of past papers and their mark schemes in revision can be very helpful but, as this illustrates, it should be done with caution. Candidates need to read the questions with care and answer them as set, otherwise marks will be lost.

Question 5

(a) (i) Most candidates could define secondary industry and gained the mark here.

(ii) This question was generally well answered with candidates being able to successfully match the towns and industries. A small minority of candidates, however, could not do this.

(iii) Many candidates were able to simply explain three advantages by referring to map evidence. Some lost marks due to vague statements, such as near cities, resources or the sea.

(iv) Many candidates did not seem to understand the requirements of this question. The main changes which gained credit were a reduction of the primary sector and an increase in the secondary and tertiary sectors. Many candidates were unable to associate those changes with the term 'employment structure'. Many of those who did so could suggest a reason for the changes and gained full marks.

(b) (i) This question was answered well by many candidates who knew the terms, although some candidates had difficulty in communicating the definitions. Most candidates scored marks here.

(ii) Most candidates could name a manufacturing industry and location and many could name at least one process. The question differentiated well as others were able to show more detailed knowledge of processes involved whilst some could not develop their ideas beyond one simple process.

(c) Whilst some candidates scored marks for answers which were more generic about industrial location, such as those relating to car assembly, many factors specific to high technology industry were included, although not developed very well by all candidates. Ideas such as proximity to university, market and air transport were commonly suggested, some candidates including place specific information and developing their points to achieve high marks. Less popular ideas were the economies of agglomeration or government incentives. The most popular areas of industry were Silicon Valley California, M4 corridor, Cambridge and Bangalore.

Question 6

(a) (i) Most candidates identified the correct event and gained the mark.

(ii) This question was well answered by most candidates who were able to show their knowledge of plate tectonics in their explanation of their choice. Some, however, simply stated that they had selected that option because of the graph evidence that most people disagreed. Where candidates answered incorrectly, they had selected 'record snowfalls' and went on to say that global warming would not increase snowfall as global warming only made temperatures higher.

(iii) Many candidates could list appropriate human activities which make global warming worse and most scored 2 or 3 marks. Some lost marks due to vague references to 'industry' and/or 'air pollution'.

(iv) This question differentiated well and there were some high quality answers which showed good understanding of why people are concerned about global warming. They referred well to threats to people and natural environments as a result of melting ice caps and changing climate patterns. Most candidates scored something; although the usual references to ozone and skin cancer were seen, there were many vague references to 'flooding' and 'high temperatures' which needed more precision and/or detail for credit.

(b) (i) Most candidates understood the question and identified a source of pollution to write about, although a few wrongly chose a pollution type. Weak answers simply stated that the chosen source caused air/visual/water/noise pollution, adding nothing more to the labels in Fig. 11. Well prepared candidates did, however, give well thought out and detailed explanations which showed good knowledge and understanding.

(ii) As in the previous question, most candidates chose a type of pollution although some selected a source instead. Answers which focused on the local *natural* environment gave candidates the opportunity to develop appropriate points. Answers about global issues such as global warming were not relevant but many were seen. The focus was on local environment, not global. The other issue here, however, was the fact that many wrote about impacts on people rather than on the natural environment, which gained no credit.

(c) There was a huge variety of examples used here; almost all examples seen were valid but this case study was generally not answered in great detail. Candidates often put too much focus on problems for the natural environment, many developing those, with attempts to maintain, conserve or improve being somewhat of an afterthought with brief statements. Sometimes the impacts of the strategies were developed rather than the strategies themselves which was not required. Good examples seen tended to refer to National Parks such as the Masai Mara and the Galapagos Islands which were well developed and had plenty of place specific detail in them.

GEOGRAPHY

Paper 0460/12

Paper 1

Key Messages

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

- ensure that the examination rubric is followed correctly, answering three of the six questions only. *Note that from May/June 2016 candidates will need to answer one question from each of the three themes.*
- read the question carefully – it is important to spend time doing this. If it helps, underline command words and words which indicate the context of the question. Some candidates appear well rehearsed on questions from past papers and determined to use the material they have learned without fully considering the exact requirements of the question they have to answer.
- know the meaning of and respond correctly to command words, e.g. know the difference between describe and explain, be able to compare.
- identify the correct focus specified in the question stem, e.g. causes or impacts, natural environment or people.
- 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 points to be made.
- write developed ideas wherever possible, especially where extended writing is required in the final two parts of each question, ensuring that ideas are developed with the correct focus, for example development of impacts rather than causes (**Question 3(c)**).
- demonstrate basic skills such as interpreting graphs, photographs and maps of various types.
- approach questions which ask for comparison by writing comparative statements rather than writing discrete comments about each aspect being compared.
- avoid direct lifts from diagrams when a question asks for interpretation of ideas.
- include evidence or data from a source if a question asks for it. However, data needs to be used to support statements being made rather than just being lifted and presented in isolation.
- learn the meanings of key words in order to be able to define and accurately use geographical terminology.
- write as clearly and precisely as possible, avoiding vague, general statements.
- have a range of case studies so that appropriate ones can be chosen for the topics tested and ensure they are aware of the scale of the question, e.g. city or country or area. Some candidates miss key words, e.g. internal, local, natural environment, which results in their answers not gaining full credit.
- include place specific information in case studies. However, care needs to be taken that this is not done at the expense of answering the question.
- make it clear, when using the extra space at the back of the question and answer booklet, that the answer is continued and indicate the number of the question accurately.

General Comments

The examination was considered appropriate for the age and ability range of candidates and it achieved widespread differentiation. As expected, the most perceptive and well prepared candidates performed superbly across the paper and some excellent geography was seen. Such candidates were familiar with, and able to cope with, handling the wide variety of ways in which geographical data was presented to them, handled the skills involved and displayed a mature and sophisticated knowledge and understanding of the topics tested. Most candidates were able to make a genuine attempt at their chosen questions and attempted most sections. However, clearly weaker candidates found it difficult to interpret tasks and write effective responses to some or all questions. In such cases, it is difficult to determine whether their command of English hampered their performance or whether their geography was inadequate.

Whilst there were rubric errors, the number of candidates who answered more than three questions was relatively small, and there seemed to be little, if any, evidence of candidates being short of time. The handwriting of some candidates was difficult to read. Whilst it is accepted that candidates are writing under time pressure, it is important that all answers are legible so that Examiners can mark them.

There were many good attempts at all the case study questions, the final part of each question. High quality answers were characterised by a range of developed ideas and good place detail. Some weaker responses tended to be generic developments of ideas with little place detail to support them, whilst others were characterised by the use of simple statements. In some cases the detail provided was largely irrelevant to the question being asked.

Case studies require specific place information to allow access to the highest level. This requirement can vary between questions – a country or an urban area, for example. Some candidates do not carefully consider their choice, limiting their mark by inappropriate choices, for example choosing a country rather than an urban area (**Question 2**) or a continent rather than a country (**Question 6**), or a country rather than an area (**Question 5**).

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

(a) (i) Whilst most candidates included some correct details in their definitions, many did not achieve the mark as they did not have all the elements required by the mark scheme. The most common omission was 'per year' though some gave a generic definition of death rate rather than answering the question set.

(ii) Lithuania has a negative population growth and many candidates were able to calculate this by subtracting death rate from birth rate. The common error was to subtract the smaller from the larger figure which was not correct in this case.

(iii) The question asked about net international migration, not emigration or immigration in isolation. The trends shown in the continuous line needed to be described and there were some clear and precise descriptions of changes, e.g. slight increase from 2005–6, steep decrease from 2009–10, etc. with accurate supporting data. Weaker responses confused increases and decreases and/or omitted the 'thousand' unit when quoting the data. However, most candidates were at least able to score one mark for recognising the fluctuation in net migration, but those who focused solely on emigration and immigration scored no marks.

(iv) Many candidates scored well and showed good understanding providing they wrote about impacts of 'emigration'. Common mistakes were to discuss the reasons for emigration or the impacts of immigration.

(b) (i) Most candidates could use the satellite images to some extent and gained credit for the idea of expansion. Some also described the direction of growth, though few used the scale accurately to measure the extent of the expansion or referred to changes in the shape of Las Vegas.

(ii) There were some excellent responses, referring to a range of appropriate land uses, though some candidates simply lifted information from the satellite images. Where candidates gave a broader answer, a common mistake was to refer vaguely to land uses found throughout an urban area (e.g. housing, industry, shops, roads) or to explain the location of land uses at the edge of the city rather than simply describing as the question asked.

(c) A range of examples was seen, some very well chosen, whilst others incorrectly referred to international migration, thus limiting their marks – this is a good example of a question where marks were lost by candidates who did not read the question with enough care. Nearly all candidates did, however, gain at least three marks for a simple list of push and pull factors, whilst a substantial number were able to develop ideas, some incorporating place details, by mentioning places between which internal migration occurred. The most impressive answers seen focused on

migration within an LEDC such as Brazil or India, or migration within a country due to war, the threat of terrorism, or a natural disaster such as drought or a volcanic eruption.

Question 2

(a) (i) Many candidates estimated the area of the city correctly, though it was a common error to under-estimate it.

(ii) Most candidates were able to express at least one correct idea. The common correct reasons given were lack of space and expensive land.

(iii) This was well answered with most candidates recognising the significance of motorways and railways. Fewer, however, noted the proximity of the docks.

(iv) Perceptive candidates gave valid comparisons, both similarities and differences in the patterns. Many candidates, however, answered with generic statements about differences in land use, having missed the idea of 'pattern of urban land use'. Other candidates did not compare but described the pattern in MEDC and then in LEDC cities. They did gain credit if the comparison was obvious; however, many wrote about one or the other, not both. Some candidates referred to land use models but were not able to make a comparison between MEDC and LEDC cities by doing this.

(b) (i) Candidates were more successful where they used comparative, descriptive statements, but where they relied only on percentage figures alone these were not always inaccurate.

(ii) This was well understood and there were many good answers, ranging from problems for people, to businesses and the global natural environment.

(c) This case study question produced some very good answers and there were many responses which included relevant place detail, with ideas being developed in terms of either description or explanation. Excellent answers were seen about major cities such as London or New York; however, a wide range of examples was seen, including urban areas which were local to the candidates. The use of local examples is a good strategy if they are appropriate, as candidates find it easier to include relevant detail about places they know personally. Weaker candidates tended to give more generic answers with simple ideas such as widening roads, more roads, traffic lights or improved public transport without any additional detail and some named a country rather than an urban area.

Question 3

(a) (i) There were a reasonable number of precise and accurate definitions of weathering, though common mistakes were to omit the 'in situ' idea, refer to erosion or simply name weathering processes.

(ii) Most candidates correctly matched the photographs to the type of weathering.

(iii) The process of exfoliation was well explained by many candidates and generally a good understanding was shown of the significance of alternate heating and cooling. A minority mixed up the process with either wind erosion or chemical weathering.

(iv) Similarly, many candidates gave excellent, detailed explanations of the freeze-thaw process, though a minority confused it with exfoliation.

(b) (i) Many candidates interpreted the diagram correctly, although the element that was most frequently omitted was the rate of solution.

(ii) There were some very impressive answers which showed a full and accurate understanding of climatic influences, specifically temperature and rainfall, on various weathering processes, including physical, biological and chemical. Some candidates simply gained credit for reference to high temperatures and high rainfall, as shown in the resource, whilst others were confused, some even writing about erosional processes and using the terms weathering and erosion synonymously. A common error was to repeat the information from part **(a)** about how processes of weathering

occur, for example exfoliation and freeze-thaw weathering, without relating this to the question asked.

(c) Most candidates could name examples of fold mountains, although they did not all describe their distribution. There were a number of mature and precise descriptions and explanations, with accurate reference to the formation of fold mountains at collision margins and destructive plate boundaries. Whilst reference to destructive boundaries was clearly valid, many candidates wrote about volcanic eruptions rather than the processes responsible for creating fold mountains in these zones.

Question 4

(a) (i) The correct statistics were identified by most candidates.

(ii) Most candidates correctly identified the canopy and emergent layer, the main error being labelling them both within the lower layers shown, with emergents on the forest floor, for example. Some, but not many, reversed the two labels, whilst some omitted the question.

(iii) Many candidates understood the process and gained full marks, typically referring to heating, air rising, cooling and condensing. Some used the term 'convectional rainfall' without showing an understanding of how it operated.

(iv) There were many detailed and well thought out answers which referred to conditions in the rain forest which resulted in the large biodiversity. Some candidates just mentioned hot and wet conditions but most did gain some credit. A significant minority of candidates were side-tracked into a focus on adaptations to the environment, answers to a question set in a previous paper which, whilst frequently detailed, were irrelevant.

(b) (i) Most candidates identified three correct ideas by using the key. A small minority did not show understanding of the question by referring to subsistence agriculture.

(ii) This was answered very well by many candidates who showed a mature understanding of the global importance of the tropical rainforest. Typically they referred to regulation of oxygen, carbon dioxide and the rain forest's role in regulating climate, as well as commenting on great biodiversity, unique habitats and medicines. Some focused too narrowly on one aspect, particularly the exploitation of resources, which tended to overlook the 'global' importance of the rain forest.

(c) Whilst some candidates missed the focus on 'local natural environment', repeating ideas from the previous question or referring to impacts on people, most answers were relevant, typically focussing on ideas about food chains, nutrient cycling, soil erosion and loss of habitats. The most common examples were the Amazon, Madagascar and Borneo and some excellent responses were seen, with detailed development and exemplification.

Question 5

(a) (i) Most candidates were able to plot the point accurately.

(ii) Most candidates defined raw materials and market accurately, though there was sometimes too little link to 'factory' which made the definitions too broad to be given credit.

(iii) The candidates who did not depend on statistics but used comparative statements usually scored better as the statements tended to display a good understanding of how the triangular graph worked. The answers which only used data from the graph were sometimes too inaccurate to credit and/or weakly phrased.

(iv) Many candidates did not seem to understand the requirements of this question, which was to relate transport costs to location, with the information previously used from the triangular graph intended as a prompt. The main ideas which gained credit for the more perceptive candidates were the need to reduce transport costs by careful choice of location, for example by locating factories using heavy or bulky raw materials close to their source, or alternatively by locating close to markets if finished products were expensive to transport.

(b) (i) This was answered well by many candidates who recognised the main trends of increase and decrease and used accurate statistics.

(ii) This was answered well with many different benefits being suggested for both individuals and the economy of the country. Weaker candidates tended to misinterpret the question, with details about the impact of hi-tech gadgets on people's lives being the most common incorrect response.

(c) This question prompted some high level responses. Whilst some candidates scored marks for answers which were more generic about industrial location, such as those relating to car assembly, many factors specific to high technology industry were included, although not developed very well by all candidates. Ideas such as proximity to universities or research establishments, market and air transport were commonly suggested, some candidates including place specific information and developing their points to achieve high marks. Less popular ideas were the economies of agglomeration or government incentives. The most popular areas chosen were Silicon Valley California, the M4 corridor, Cambridge and Bangalore, all areas where place details could be incorporated. Some candidates did this, others tried, though not all were accurate.

Question 6

(a) (i) The shading was usually correct but some candidates omitted this section.

(ii) Although many candidates referred correctly to rainfall and high ground, there were many irrelevant references to the irrigated areas.

(iii) Some candidates correctly referred to the latitude where the irrigated areas are located and others to their altitude. Fewer candidates referred more precisely to their distance from the reservoirs or the specific location of each one in relation to features such as the reservoirs. Vague statements such as coastal/inland and near to reservoirs were common, and some candidates attempted to explain their location at the expense of describing it.

(b) (i) Most candidates scored well on this question, using the labels on the diagram to explain the sequence of processes which generate power. Some displayed additional knowledge and understanding by reference to the way kinetic energy is transformed to electrical energy.

(ii) Again this was well answered with many candidates being able to refer to the fact that HEP is renewable and does not pollute the atmosphere and enhance global warming. Some candidates answered in relation to the disadvantages of fossil fuels, an approach which was accepted, though double credit was not awarded for reverse statements. A significant minority referred to HEP being 'cheaper' or 'cleaner' without elaborating their ideas to gain credit.

(iii) This question differentiated well with well prepared candidates giving precise and detailed responses. The most popular reasons suggested were locations next to rivers and on high ground, though a range of other ideas were correctly given by candidates, such as the need for a head of water, impermeable rocks and a suitable valley to dam. There were also quite a number of misconceptions such as the importance of a large or skilled workforce nearby, an accessible market and flat or cheap land.

(c) This was generally not answered in great detail with many candidates putting too much focus on problems for the natural environment, with the impacts on people as asked for in the question tending to be either brief or omitted. For example, many candidates described deforestation and soil erosion in detail which did not gain any credit until the effect on people was mentioned. The most impressive answers referred to the need to travel increasing distance over time, and its impacts on the women and children who usually carry out this task, the effects burning wood has on people's health and the impacts of the removal of trees on crop yields due to decreased soil fertility. The most popular located area was DR Congo, though overall place detail was lacking.

GEOGRAPHY

Paper 0460/13

Paper 1

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- know the meaning of, and respond correctly to command words, e.g. know the difference between describe and explain, be able to compare.
- identify the correct focus specified in the question stem, e.g. causes or impacts, natural environment or people.
- ensure they are aware of the scale of the question – city or country or area. Candidates need to ready the question carefully.
- 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 points to be made.
- develop ideas in the correct way, for example development of impact rather than cause. Underline key words and key command words in the question to help identify this.
- demonstrate basic skills such as interpreting graphs, photographs and maps of various types.
- approach questions which ask for comparison by writing comparative statements rather than writing discrete comments about each aspect being compared.
- avoid direct lifts from diagrams when a question asks for interpretation of ideas.
- include evidence or data from a source if a question asks for it. Candidates need to ensure they do this to get full marks. Data needs to be used to support statements being made rather than just being lifted and presented in isolation.
- learn the meanings of key words in order to be able to define and accurately use geographical terminology. Key word glossaries for Centres to build up would be advantageous for candidates. Key words from this session that were often incorrectly used were: ‘birth rate’, ‘rural settlement’ and ‘international tourist’.
- write as clearly and precisely as possible, avoiding vague, general statements, e.g. ‘they’re poor, it will cause pollution/make a lot of noise’.
- write developed ideas wherever possible, especially where extended writing is required in the final two parts of each question.
- have a range of case studies so that appropriate ones can be chosen for the topics tested. Some seem to have too few case studies and try to apply them inappropriately.
- include place specific information in case studies. However, care needs to be taken that this is not done at the expense of answering the question. Place specific information was sometimes lacking.
- make it clear, when using the extra space at the back of the question and answer booklet, that the answer is continued and indicate the number of the question accurately. Many candidates do not indicate that the answer is continued.

Areas to focus upon from this session which were poorly answered are: settlement patterns, functions of an urban settlement, wave-cut platforms, why temperatures in tropical deserts vary during the year and change from day to night, reasons for low rainfall in a desert, why people are subsistence farmers, how the negative impacts of tourism are managed.

General Comments

The examination was considered appropriate for the age and ability range of candidates and it achieved widespread differentiation. As expected, the most perceptive and well prepared candidates performed superbly across the paper and some excellent geography was seen. Such candidates were familiar with, and able to cope with, handling the wide variety of ways in which geographical data was presented to them,

handled the skills involved and displayed a mature and sophisticated knowledge and understanding of the topics tested. Most candidates were able to make a genuine attempt at their chosen questions and attempted most sections. However, clearly weaker candidates found it difficult to interpret tasks and write effective responses to some or all questions. In such cases, it is difficult to determine whether their command of English hampered their performance or whether their geography was inadequate.

Whilst there were rubric errors, the number of candidates who answered more than three questions was relatively small, and there seemed to be little, if any, evidence of candidates being short of time. The handwriting of some candidates was so small or indistinct as to be virtually illegible. Whilst it is accepted that candidates are writing under time pressure, it is important that all answers are legible so that Examiners can mark them.

There were some good case study answers on the impacts of HIV/AIDS, the impacts of a tropical storm, adaptations of desert vegetation and wildlife and the management of the impacts of tourism. These case studies were answered by many candidates who were able to develop their ideas and in some instances add good place detail. Whilst, to some extent, this was true of some answers to the other case studies, many which did contain developed ideas tended to be generic developments of ideas with little place detail to support them. Weaker case studies throughout were characterised by the use of simple statements, and in some cases the detail provided was largely irrelevant to the question being asked. This was especially true of many answers to **Questions 2(c)** and **5(c)**.

Case studies require specific place information in the example to allow access to the highest level. This requirement can vary between questions – country, urban area, area. Some candidates still do not carefully enough consider their choice, limiting their mark by inappropriate choices, for example choosing a country rather than an area (**Question 5**, **Question 6**) or a continent rather than a country (**Question 1**), or a country rather than a settlement (**Question 2**).

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

(a) (i) A reasonable number of candidates scored the mark for providing the full definition for 'birth rate' but too many gave a partial definition. Many omitted either 'per year' or 'per thousand'.

(ii) Most candidates answered correctly and gained both marks for completing the table which was generally impressive as candidates have shown an understanding of how natural population growth is calculated. Some candidates wrongly ranked them according to birth rate.

(iii) Many candidates answered this well and scored the full three marks for explaining why there are high birth rates in many LEDCs. There were a few references to falling death rates which was not relevant and did not score any marks. Most common responses included: lack of contraception, need for children to work on farms and high infant mortality rates.

(iv) Most candidates scored well here, with many scoring three or four marks. Overall there was a wide spread of problems caused by high natural population growth in LEDCs that were identified by candidates. Weak common non-scoring responses included the following vague ideas: overcrowding, overpopulation, pollution, more crime, etc. A few wrote about the reasons for high population growth rather than the problems caused by it which is irrelevant.

(b) (i) Most candidates seemed to understand what was required here and compared the changes well. Some weaker candidates wrote about only one country rather than comparing and about a specific year rather than a change, but generally the question was well answered and high scoring. The most common error was from 1985 to 1999 as many candidates did not state that Iran decreased 'more' than China but simply stated 'both decreased'. A small percentage of candidates mixed up the lines for Iran and China and consequently scored no marks.

(ii) This question differentiated well and there were some full mark answers focussing well on appropriate policies, with good accurate description. China's one child policy was a very popular response and high scoring, provided candidates focused on describing it rather than evaluating it –

the latter was irrelevant and gained no credit. Whilst weaker candidates generally were able to describe a policy, many of them were not wholly accurate and were sometimes oversimplistic.

(c) There were many good responses to this question, those with development achieving L2 and many with place detail achieving full marks. Some good use of appropriate statistics was made, which was credited as 'place specific' detail. Typically candidates chose an African example such as Botswana or Swaziland, though other countries such as Russia and the USA were seen. Some weaker candidates selected 'Africa' which limited their marks, though such choices tended also to be accompanied by simple statements so they remained at L1.

Question 2

(a) (i) Whilst there were some good definitions, many were partial such as 'a settlement in the countryside'. Candidates need to define all words italicised rather than using the same words in their definition. Again, this is an example of where candidates need to learn the full and accurate definition of key terminology. Many described a settlement in the countryside but forgot to include the idea that it is a place where people live or a residential area.

(ii) Good answers were seen from some candidates who made use of evidence in the photo to comment on steep slopes, difficult to get to, risk of landslide, etc. – a good understanding was shown by some. However, overall this question was not answered very well as candidates generally talked about the idea of steep mountains, etc. but very little reference to lack of employment or other ideas was seen. Overall the majority gained just 1 mark or no marks at all.

(iii) This question was also well answered with many candidates scoring 2 or 3 marks. Some impressive use of terminology was seen from some candidates, e.g. high order goods, commute to work, etc.

(iv) Again this question was generally well answered with reference to a variety of factors seen. A fair number wrote about cheap housing/cheap land/cheaper to live in rural areas, which is not always true and therefore not credited.

(b) (i) Many candidates scored full marks here. Impressive interpretation of the maps and knowledge of the appropriate terms was seen. Words like scattered and clustered were credited but many candidates used the correct textbook terms anyway. Only a small number of candidates had no idea and gave irrelevant answers.

(ii) There was a range of answers seen here and the question differentiated well overall. Top quality answers showed an understanding of the reasons for the development of different settlement patterns and exemplified them well. Weaker simplistic answers tended to be poorly expressed but generally made one or two significant points which could be credited such as 'linear settlements develop along rivers'.

(c) This was one of the weakest case studies seen: 'describe and explain the main functions of an urban settlement you have studied'. It was poorly answered by a large number of candidates who did not develop either their description or explanation, thus L1 answers were common. There were a few outstanding answers, typically large cities, often a capital city, which provided scope for candidates to write about in detail. This type of case study is best answered by using an example well known to candidates, such as the capital city or another large urban area in their own country. Not only does it make it easier to include relevant details but also place specific information. It is no coincidence that the better answers from this cohort were about places like Kuala Lumpur, Shanghai and Singapore (local examples) rather than London, New York and Cairo (textbook examples).

Question 3

(a) (i) Most candidates were able to correctly identify the stack.

(ii) Candidates were able to correctly name two processes of coastal erosion and as such, this question was well answered with many candidates scoring both marks available.

(iii) Whilst there were a few impressive answers that clearly explained how a wave cut platform was formed, there were many weak ones which generally described erosional processes rather than specifically focussing on how cliffs erode and retreat to leave a wave cut platform.

(iv) This question was generally well answered and most candidates were able to describe the differences between constructive and destructive waves. A minority, however, wrote about one or the other without comparing and some confused the two types of wave, getting their ideas the wrong way around.

(b) (i) Many candidates described well the distribution of areas of coral and scored high marks. Weaker candidates were too vague or described the distribution in non-geographical terms, using ideas such as 'above/below', 'left/right' which could not be credited. There were some erroneous references to coral along the eastern coast, candidates either confusing east and west or not looking carefully enough at the symbols used.

(ii) Many candidates were able to describe the conditions required for the development of coral reefs, often showing impressive knowledge and understanding. Many gained full marks. Many quoted precise statistics here to back up statements which were credited as development marks.

(c) This case study question referring to the impacts of a tropical storm was answered well by many candidates and was one of the best case study answers for many. Developed statements and place detail were the key to high marks; weaker responses tended to lack detail. Hurricane Katrina was well used by many. Others, however, used named examples which were closer to their part of the world – in countries such as Philippines, Bangladesh and Myanmar to name a few. Place specific detail was seen including place names, dates and statistics.

Question 4

(**a**) **(i)** The majority of candidates were able to select the correct figure – 240 mm. Those who selected the incorrect figure most often chose 25 mm.

(ii) Here candidates were asked to compare the average monthly precipitation for January and July. This was generally well answered, with most candidates comparing and using accurate statistics. However, some candidates also included temperature which was not necessary for this question.

(iii) Here candidates were asked to compare the variation in temperature during the year and to refer to data. Again, good interpretation of the graph was seen with many candidates scoring 2 or 3 marks. There was some inaccuracy in reading the figures from weaker candidates.

(iv) This question proved to be poorly answered with disappointing responses overall to both parts of the question. Full marks were scored by relatively few candidates with many not referring to clouds in the second part about diurnal variation. Some candidates had no idea about the first part of the question and wrote all sorts of irrelevant information.

(b) (i) Most candidates were able to score something on this question and there were some good responses using map evidence well. Most recognised the location on the Mexican/US border, although some had difficulty putting this into appropriate words. Some were insufficiently accurate with use of lines of latitude and longitude, especially latitude, whilst others used poor terminology, 'above/below', 'next to', etc. which were not credited.

(ii) This question asked candidates to suggest reasons why rainfall is low in the Chihuahuan desert. This was answered well by well prepared candidates who referred to appropriate ideas, especially the rain shadow effect of Sierra Madre Occidental. Some also showed good understanding of implications of high pressure/descending air, having recognised that the desert was located close to the Tropic of Cancer. Weaker candidates produced simplistic responses or simply had no idea. 'No clouds' and 'no rain' were common responses as was the reference to proximity to Tropic of Cancer without any further explanation. Reference to Hadley Cell was appropriate, providing the relevant knowledge was shown about why the Hadley Cell produced dry conditions in desert areas. Not all such explanations did so and therefore gained no credit.

(c) This case study asked candidates to explain how the vegetation and wildlife are adapted to the climate. There were many impressive answers seen to this question, with most candidates including relevant adaptations of both plants and wildlife and attempting to develop their ideas.

Some candidates included information about how plants have adapted to resist being eaten by animals, but this was irrelevant in this question.

Question 5

(a) (i) Most candidates could define what a commercial farm is by using the word 'sell' and gained the mark.

(ii) Most candidates were able to use the figure well and as such this question was generally well answered, with few candidates making errors.

(iii) Candidates were asked to explain how the relief of the land can influence agricultural land use. Many candidates realised the significance of height and slope and could explain how that influenced land use in terms of the farmer choosing crops or animals. Few went beyond that to make more subtle points, e.g. on aspect, so full mark answers were not common. Many candidates read 'how' as 'why' and included irrelevant details, whilst others overlooked the 'land use' element and wrote about other issues relating to relief – indeed some obviously did not know what 'relief' was.

(iv) This question asked candidates to explain how commercial farmers have been able to increase their output. There were many high scoring answers here, with many candidates scoring three or four marks, including weaker candidates.

(b) (i) Using the map, candidates were asked to describe the distribution of areas where over 20% of the population is undernourished. This was answered well by many candidates who were able to make a good attempt at describing the distribution. Many recognised that most of these countries were concentrated in Africa, centrally or south of the Sahara. Some candidates just listed countries which is not an appropriate technique when describing a distribution.

(ii) This question asked candidates to explain why there are food shortages in some parts of the world and proved to be another question where many candidates displayed excellent knowledge. In some cases, full marks were obtained from answers which were wide ranging; in other cases, greater depth of knowledge was shown with the same level of success.

(c) This case study question asked candidates to explain why the farmers are subsistence farmers in an area where small scale subsistence farming takes place. There were some good answers, particularly using case studies from southern Asia, where candidates typically developed the ideas of lack of land and the various implications of poverty which result in many farmers being subsistence farmers. Less mention was made about the lack of access to markets and only a small minority of candidates achieved top L2 or L3 by developing sufficient ideas, despite including plenty of detail about the one or two ideas with which they were familiar. Many responses were vague and limited to L1 for simple ideas such as 'can't afford machinery'.

Question 6

(a) (i) This is another example of where candidates need to learn full definitions for key terminology as most candidates defined 'international' but not 'tourist', so their incomplete definitions were not creditworthy. Many candidates used the same word in their response.

(ii) Here candidates had to complete the pie chart. In many cases, the pie chart was accurately completed and shaded by most candidates, although there were some omissions and mistakes, e.g. wrong shading used or inaccurate placement of the line.

(iii) Here candidates were asked to describe the changes in the number of international tourists to Ibiza using the graph provided. Most candidates described appropriate changes and/or used statistics to gain the marks. There was some misreading of the scale and lack of accuracy; however, on the whole, high marks were scored.

(b) (i) This question was generally well answered, with many candidates referring to the creation of jobs and boosting of business to show how people might benefit from tourism in Ibiza. It was evident from some answers that candidates had made good use of evidence provided in the photographs to steer them to an appropriate response.

(ii) Again this question was well answered with most candidates scoring something and many scoring high marks. As usual there were answers entirely about the natural environment, despite the clear focus of the question being on people.

(iii) For this question there were plenty of ideas in the photographs and on the map and most candidates used the sources well to gain high marks. Some wrote brief/vague/simplistic comments such as weather/entertainment/scenery, etc. or did not add an adjective to sea/beach so lost marks.

(c) This case study asked candidates to show how the negative impacts of tourism are managed. Many good examples were used, local and textbook examples, and the quality of responses varied immensely. Whilst there were some excellent developed ideas with place specific detail for full marks, these were outnumbered by responses which, whilst valid, lacked detail. Many candidates spent much time describing what the problems were and how they were caused at the expense of explaining how the negative impacts are managed, adding the latter as somewhat of an afterthought with brief statements. Sometimes the impacts of the strategies were developed rather than the strategies themselves, which was not required.

GEOGRAPHY

Paper 0460/21

Paper 21

Key Messages

- Strong answers were often concise, making excellent use of the resources provided in the paper as well as showing clear understanding of the different meanings of the command words such as *describe*, *explain* and *suggest* in questions and what responses these require.
- Where only one or two lines are provided for an answer, candidates should respond briefly and to the point. Long answers which repeat the question should be avoided.
- Some questions required candidates to give map and photograph evidence and stronger responses featured this.

Comments on Specific Questions

Question 1

Generally, answers to this question were accurate and candidates made careful use of the map and its key. Good levels of credit were gained by many candidates.

(a) Most candidates scored well with the exception of part **(i)** where the correct response was *gravel or earth road*. In part **(vii)**, a mark could only be given where the candidate gave the complete answer of 1260 metres. Copying of a full line of the key showing a number of symbols should be avoided as no marks can be awarded for this. For example, in part **(ii)** where the correct answer was *huts*, those who wrote *Huts, Staff Quarters* were not given credit.

(b) The required features on the cross section were correctly identified by many candidates. A considerable number of candidates did not respond at all.

(c) Candidates scored well in this part with many gaining full credit. Most candidates scored at least two marks, usually recognising that *the river has variable width* and that *parts of the river valley in the south-east are narrow*.

(d) This part was well-answered with most candidates identifying that the Umvukwe Range is higher and steeper than the rest of the map and that there is no or little cultivation there.

(e) Those candidates who understood the meaning of the term *relief* recognised that the routes of the roads avoided the steep mountains. The best candidates also saw that the routes followed the main north-south valley and Airey's Pass through the south of the Umvukwe Range.

Question 2

This was a low scoring question overall. Many candidates did not pay sufficient attention to the details in the resources provided (Figs 4 and 5).

(a) This part tested knowledge of two important definitions relating to plate tectonics. The epicentre is the point on the earth's surface directly above the focus and the plates are the upper, rigid parts of the earth's surface including the crust and part of the upper mantle.

(b) A variety of answers was given with only a small proportion of candidates gaining both marks for X: destructive or convergent and Y: conservative plate boundaries.

(c) In part **(i)** many candidates correctly marked the position of the epicentre (within the intensity 11 area extended across the plate boundary) and credit was given even if the letter **E** was not used. In part **(ii)** some candidates recognised that this earthquake was caused by the two plates sliding past each other with the associated build-up of pressure, faulting and later release of this pressure. Some candidates strayed from the question and wrote in general terms about the causes of mountains, volcanoes and earthquakes.

Question 3

Responses in this question varied greatly and some candidates lacked precise knowledge and understanding of weathering and erosion processes.

(a) A great mixture of responses was given in this part. Candidates were sometimes unclear about the different river processes and frequently muddled saltation with suspension in part **(i)**. Erosion in part **(ii)** and exfoliation in part **(iii)** were also often confused. In part **(iv)** carbonation was more often correct.

(b) Candidates needed to *describe* the evidence of weathering seen in the photograph and then *explain* the processes involved. Many different responses were credited and the most able candidates soon gained full marks. Suitable answers described the trees growing in the cracks of the rocks leading to biological weathering, the rounded boulders as a result of exfoliation or chemical weathering, the orange colouration due to oxidation or chemical weathering and the shattered rocks as a result of frost action. Credit was not given where photograph evidence was not stated. There were frequent references to erosion and candidates were not always able to distinguish between erosion and weathering.

Question 4

(a) In part **(i)** many features were given credit. Strong candidates picked up full marks by describing aspects such as the tall buildings with flat roofs and many windows in the distance and the small, colourful houses with pitched roofs and gardens in the foreground. However, describing the roads, trees and open land and attempting to explain the relationship of the buildings to the urban models did not gain credit. In part **(ii)** many candidates correctly suggested the zone to be residential, the suburbs or the rural-urban fringe.

(b) Answers to this part were good, with candidates identifying the large buildings, vast car parks and main access roads. Some candidates spent too long considering why the area was suburban rather than finding evidence for the shopping centre itself.

Question 5

Most candidates scored high marks in this question and made very good use of the resources provided.

(a) In part **(i)** most responses were correct though a significant number of candidates did not make any attempt to complete the graph. In part **(ii)** almost all candidates correctly identified that two of Russia, USA, Canada and Germany had wheat production which had decreased between 2009 and 2011.

(b) Candidates responded very well and a number of ideas gained credit. Most commonly, candidates recognised that being able to see the differences between the production of the leading wheat producers and how they varied over time were advantages of Fig. 6. They also recognised various

disadvantages including the limited time range shown and the cluttered appearance of the lower part of the diagram.

(c) In part **(i)** most candidates correctly identified South America and Africa as the continents shown without one of the ten leading wheat producers. In part **(ii)** many candidates also recognised that most of the leading wheat producers are *in temperate latitudes* and *in the northern hemisphere*. Almost all candidates gained at least one mark but candidates should avoid ticking more than the required number of boxes if they are unsure.

Question 6

(a) In part **(i)** few candidates gave the correct measurement (a tolerance of between 9.7–10.3 km was allowed). In general, a more accurate answer was obtained when the scale line was used rather than attempting mathematical calculations. Candidates needed to note that the measurement was along the road and not as the crow flies. There was a variety of answers given to part **(ii)**, but the majority of candidates selected the correct response that the river flows *to the north west*.

(b) Candidates generally appeared to pay close attention to the details of Fig. 8 and many relevant answers were given. In parts **(i)**, **(ii)** and **(iii)**, most made the correct choices. Parts **(iv)**, **(v)** and **(vi)** proved to be more challenging parts of the question and there were varying responses. A complete list of the acceptable answers can be seen in the mark scheme. Many candidates suggested in part **(v)** that waste could be dumped into the sea or river did not gain credit, nor did those who ticked more than one box in in all parts of **(b)**. A few candidates appeared to be a little short of time in this question and incomplete responses without a valid reason did not gain credit.

GEOGRAPHY

Paper 0460/22

Paper 22

Key Messages

- Candidates should be encouraged to always give the units in numerical answers, e.g. in **Question 1(a)(iv)** and **Question 4(b)**.
- When giving six figure grid references candidates should use the method described in the syllabus, particularly when giving the third and sixth figures of the reference as in **Question 1(e)**.
- When studying rivers on maps it is becoming increasingly common for candidates to interpret the flow direction of a river as being in the reverse direction to the correct one. Candidates frequently describe normal drainage patterns as the river 'splitting into tributaries and flowing in different directions'.
- Paper 22 is a skills paper with emphasis on Assessment Objectives 2 and 3. Candidates should be aware that questions ask them to focus on the data provided, especially when they include instructions such as 'Using Fig. 9 **only**…', as in **Question 6**.
- Candidates should be aware that a south east wind blows **from** the south east and not **to** the south east.

General Comments

Most candidates found **Question 2** relatively easy, although **2(d)** did cause a few problems. All the other questions produced a good spread of marks.

Comments on Specific Questions

Question 1

(a) Candidates generally identified feature **A** as an *other* road, feature **B** as a *dam,* feature **C** as a *dip tank* and the height of the spot height at **D** as *1411 m*. Many candidates failed to give the units and lost credit. The feature at **E** was generally identified as a *reservoir*, although those candidates who answered *buildings* were also given credit.

(b) Many candidates gained full credit on this question, the most common error being to fail to notice that bush was present in both areas.

(c) For the description of the river, a variety of responses were given credit such as narrow, variable width, flows west, lake, tributary/confluence, meanders, rapids, causeway, bridge, gentle gradient and braiding. As mentioned above, the most common error was to completely reverse the flow direction and describe the river as flowing east and splitting up. Candidates who described the relief and land use around the river were not given credit. Candidates found identifying the width of the flood plain difficult. Some referred to the width of the river. Good candidates noted the generally narrow width, widening downstream. Candidates were also given credit for numerical descriptions.

(d) It appeared that the vast majority of candidates were able to locate the two points on the map referred to in the question. Distance measurements were mostly within the mark scheme tolerance of 3200–3400 m but it was noticeable that those candidates who did not use the method described in the syllabus and attempted to convert cm and mm to metres frequently gave incorrect answers. The compass direction and the bearing were both extremely well-answered.

(e) The grid reference was not answered as well as in some examinations, with the third and sixth figures causing problems. Candidates who gave an answer in the correct square were awarded one mark.

Question 2

(a) The definition of settlement hierarchy was well-answered. Candidates generally understood that this had to refer to an order, or arrangement, or ranking, or organisation of settlements and that this was by population, or importance, or services. Almost all candidates noted that settlement **A** was highest in the hierarchy because it had the greatest population or most services. Examiners credited a variety of unusual features of the position of settlement **F**, the most common being that it had more services than **E**.

(b) The highest order service in Table 1 was a secondary school, although a significant number of candidates answered *convenience store* which was the lowest order service. The minimum population for a settlement to have a primary school was anything between 601 and 1400, with the latter usually quoted by candidates.

(c) Most candidates were able to plot accurately the position of settlement **C** on Fig. 4. Candidates generally noted that lower order settlements had fewer convenience stores or vice versa.

(d) The required answer was that there were fewer higher order settlements, or vice versa. Many candidates found this question difficult and referred to the number of services within the settlements rather than the number of settlements.

Question 3

(a) Most candidates commented that in winter the river was frozen and would not flow but in summer it would flow freely.

(b) This was well-answered with candidates referring to the wide channel, gentle gradient, meander, gentle or shallow banks, artificial banks, bridge and the floats or buoys.

(c) Some candidates were able to gain full credit by explaining how this would prevent erosion and damage to the buildings on the outer bank. Others referred to allowing access to the river (for boating, fishing, etc.), the footpath or the aesthetic appearance of the banks. There was no direct evidence in the photograph for flood prevention.

Question 4

(a) Answers to this question were very variable and the Examiners gave credit for a variety of descriptions of the general movement of the cyclones. These included the fact that the cyclones started over oceans then moved towards land, had curved paths, the cyclones moved north west in the north and moved south west in the south, and that they moved away from Equator (or towards Tropics). Some descriptions were confused because of references to 'above and below the Equator'. As the question referred to general movements, descriptions of single storm tracks were not given credit.

(b) This question allowed many candidates to gain full credit; however, there were some recurring issues. Many candidates noted the 20 mm/hr of rainfall before the eye and 10 mm/hr after the eye but failed to notice that the rainfall stopped in the eye of the cyclone. Most candidates noted the reversal of wind direction (although many lost credit by referring to winds blowing to the north west and south east) but few noted the calm eye. Most candidates noted that the pressure fell and the temperature rose in the eye and some gave figures to illustrate this, unfortunately not always with the correct units. The question referred to the 'change as the eye of the storm passes'. Many candidates described the changes across the whole time period shown on Fig. 6 and it was sometimes difficult to tell what referred to the eye.

Question 5

(a) Candidates generally coped well with this unfamiliar material. Most candidates decided that vehicles were a source of NO_2. They then went on to give evidence such as the NO_2 being found in the urban areas, examples being London/Birmingham/Liverpool/Leeds/Manchester. Candidates noted that there would be more cars in urban areas. Fewer candidates noted the lines of NO_2 joining urban areas along roads where vehicles travelled.

(b) Candidates found this question less easy than part **(a)**. Generally there was little relationship between SO_2 pollution and urban areas. Most SO_2 was found in rural areas, often to the east of urban areas. It was found in some urban areas such as Liverpool or Edinburgh. Manchester and Leeds were also allowed because of the map labels. Credit was also given to those candidates who noted the low SO_2 in some urban areas such as in Birmingham, Glasgow, Cardiff, London or Belfast. In part **(ii)**, for the likely source of SO_2, the best answers were *power stations* or *burning fossil fuels*. However, vaguer answers such as *manufacturing industry* or *factories* were given credit.

Question 6

(a) This question tested Assessment Objective 3: judgement and decision making. The best answers were from those candidates who noted the instruction in the question to answer 'Using information from Fig. 10 **only**…' Plymouth was evacuated because of the thick ash (30 cm shown on the map), pyroclastic flows (which are very destructive and dangerous) and the fact that Plymouth was only 4 km from the volcano. Many candidates noted these points. Part **(ii)** focused on the hotel owners. They may have benefitted through increased tourist trade but may have suffered damage from the eruptions or been part of the Exclusion Zone. Part **(iii)** focused on the people in the North. They may have benefitted through commercial activity and government functions moving to the North, more jobs and the new airport.

(b) Answers were generally disappointing. Although candidates noted the presence of plate boundaries on the map, using this to explain why Montserrat is a volcanic island proved difficult for many. Some candidates were able to gain credit by referring to subduction and melting. Few candidates appreciated that the subduction zone would extend beneath Montserrat and that Montserrat was part of an island arc.

GEOGRAPHY

Paper 0460/23

Paper 23

Key Messages

- Marks were lost on certain questions through not reading the questions carefully. Candidates need to be more aware of the key command words, such as *describe* or *explain* and what is required by them.
- Candidates generally were able to cope with the wide variety of ways that data was presented to them. They should be reminded to study the title, key and graph axes labels, which help in the overall understanding and also provide additional information.

General Comments

This paper was comparable with that for previous years with **Question 2** and **Question 4** proving to be relatively easy, while **Question 5** was more difficult, along with **Question 1(e)(i)**, **Question 1(e)(iii)**, **Question 6(b)** and **Question 6(c)**. Each question included parts which were easy as well as parts which were more difficult, and this gave the weaker candidates the confidence to attempt every question.

Comments on Specific Questions

Question 1

(a) The 1:50 000 map was for Rosenfels, Zimbabwe, and the first task was to use the map in conjunction with Fig. 1 to identify a number of features. Feature **A** was a contour line showing a height of 1080 m. **B** was a building, **C** was a dam, **D** was a ruin, while the natural surface feature at **E** was smooth rock.

(b) The relief, in the area shown on Fig. 2, was dominated by the hill named Kezi. Candidates typically noted that it was a hill or mountain and pointed out the steep slopes. Many also quoted the height at the trigonometrical station of 1194.8 m. Other possible points included the fact that it was a ridge of about 2–3km in length, stretching from north-west to south-east, the separate lower summit, with a saddle or col in between. Moving away from the hill, those who noted the valley were also awarded a mark and comment on the gentle slopes was also valid, provided they were located.

(c) Candidates had to study the two main rivers named on the map: the Mwewe and the Babuli. In order to compare them, a table was provided so that candidates simply had to place a tick into the correct box. Both rivers had rapids and many tributaries, and candidates often had these correct. The Mwewe was the only river with islands. Neither river flowed from south-east to north-west since, although they were aligned this way, they were flowing in the opposite direction.

(d) Farming is an important activity in the south and west of the map extract, since large areas of land are shown to be covered in cultivation. There are also dip tanks for livestock. Most candidates commented on the cultivation. A few mentioned the dams in this area. This was valid if they went on to say that they were for irrigation or drinking water. Weaker candidates noted the large amount of huts and reasoned that there would need to be farming to feed all the people, but they did not actually give any evidence for the farming.

Two of the areas of huts were identified as areas **A** and **B** in Fig. 3, and candidates were asked to compare the services and the settlement pattern in each area. The school and the sports field were the services in Area **A**, while Area **B** had no services. A number of candidates did not get the mark because they included things that were not services. The settlement pattern in Area **A** was dispersed or scattered, while in Area **B** it was linear, along the track. Candidates generally knew the latter.

(e) The six figure grid reference of the 1032 spot height, on the tarred road in the south-east, was 523909. Many candidates had a correct response but 524909 was also seen frequently.

The distance from the spot height to the bridge over the Babuli river was 1900 m. The candidates were given a choice of answers and many did select the correct one.

In part **(iii)** they were asked to calculate the gradient between the two spot heights. The answer was 1 in 70 to 1 in 71 (to allow for rounding) or, as a percentage, 1.4%. It would seem that some candidates did not have access to a calculator, since many had set up the calculation but had not worked through to the answer. Those that had progressed further did not all express their answer correctly. For example, 0.014 rather than a percentage or simply 70 rather than a ratio.

In part **(iv)**, candidates had to measure the bearing, from the spot height to the eastern edge of the map, along the straight line of the cadastral boundary. Answers between 104° and 106° were accepted. Most answers showed that candidates had their protractor correctly oriented, but they had not always read it with sufficient accuracy.

Question 2

(a) Candidates were asked to look at Photograph A and give two pieces of evidence that it was showing the Central Business District (CBD). Most scored their two marks by spotting the bank and noting that it was a tall building. They usually did this within one answer space, so then went on to mention the busy road, with many cars. High density of buildings was also valid, as was a reasonable assumption about the building in the background, such as government building, historic building or just important building. This part was done well.

(b) Candidates could select evidence from any of the photographs for part **(b)**. They had to describe ways in which congestion had been reduced and road safety increased. The most popular points were comments about the wide roads, the presence of lanes, the use of traffic lights, the designated speed limit and the presence of car parks to reduce on-street parking. There were a number of other possible points, including street lighting, pedestrian crossings, pavements, lanes specifically for turning so queuing traffic would not hold up other vehicles, and the use of temporary safety signs to warn of changes ahead (Photograph A). The grid road pattern was also a valid point and the one way street (Photograph C). Many candidates gained full credit here.

(c) Again referring to all three photographs, candidates were asked to comment on relief. The site of Salt Lake City can be seen to be flat or gently sloping, while the land around is higher and steeper with hills or mountains. Many candidates did have correct answers, though they had sometimes included other irrelevant information too, particularly when describing the site.

Question 3

(a) On Fig. 4, plate boundary **X** was labelled on the mid-Atlantic ridge, a constructive, divergent boundary. The clear arrows, either side of **X**, made this very straightforward and many candidates had the correct answer.

(b) Candidates then had to refer to the plate boundaries to describe the earthquake distribution. Many pointed out that the earthquakes were on the plate boundaries (with a few noting the one in China / SE Asia that was the exception) and that they were mainly on the edge of the Pacific Plate. Some then went on to note that it was the boundary of the Pacific Plate and the Eurasian Plate or the Pacific Plate and the Indo-Australian Plate, or that the earthquakes were mainly on destructive boundaries. A few had written about earthquake distribution from their knowledge, rather than as shown on Fig. 4.

(c) In part **(c)** candidates had to refer to Figs 5 and 6. Many plotted the graph correctly and accurately in part **(i)**. The main error was to take the figures against the wrong axes. Candidates should be encouraged to use a sharp pencil for marking data points, so that the exact location of the point can be clearly seen.

Part **(ii)** was found to be difficult by many candidates. Many candidates looked at Fig. 6, but then wrote what Fig. 6 was showing, rather than using this information to answer the question. Shallow earthquakes are closer to the line of the trench, while deeper earthquakes are further away.

Fig. 5 showed a destructive or convergent boundary and the process causing the earthquakes there was subduction. Candidates could usually name the boundary, but not always the process.

Question 4

(a) Fig. 7 gave information about a day's weather for a place in Sri Lanka, and Table 1 gave the information to complete the temperature graph. Many candidates completed the line correctly. The most common mistake was to plot 30°C at 08:20 because this was the darker line on the given grid.

The rainfall bar needed to cover the three small squares between 12:00 and 13:00 and extend to 0.5 mm. Again most candidates were correct. Errors were usually in the width of the bar, rather than its height or placement.

Candidates then had to use the information in Fig. 7 to complete the table. Highest temperature was 32 °C at 11:00 or 12:00 and highest humidity was 86% at 24:00. The temperature data could then be used to calculate the daily temperature range of 6 °C.

The times of sunrise and sunset were shown on Fig. 7 and candidates used this information to help them explain the temperature variations. Some compared day and night, with highest temperatures during daylight hours; others talked about the sun being higher in the middle of the day. Weaker candidates described the temperature variations rather than explaining them and some, perhaps influenced by part **(v)**, related temperature to relative humidity.

As temperature rises, the relative humidity decreases or falls. Almost all candidates completed the sentence correctly.

(b) The rainfall data, shown on Fig. 7, would have to be collected outside of the Stevenson Screen. Many candidates had realised this and either wrote 'rainfall' or 'rain gauge', which was also accepted.

Question 5

(a) The rate of erosion of bare soil is higher than that of cultivation, which is higher than that of pasture, so the correct order down the table was pasture, cultivation, bare soil and this response scored two marks.

Trees help to prevent soil erosion in many ways. Candidates typically mentioned that the roots would hold the soil in place and many also noted that the trees would absorb water. Those that gave a bit more detail on this point were able to gain credit by making the distinction between the roots absorbing water in the soil and the leaves intercepting the rainfall. Interception would reduce the amount of water reaching the soil, since some would evaporate from the leaves later, and also decrease the force of impact. Trees also reduce wind speed, slow overland flow and provide humus to the soil, thereby improving its structure.

(b) In part **(b)** candidates had to use the information in Table 2. It was not enough to simply lift phrases from the table. Most candidates noted that light and loose soils would be particularly prone to erosion. Many also noted that the drought would cause the vegetation to die and the soil to dry out and become even more loose. Others thought that the nomads would allow their animals to remove too much vegetation and cause overgrazing.

Question 6

(a) In 2007 there were 39 000 workers employed in Brazil's shipbuilding industry. Most candidates selected the right information from the graph. In part **(ii)** candidates generally followed the instruction not to give a year by year account of the changes and scored high marks for describing the general pattern of changes.

(b) Due to the expansion of the Brazilian shipbuilding industry, indicated by the graph, the companies would have had to expand their operations. They would have needed new sites for shipyards, and more facilities at existing sites, including accommodation. They may have had to take on lots of unskilled labour due to the problem of needing to find so much new skilled labour. There were few good answers.

(c) Here candidates were again still focused on the numbers of employees and often suggested reasons such as improvement in education and training, mechanisation of primary industry, etc. as reasons for the influx of workers. Instead they needed to suggest reasons for the growth of shipbuilding, such as increased demand for ships, increased overseas trade or even just an increase in the size of ships being produced. A few candidates wrote about government policy, with financial incentives such as tax breaks and others referred to multinational companies, but few had sufficient ideas for full credit.

GEOGRAPHY

Paper 0460/03

Coursework

There was a marked increase in the number of Centres entering the component for this session. Very few of these Centres experienced any difficulty producing work of the standard that is expected, making appropriate assessment within the Centre and completing all the administration accurately and efficiently.

Established Centres continued to work to the well defined standards of previous years and also experienced very few difficulties.

Although good practice was identified throughout much of the work submitted, the report inevitably must focus on shortcomings where they did occur. So overall the report might seem to indicate more weaknesses than strengths, but it must be remembered that weaknesses occurred in only very few instances and that strengths were encountered in the majority of Centres. Where specific difficulties did arise for any Centre, these will have been reported back directly to the Centre in a confidential way. Items discussed here are of a more general nature. Areas of success are shared as a source of good ideas for the future, and difficulties encountered can serve as an identification of pitfalls to be avoided.

There was some adjustment to marks in a few instances. Not all of these were downward, and if any adjustment has been made, Moderators will have identified the source of the change and how it might be avoided in the future. That so many Centres were able to have their submitted marks approved without any adjustment pays tribute to the number of teachers who have undertaken the training in assessment. CIE has been quite happy to accredit teachers with extensive background in Coursework assessment without such training, and these two routes to approving teachers as internal Moderators has resulted in a widespread, fair and consistent application of the mark scheme. CIE has noted that some of the assessment has been carried out by teachers not yet accredited by either undertaking training or based on their previous experience, sometimes because they are new, sometimes because they are not aware of the accreditation that can be given. In these instances, teachers are encouraged to become accredited. The method of doing this by individual feedback will continue for the remainder of 2015, but will be replaced by an online interactive course from 2016 onwards. Both methods of undertaking training should give sound experience and ensure confidence in assessing candidates' work.

Almost all the tasks set for candidates to undertake had a focus on sound Geography and it was clear from the way that candidates wrote, that most had thoroughly enjoyed doing the work and perceived the nature of the Geography being investigated. The only few instances where work undertaken did not include sensible, realistic geographical tasks were in cases where the Centre in question had not sent in an outline proposal form outlining what was intended or planned. Centres that have not yet sent in proposals for their work are encouraged to do so. CIE is reluctant to turn down any proposal, and is only likely to do so if the work does not fall within the syllabus, or is only related to it in a tangential manner. However, if the planning indicates that there might be potential weakness in any of the five criteria for assessment, advice can be offered on how to overcome this. Moderators will readily pass on the ways in which successful Centres have approached work to suggest how any potential difficulties can be avoided. In the write up of the work, the most common weakness has been long, and often irrelevant, introductions, often introducing interesting information in itself, but lending nothing to the actual investigation. Sharp, precise hypotheses usually lead to more focused work in the rest of the study than more open, generalised questions.

The greatest strength of almost all the work undertaken has been the Observation and collection of data. Most proposals contain great detail here. Many candidates reflect this in detailed accounts of how they have collected data, with clear justification of the methods adopted, both in terms of relevance to the aims and ensuring accuracy of the data obtained. Moderators have very rarely needed to report back on this area in terms of potential improvements.

Organisation and presentation of data was more variable between Centres. Organisation was, on the whole, strong. The stages of the route to geographical enquiry give a format that is easy to follow. It was in the presentation of data that most variation occurred. The most common comment by Moderators was that only

relatively simple methods of presentation were used that revealed very little. At least some of the presentation should try to show relationships (scatter graphs, lines of best fit, measures of correlation are amongst those that help show these), or show distributions (maps of various kinds work well here). Diagrams have usually been good, and photographs effectively used. Moderators have reported that on occasion, photographs have been left to speak for themselves rather than significant points in them brought out for the reader.

Analysis is an area that varies considerably between candidates. It is clear that some candidates think that this should be just a description of the data gathered, a written version of what may have been shown in data presentation. For high marks to be achieved here there needs to be some account of how far there is any light thrown on the hypotheses, some explanation of why the findings are as they are (even better if related to geographical theory or textbook reasons). Attempts made to account for any anomalies usually helped to achieve high marks in this criterion.

The conclusion and evaluation often depend on the quality of the analysis. If there has not been interpretation in the analysis along with some comment on expectations, it is quite difficult to write a summary. Ideally, the conclusion should pick out the main and most significant findings and point to the key data that indicate these results. An evaluation should contain more than a list of things that went wrong (pencil broke or the recording sheet got wet) or that insufficient results were collected. It is often not until something is completed that it is possible to see what exactly is involved, and how it might be done better. Answering the question, ‘Now that I know what was involved, what would I do differently if I were to start again and why?’, comments on who might find the results useful, or new lines of investigation that have been thrown up can add further weight to the evaluation, although not always applicable.

In terms of administration, although it is clear that many Centres take time and trouble over ensuring accuracy, Moderators have difficulty in knowing what has been intended in many instances. For example, the marks awarded for each of the criteria in some instances did not add up to either the total or internally moderated total, with yet a different mark again entered on the MS1. Moderators will make extensive efforts to ensure that candidates are given the right mark where it is clear where an error has been made. However, several instances occurred this session where it was not clear at which stage errors had been made by a Centre, and it was not always possible to determine what the correct mark for a candidate should be. It is recommended that, once forms have been completed, a method of double checking be employed to detect any errors.

Once again, it is worth emphasising that most of the suggestions for improvement apply in a relatively small number of instances and that the majority of work seen was fully appropriate and represented good geographical investigation.

GEOGRAPHY

Paper 0460/41

Alternative to Coursework

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 different set 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 list comparative statistics.
- Check you are using the resources that a question refers you to, e.g. *Support your answer with results from Fig. 9 and Table 5.*
- Attempt all completion tasks on graphs, tables or diagrams – not all the answers are on lines and in writing.
- 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 allow, 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 out a question. 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 especially to questions where you are asked to complete tables, diagrams, graphs or maps.

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. 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 write too much in some sub-sections. They 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 41 questions, relate to misunderstanding or ignoring command words and 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 2(a)** where candidates were required to relate their ideas to

safety whilst involved in fieldwork. As in some previous papers, **Questions 1(e)** and **2(e)** required candidates to suggest suitable fieldwork investigation methodologies, and **Question 2 (d)(iv)** required candidates to suggest improvements to the investigation methodology. Such questions are frequently included on this paper and are an area which Centres should practise with candidates. However, it is not good practice to develop a series of generic improvements which may apply to all fieldwork as such suggestions tend to be vague and not worth credit.

Centres need to realise 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(b)**, **1(c)(i)** and **2(b)(i)** 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 premises or in the local area.

Comments on Specific Questions

Question 1

(a) Most candidates compared the employment structure shown in the pie charts, although some wrote two separate points, one about each place which had to be linked for one mark. A question such as this one which asks for differences needs candidates to make comparative statements.

(b) The topic of sampling remains unknown to a significant proportion of candidates. Better candidates were able to name a sampling method and describe how it could be used. However, many candidates did not correctly name a method but wrote about methods of data collection such as a questionnaire. Other candidates named a method but then mixed up their description with a different method. Candidates need to learn three standard sampling methods, i.e. random, systematic and stratified. Random also needs a more precise description of the method than merely 'select people at random'.

(c) (i) Most candidates understood what was required by the question. Weaker candidates did not realise the significance of making sure that people interviewed were migrants. Others were confused about who was the target audience of the questionnaire.

(ii) This question is typical of a data completion exercise which is omitted by too many candidates. Candidates who did draw the arrow were usually within accepted tolerance and shaded the arrow appropriately. A few candidates crossed their arrows over existing ones or took a circuitous route, but these were generally accepted.

(iii) The second map completion exercise was done well by candidates who attempted the question. Again there is an issue that too many candidates did not answer the question.

(iv) Most candidates gave a valid answer with many referring to the idea of clarity or simplicity of the map or its visual impact. Some candidates made the mistake of referring to map 3A rather than 3B.

(v) Fewer candidates omitted the graph completion exercise. Almost all plotted the data and shaded the sections accurately. One error which was apparent in weaker candidates was that they started each section at 12% on the graph and overlapped the sections, showing that they did not understand the technique.

(vi) Nearly all candidates completed both plots accurately. A small number were too inaccurate in plotting the square symbol to gain credit.

(vii) The hypothesis conclusion was made correctly by most candidates and the question differentiated well between candidates. Candidates supported their conclusion by reference to a combination of details from Figs. 3, 4 and 5. Some candidates did not score full marks because they focused on only one source rather than considering all the evidence which they were instructed to do by the question. A good answer contrasted where migrants came from, when they migrated and why they migrated. These ideas were supported by comparative data.

(d) (i) Too many candidates did not attempt the question, ignoring the instruction to complete Fig. 6 on the opposite page. Candidates who did complete the horizontal bars usually did so accurately.

(ii) The correct choices were selected by most candidates. The most common misunderstanding was in benefit number 2 where candidates mistakenly selected the peaceful area option. For an inexplicable reason, some candidates selected more than one opinion for each section. They were not credited for this even if the correct option was one of those chosen.

(iii) Almost all candidates chose Jayabheri and made appropriate comparisons about the problems and benefits in the two locations. However, few candidates supported their explanation with comparative data as instructed in the question.

(e) The final section proved to be a difficult and challenging extension question. It differentiated well between candidates of different abilities, although there were many answers which scored only one or two marks. Most candidates gained some credit in their answer, typically by suggesting that candidates 'look at' or 'observe' conditions or 'count the number of services'. Many candidates suggested techniques such as 'ask people' or 'take photographs' but rarely did they elaborate on what they were trying to find out by using these techniques. Other answers concentrated on obtaining secondary data, but in many answers there was little detail of what this might be. Some candidates assumed that the candidates would be able to go inside the houses to check facilities, which is rather unrealistic. Better responses focused on bi-polar and environmental surveys where candidates were able to elaborate on the techniques and consequently score more marks.

Question 2

(a) Most candidates scored one mark for explaining the need for a cell (mobile) phone. The other two precautions were not explained as successfully because candidates did not relate their answers to safety precautions as required by the question. Consequently there were many answers which explained that fieldwork would be more effective at low tide because the beach would be uncovered, and that candidates should check the weather forecast so they would know whether they needed a coat.

(b) (i) Many candidates missed the instruction to describe a 'simple' method and so wrote about a wind vane, which is not the type of simple equipment which candidates would take with them. Where candidates realised that a simple method was required, many appropriate suggestions were made, for example wetting the finger or making a simple flag or streamer. Many candidates did not refer to the use of a compass to interpret the direction which their method showed. Few candidates referred to the prevailing wind and the need to repeat the method on different days to see if there was one dominant direction.

(ii) Most candidates identified the correct label for the lines on the diagram. The common distractor was 'direction of the tides'.

(iii) The diagram which illustrated longshore drift was helpful to some candidates in explaining the process. There were some excellent answers which clearly showed thorough understanding of the process. Weaker candidates had difficulty in explaining the process even with the help of the diagram. Many candidates missed the key points about swash going up the beach at an angle and backwash going straight down the beach.

(c) (i) Almost all candidates who attempted this question plotted the two measurements correctly.

(ii) Most candidates correctly interpreted the data and agreed with the hypothesis. The question differentiated well with weaker candidates correctly referring to the greater distance travelled on the unprotected coast. Better answers used the data well to support their conclusion and made use of the various average statistics in the table. The question required paired data from both sections of the coast which had to be used comparatively.

(iii) Whilst most candidates understood that the situation would vary with different wind direction and wind strength, they did not always relate these ideas to the fieldwork task and its results. Candidates did not gain credit if they referred to longshore drift or pebbles because the fieldwork was based on the distance travelled by the oranges.

(d) (i) This was a more challenging data plotting exercise because of the reverse scale and the difficult numbers to plot. Nevertheless, many candidates plotted the bars accurately. A common error was to plot the bar at 1.3 m rather than 1.03 m above the beach.

(ii) The question was quite challenging and was not attempted by some candidates. Better answers explained that the beach was higher on the south side as a result of deposition. Weaker candidates struggled to relate the evidence from the graph to the hypothesis. Some candidates ignored the advice that the hypothesis was correct and stated that it was incorrect.

(iii) As in the previous question, better answers explained that there was a difference in height because material was trapped by the groynes or material collected on the south side of the groynes. Weaker answers showed no understanding of how longshore drift is responsible for the unequal distribution of material around groynes.

(iv) This question proved to be the most difficult on the paper. The most common answer was to take more measurements along the groyne, but there were relatively few candidates who suggested that other candidates check the accuracy of measurements or that the investigation could be repeated at different times of the year. Candidates generally gave answers that were not going to improve the reliability of this particular piece of fieldwork, such as measuring groynes on other beaches. Weaker answers were characterised by standard responses such as ‘do the investigation again’ or ‘take more measurements’ or ‘do the fieldwork in groups’. This type of generic answer is too vague to gain credit.

(e) The final question proved difficult for many candidates. There were many weak answers which suggested that candidates had never done this type of task or seen it in textbooks (or past papers). These candidates did not know the purpose of the equipment which was used. Many did not show a clear understanding of what a beach profile is. Some candidates attempted to continue the theme of measuring longshore drift. The small minority of candidates who were familiar with the equipment and the fieldwork technique scored marks with a clear explanation which frequently contained more than four creditable ideas.

GEOGRAPHY

Paper 0460/42

Alternative to Coursework

Key Messages

Here are a few messages to pass on to candidates and to consider in their preparation. These have been suggested by Examiners based on scripts they have marked.

- When answering Hypotheses questions that ask whether you agree or not, always give your opinion at the start of your answer before any supporting evidence. This will usually be *Yes, No* or *Partially / To some extent*. Do not just copy out the Hypothesis if you agree with it.
- If you are told a hypothesis is correct do not then disagree with it and try to justify your view e.**g. Question 1 (c) (iv)**.
- When giving figures in an answer always give the Units if they are not stated for you.
- When shading graphs, use the same style as that provided in the Question and make sure your pencil shading is clear. Check you understand the scales used and the importance of any plots already provided.
- When you think you have finished, go back and check that all graphs have been completed; many candidates lose straight forward marks by missing out graphs.
- Read questions carefully and identify the command word e.g. *Describe..., Explain…* A question that asks *'Why?*' requires a reason to be given not a description.
- Check you are using the Resources that a question refers you to e.g. **Question 1b(ii)** Table 1 and Figs. 2A and 2B.
- 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.
- Make sure you understand the three key sampling techniques that are used in most examinations – these are systematic, stratified and random. It is important to know in which situation each is most appropriate.
- Make sure you understand how the fieldwork is being carried out e.g. in **Question 1 (c)(ii)** many candidates did not gain marks because they confused the traffic survey with the earlier questionnaire so suggested such things as *Ask the drivers…, Give the questionnaire to the drivers.*

General comments

Most candidates found this examination enabled them to demonstrate what they knew, understood and could do. The overall range of marks was wider than in June 2014. Most candidates scored well on the practical questions, such as drawing graphs, calculations and diagram completions.

There is less general advice to be given for areas for improvement with this paper as with others. As there are no question choices to make, it is difficult to miss sections out – though candidates do (especially completion of graphs) - and there were no reports of time issues as the booklet format does not allow or encourage over-writing of sub-sections. This year, however, many candidates chose to write long answers and frequently wrote down the sides of the pages or added 4-12-page booklets at the end.. It is important that, when candidates write the remainder of their answer elsewhere, that they signal it by writing something like –*"continued on page 15"* to ensure it is seen.

Most points for teachers to consider, when preparing candidates for future Paper 42 questions, relate to misunderstanding or ignoring command words, the use of equipment in fieldwork and the importance of experiencing fieldwork – even if is only in the School grounds. Particular questions where candidates did not score well also often relate to them not fully reading the question or just completely missing out straightforward graph completions. Such issues mean that some candidates do not obtain a mark in line with their geographical ability and is an area that Centres should work on.

Please note that this candidates are expected to show that they know about fieldwork equipment, how it is used and fieldwork techniques especially those to do with systematic, stratified and random sampling which continues to be a topic that most candidates do not seem to be able to grasp or distinguish between. Some fieldwork experience is vital even if there is only limited opportunity within the Centre. Familiarity with maps, tables and various graphs is also important to this examination.

Question 1 required candidates to know about aspects of tourism and its effects on residents, how to carry out a traffic survey, the use of questionnaires, and sampling techniques as well as locating plots, drawing vertical bar charts and line graphs. They also needed to make judgements using statistics as well as applying knowledge and understanding to justify hypotheses.

Question 2 required candidates to have experience or knowledge and understanding of how to investigate beaches especially wave frequencies, beach profiles and longshore drift. They needed to understand the differences between constructive and destructive waves and their influence on beach shapes. They also needed to make calculations, plot points and use statistics when analysing and making judgements from evidence with regard to hypotheses.

Comments on specific questions

Question 1

(a) (i) Most candidates realised that the questionnaire was aimed at residents so the prime object of asking them if they lived there was to identify if they were a resident or tourist and not waste their, or the tourists, time. A common reason given was 'because the residents would have more year-round experience of the impact of tourism' whereas tourist answers would be limited, though not necessarily inaccurate, as some candidates stated. A small number of candidates seemed to think the questionnaire was aimed at tourists.

(ii) As in previous examinations, the accepted sampling techniques are Systematic, Stratified and Random – all other variations of these three techniques such as snowball sampling, quota sampling, plus non-sampling ideas (e.g. give out questionnaires, use the Internet), were not acceptable as has been stated in previous reports. Even if the technique stated was incorrect, credit could still be obtained if the description matched one of the three accepted techniques. A number of candidates that did not attempt this **Question (4%)** even though it has been a regular feature of this examination in recent years and is a fundamental part of fieldwork investigations. The three techniques were fairly equally represented with more Systematic than others; note that if they choose Random it is not worth credit if their description is 'choose or pick people at random'; they need to explain what is meant by random. A few canddiates who chose Systematic then described it as choosing every 5th house but the question was about selecting 150 residents so they needed to suggest asking every nth person; the house idea was inappropriate in this context.

(iii) While a few responses focused on the advantages of their chosen technique, most saw that this was a broader question and gained marks for referring to sampling being fair, unbiased, representative and saving time by limiting the numbers asked**.** Answers such as 'easy to carry out' were not accepted nor was to 'get a range of results'. While sampling can ensure there is a range of people selected, no guarantee can be made about the variation in results until they are analysed.

(b) (i) A signifcant number of canddiates omitted this question but of those who did attempt it almost all that did this gained full marks. The 60 plot was the easier one that was done well; a few misplotted the more difficult 47 plot. The two marks were for the plots so incorrect shadings were ignored on this occasion but some candidates chose a different shading to the ones used on the other bars.

(ii) The hypothesis question was quite well done. All the evidence pointed to agreement with the hypothesis and most candidates referred to 'the majority' or 'most residents' supporting the statement. Marks were also available for using data; most candidates referred to the 129/150 residents who agreed that there were more advantages or to the types of advantages with 7 being more than 5 disadvantages. One area where canddiates struggled, was the reference to the 464 responses for advantages and 282 responses for disadvantages. Despite being told that the sample was 150 people, many candidates then referred to 464 and 282 residents. This prevented those candidates gaining full credit.

(iii) Candidates were told that tourism would create more jobs and opportunities to earn money and many candidates just repeated this in their responses. The best answers worked through the consequences of increased tourism and focused on the residents being able to earn more money and a reduction in unemployment. They could then raise their standard of living and afford basic items such as food or even luxuries including access to Schools and hospitals. Credit was available for multiplier effects and boosting the economy due to the creation of hotels, restaurants and a market for selling local items such as food and souvenirs or working in the tourist industry. Some responses focused on social effects suggesting crime would decline and the town would be safer; these were not credited.

(c) (i) Again a number of candidates omiited this question but those that responded did so well. A fairly straight forward question given the inappropriateness of the alternatives canddiates were asked to chose from.

(ii) Many candidates did not read this question carefully. They should have suggested three things that the candidates needed to get right when carrying out the traffic survey that would make the data reliable. Credit was given to ideas that the survey should be taken at the same time, for the same time period, two candidates should check each other's work, and using a tally/clicker to ensure the count would be accurate. Candidates who did this scored well but others wrote about how they would improve the survey next time e.g. carry it out on more days, use more locations, do it at different times of day. Some also suggested using a questionnaire with the drivers or asking the police/traffic wardens to check their data.

(iii) As with many graph completions, many candidates missed this out (8%) yet those that attempted it did well. Straigh forward marks were lost by those not attempting this question. The 220 plot was done well and most candidates also made the effort to put the 122 plot just above the 120 line despite the difficulty of doing so.

(iv) For location X there was no credit for restating the hypothesis; candidates needed to state that the summer line was always above winter on the line graph and then give either the peak difference or the total difference as data support. Tolerance on data was allowed depending on whether they used the data table or made judgements from the graph. In location Y credit depended on how the candidates used data. A few stated that the hypothesis was true – despite being told it was false – and then used the summer/winter +10 difference to justify that but the right data in the wrong context cannot be credited. The hypothesis was false because the figures were so close and the same data should have been used to show that. The best responses recognised that the lines crossed and that, on three occasions, winter figures were higher than summer's. They also chose the highest differences from the data to support this e.g. 14.00 320:307.

(v) It was important here that candidates did not just describe the differences between the two locations but homed in on the different traffic patterns of Fig. 3 and explained the differences. Credit was given for recognising that there was a peak in summer near the beach and harbour which would be due to them being a tourist attraction. Most candidates could do that but failed to explain the pattern at Y regarding local residents providing a consistent all year traffic pattern. Just mentioning that Y was close to a motorway does not explain the pattern.

(d) This was quite well done. Most candidates realised that the type of car was irrelevant to the purpose of the study or that it could be a sensitive question for many people. They also realised the limitations of **Question 2** in that, being a closed question, it did not help find out what method of transport was used; some mentioned that **Question 3** was better as it covered **Question 2** but also found out the method.

Question 2

(a) Most candidates scored well on this question with many receiveing full credit.

(b) Most candidates knew the differences between a constructive and destructive wave and chose the correct answers however a few did not realise the type of wave had changed between the questions so answered the second table by ticking the constructive wave row. While it is true that defining wave frequencies by number values varies between different textbooks, candidates should be aware that the highest rate will be destructive and the lowest constructive. A few discussed how they would measure river velocity rather than wave frequency.

(c) (i) A large number of candidates (5%) did not attempt this question. Measuring wave frequency (as well as beach profiles and longshore drift) is one of the most common coastal investigations that can be carried out and, even if a Centre is a long way from the coast, the methods of carrying out such fieldwork need to be covered. Those that did this usually referred to the use of a stopwatch and counting waves for a set period of time (usually a minute or more) and working out an average. Most said that the waves should be counted but did not define at what point e.g. when they pass a ranging pole or when they break. More than 'count the waves' was needed for credit here. Ideas such as using flowmeters were not accepted.

(ii) This involved a straightforward calculation by adding the numbers to 76 and dividing by 10 giving an answer of 7.6 which the majority did. A few rounded this up to eight despite the fact that averages are rarely whole numbers; if 7.6 was written but then rounded up it was credited. A few added the total to 76 but there was no decimal point between the 7 and 6 to show that they had divided it by 10 so no credit could be given.

(d) (i) Providing a drawing as a prompt proved helpful to candidates who had not experienced the measuring of a beach profile. One error made by many was to state that the ranging pole should be at equal distances; on the diagram it is the breaks of slope that decide the distances. Nevertheless they realised the tape measure would be used for measuring this distance, poles should be vertical, and that the eye line for measuring the angle should be between the same points on the poles. They also mentioned using the clinometer to measure the angle; some said it measured the gradient or slope which was not acceptable. Most finished their answer by adding the need to repeat the method at all the sites to get a beach profile.

(Ii) Reasonable attempts were made to this question; the best answers recognised the similarity in profiles between the plotted shape and the one created by constructive waves. They also used the wave frequency of less than 13 to justify their choice and noted the small bars and ridge in comparison to the destructive shape. This comparison was quite well done. A few responses made their own judgement on the hypothesis despite being told that it was correct; other answers discussed the difference between swash and backwash with different wave types which did not address the question.

(e) (i) Most candidates here answered that they would erect a wind vane or anemometer to check the wind direction. This was not credited. The clue was in the word 'simple'. Acceptable practical ideas included tying a cloth/flag to a pole, seeing which way trees are bending or watching flags blow and then also using a compass to identify the direction. Watching the direction of waves or putting pebbles on the beach to see which way they were moved were inappropriate suggestions to what should be a simple, quick exercise.

(ii) These were two difficult plots yet the majority of candidates rose to the challenge and plotted both 6.5 and 4.2 in the correct places. It was surprising to see that some did not plot 6.5 but could plot 4.2. A number joined up the points or drew a best-fit line through the points. This question, however, did have the second highest omission rate of 7% as, like many other graphs, if it looks like it is complete, some candidates move on to the written answers and do not realise they have to add plots.

(iii) This question was done quite well. The best answers agreed with the hypothesis and also stated that pebbles got smaller as they travelled further east; some did not specify that direction which was needed. Paired data was required for full credit e.g. 6.5 cm at 0 m along the beach decreasing to 4.0 cm at 260 m along the beach. Quite a few responses missed out distance which was needed when providing any data. A few decided the hypothesis was 'Partially correct'; although there were a couple of anomalies (which were credited if mentioned after agreeing with the hypothesis), overall the evidence was overwhelmingly for agreement.

(iv) This question was found to be difficult by most candidates. As with **(c)(i)**, it seemed to show that, unless candidates are provided with a diagram as a prompt - as in **(d)(i)** – or they have experienced measuring longshore drift in the field, they will struggle. The few good answers described the standard technique of painting pebbles, leaving them by the water's edge at a marked spot then returning after a few hours or days to find the pebbles and measure the distance they had moved. A small number referred to an alternative method using a float (some also thought pebbles could float) in a similar way though floats do not always travel quickly with the swash and backwash. Few responses suggested the technique of using a beach with groynes and measuring down each side of a groyne to beach level to compare the amount of material retained. It was

impractical for some candidates to suggest that candidates erect their own groynes to catch the longshore drift. A few suggested taking aerial photographs or looking at old maps which, while of some validity, are not methods that they could use to actually measure longshore drift.

(f) Although few candidates gave a coherent, sequenced explanation of why there was rock debris at the cliff base, they did suggest erosion and weathering as causes and developed some of these ideas for credit. A few responses suggested strong waves bringing in large material that a weak backwash could not remove. The photo is of natural rock debris so any answers that referred to human activity having put it there to protect the cliff were not credited.

GEOGRAPHY

Paper 0460/43

Alternative to Coursework

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 different set 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 list comparative statistics.
- Check you are using the resources that a question refers you to, e.g. *Explain your conclusion by using data from Figs. 9 and 10 and Table 5.*
- Attempt all completion tasks on graphs, tables or diagrams – not all the answers are on lines and in writing.
- 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 allow, 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 especially to questions where you are asked to complete tables, diagrams, graphs or maps.

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. **Questions 1** and **2** were very similar in terms of difficulty.

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 write too much in some sub-sections. They 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 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)(i)** where candidates were asked to focus on dangers in

polluted water rather than just a river. As in some previous papers, **Question 2(e)** required candidates to suggest a suitable fieldwork investigation methodology and **Question 1(b)(ii)** required candidates to suggest improvements to the investigation methodology. Such questions are frequently included on this paper and are an area which Centres should practise with candidates. However, it is not good practice to develop a series of generic improvements which may apply to all fieldwork as such suggestions tend to be vague and not worth credit.

Centres need to realise 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(b), 1(c), 2(a)(i)** and **2(a)(ii)** 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 premises or in the local area.

Comments on Specific Questions

Question 1

(a) (i) The first question focused on safety whilst working in polluted water. A minority of candidates ignored this focus and wrote about the general dangers of working in a river, such as deep water and sharp stones. Candidates who answered with an emphasis on pollution generally scored well, especially with ideas about protection. Weaker candidates frequently did not gain credit because their ideas, such as infection, disease, suitable or appropriate clothes, were too vague.

(ii) Candidates who understood the need to focus on a visual survey generally scored well. The most common suggestions were to look for litter or floating dead fish, or to look at the colour or clarity of the water to make a decision. A common error was the suggestion that there would be a lack of wildlife which could not be checked visually. A few candidates misinterpreted the question and described ways that the candidates might see the pollution such as by using binoculars or taking a photograph.

(b) (i) A common answer was to take repeated readings with the digital meter. This needed to be specified in the same location in the river. Credit was not given for repeating the test on a different day or in a different section of the river as results might be significantly different. The most thoughtful responses were to use two digital meters, clean the sensor after use and make sure the meter is set up properly.

(ii) This was the most challenging question on the paper. However, it did distinguish the better candidates who suggested ideas about the greater accuracy of the digital meter, especially as candidates' decisions on clarity and foam were likely to be subjective. Many answers referred to candidate error or inconsistency and suggested that the water might be contaminated or changed during the time in storage. Others simply referred to the inconvenience of tests not being instant.

(iii) This question is typical of a data completion exercise which is omitted by too many candidates. Those who did draw the bars generally did so accurately.

(iv) Almost all candidates correctly agreed with the hypothesis. They supported their decision with general statements about how the pH, dye and foam in the river changed downstream. Many candidates used statistics to support their conclusion. They needed to include paired data from two sites with reference to distance downstream or site number and the relevant measurements to gain one data mark. Some candidates did not gain maximum marks because they only used the results from one experiment, e.g. pH, rather than considering pH, dye and foam results.

(v) Although most candidates suggested why pollution occurs in a river, only a minority focused on how pollution levels may vary along a river. Some candidates gained limited credit for suggesting sources of pollution such as factories. The better answers explained how pollution might vary due to factories being located in some parts of the river but not others, or the impact of clean or polluted water feeding in from tributaries.

(c) (i) The value of doing a pilot study is becoming more recognised by candidates. Many correctly suggested that a pilot study is useful for practising fieldwork techniques and correcting errors. Less popular suggestions were to test fieldwork equipment and to get used to working as a team.

(ii) The majority of candidates understood that kicking the stones was a deliberate attempt to expose or move the indicator species so they could be caught. However, some candidates misinterpreted the question and explained that the bed was disturbed because the candidates were walking on it.

(iii) Some candidates also misinterpreted this question and suggested that by identifying the species it would be possible to assess the level of pollution in the river or find out the quality of the water. These ideas are rather vague and did not make reference to the biotic index which was required.

(d) (i) Almost all candidates completed the tallies accurately. A small percentage did not attempt the question or wrote in the actual numbers.

(ii) Almost all candidates who answered the question made the correct calculation.

(iii) The graph plotting exercise was more challenging than many because of the need to accurately read the scale. Most candidates plotted at least one value correctly, usually the plot at site 5. A common error in reading the distance scale meant that some candidates plotted the site 3 value at 19 km rather than 18 km downstream.

(iv) Most candidates used appropriate evidence to support the decision they were given. Weaker candidates merely repeated the hypothesis which was not acceptable as evidence. Better answers included reference to the average biotic index or biotic index scores. Candidates needed to relate the biotic scores to the site or distance downstream, rather than just saying 'downstream'.

(v) Candidates were successful in this question if they referred to the biotic species or groups rather than just biotic scores. Candidates who referred to species and linked them to the sites usually scored both marks. As in the previous section, some candidates only referred to downstream rather than actual sites or distance downstream, which was not accepted.

Question 2

(a) (i) Most candidates gave appropriate answers. They recognised that 20 people were not representative of the total population and that asking 500 people would be too time consuming or an impossible task with only six candidates.

(ii) The topic of sampling remains difficult for a significant proportion of candidates. Better candidates were able to name a sampling method and describe how it could be used. However, many candidates did not correctly name a method but wrote about methods of data collection such as a questionnaire. Other candidates named a method but then mixed up their description with a different method. The most common explanation suggested was to avoid bias. Candidates need to learn three standard sampling methods, i.e. random, systematic and stratified. Random also needs a more precise description of the method than merely 'select people at random'. There were some excellent answers about stratified sampling showing good understanding of the methodology and explaining how it would be more representative of groups within the population.

(iii) The focus of the question was migration to the squatter settlement. Unfortunately many candidates overlooked that element and suggested questions about other aspects of life in the squatter settlement such as possible improvements that might be made. Some candidates repeated questions about problems and benefits which were included in the questionnaire. The most popular correct questions were 'Where did you come from?' and 'When did you move here?'

(b) (i) Most candidates completed the pie chart correctly and accurately. A common error was to reverse the order of the segments but this was not following the order of the key or data. These candidates usually still scored one mark for correctly shading the segments.

(ii) Most candidates correctly agreed with the hypothesis. The better candidates understood that the top two categories both referred to employment and so they added them together to reach a conclusion that over half the families moved for employment. They supported the conclusion by quoting the figures from the table.

(c) (i) Nearly all candidates correctly completed the horizontal bars accurately. Unlike many graph completion questions, few candidates did not attempt the question.

(ii) Explanations of the hazard of fire were usually better than those about flooding. Many good answers included ideas about flammable materials, high density housing, the dangerous condition of gas pipes or electricity cables or cooking on open fires. The best answers about flooding focused on site factors such as the houses being on a flood plain or close to the river. Some candidates did not sufficiently explain the problem of poor drainage. Many wrote about poor quality housing being easily damaged which was not accepted as an explanation for risk of flooding.

(iii) Most candidates made the correct decision to disagree with the hypothesis. They generally referred to the comparative number of responses about benefits and problems, and supported the statement with appropriate data. Some candidates did not realise that the responses came from 100 people who could make more than one suggestion each. Consequently they did not score credit if they wrote about 311 people saying there were benefits or 270 people saying there were problems.

(d) Candidates made many sensible suggestions about the difficulties of doing fieldwork in a squatter settlement. Popular suggestions included the danger of crime against the candidates, difficult access, difficulty communicating with residents, and lack of cooperation from some residents. A few candidates repeated ideas about flooding and fire from the earlier question which were not relevant.

(e) The final section proved to be a difficult and challenging extension question. It differentiated well between candidates of different abilities, although there were many answers which scored only one or two marks. Most candidates gained some credit in their answer, typically by suggesting that candidates ‘look at’ or ‘observe’ housing conditions. Many candidates suggested techniques such as ‘ask people’ or ‘take photographs’ but rarely did they elaborate on what they were trying to find out by using these techniques. Other answers concentrated on obtaining secondary data, but in many answers there was little detail of what this might be. Some candidates assumed that the candidates would be able to go inside the houses to check facilities, which is rather unrealistic. Better responses focused on bi-polar and environmental surveys where candidates were able to elaborate on the techniques and consequently score more marks.