

GEOGRAPHY

Paper 0460/11 Geographical Themes
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Key messages

To perform well on this style of paper candidates should:

- Follow the examination rubric correctly, answering three questions, one chosen from each section.
- Answer every part of the three questions chosen, in the spaces provided.
- Be familiar with command words used and words which indicate the focus and context of each question.
- Use and interpret a range of different types of graphs to support ideas expressed in answers.
- Interpret photographs, diagrams and maps carefully, referring to relevant evidence in them.
- Be able to describe a distribution from a map and the location of a specific feature.
- Learn specific geographical terms, to define them and/or use them in answers.
- Use comparative words to describe differences or compare features shown on source material.
- Write answers of an appropriate length by considering the mark allocations and space provided in the answer booklet.
- Write clearly and precisely, avoiding vague terms such as 'pollution', 'resources', 'infrastructure'.
- Develop ideas and/or link them to others when extended writing is required in questions worth five or more marks.
- Ensure that responses are entirely based on the source material provided when this is a requirement of the question.
- Learn a suitable range of case studies, including relevant place specific information, and choose them with care to concisely answer the questions selected.

General comments

In this penultimate November session examining the current syllabus a significant number of candidates performed well across the paper, displaying excellent knowledge and understanding and writing answers of a consistently high quality. Whilst other candidates did not perform as consistently across the paper, most did make a good attempt at most parts of their chosen questions. The paper enabled all candidates to show what they knew, understood and could do.

There were a very small number of candidates that made rubric errors. In some cases, all six questions were answered. Whereas in other cases candidates answered three or four questions from the six, and some selected two from the same section rather than one from each section.

The presentation of answers from candidates was generally acceptable and answers usually included an appropriate amount of detail. Occasionally answers worth a small number of marks were excessively long, mainly due to the inclusion of irrelevant material, whilst some answers to questions worth more marks were too brief. Most candidates, however, were guided by the space provided and mark allocations. The best responses were concise, yet sufficiently detailed and accurate. Some candidates made use of the additional space at the back of the answer booklet. When using the additional space candidates must indicate that the answer is continued in the main body of the answer and clearly include the number of the question on the extra page(s).

Questions 1, 4 and 6 were the most popular questions. There were good answers seen to most questions. There were some high-quality answers to those questions requiring extended writing, including all the **part (c)** questions on population policy, settlement function, coastal hazards, earthquake impacts, economic activities and food shortages. The strongest answers were those which included developed or linked ideas but were well focused and succinct. Weaker responses were sometimes poorly focused with brief lists of simple points, sometimes in bullet points, not all of which were relevant. Some responses included general introductions with irrelevant information about the topic being tested which were not required.

To enable access to the higher levels, candidates need to include place specific detail related to their chosen example.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres prepare future cohorts of candidates.

Comments on specific questions

Question 1

- (a) (i) Most candidates stated a percentage within tolerance.
- (ii) Many answers scored 2 marks. Most that did not score 2 had put the countries in the reverse order.
- (iii) A full range of answers was seen. Some used appropriate geographical language such as 'clustered' and 'uneven' to describe the distribution. Most tried to describe specific areas where the population was decreasing. The northern hemisphere, northern Asia and eastern Europe were acceptable responses. However, weaker candidates did not describe these areas as effectively, some referred to the north/north east of the map or did not specify an area of Asia and Europe. Some candidates mentioned the isolated countries/anomalies in South/Central America and were credited for this. Commonly seen errors were to list named countries or to describe the pattern of LEDCs/MEDCs, which was not relevant.
- (iv) Many candidates gave good responses, a variety of ideas were seen and many scored high marks. Most answers focused on some of the many reasons for low or declining birth rates though others referred effectively to death rates and/or migration.
- (b) (i) This question was generally well answered. Many candidates compared the expected changes in population of LEDCs/MEDCs clearly and many also used data accurately to score full marks. Some did not include the units for total population, millions.
- (ii) This was generally well answered, many scored high marks by referring to a range of appropriate problems, some of which were developed by using linked ideas. All candidates understood what was required although weaker responses included a limited number of valid points. Some vague language was used, such as 'lack of services', where an example of a service could have been credited.
- (c) A wide range of population policies were seen. Many candidates who accessed a mark in level 2, however relatively few were able to push their answers into level 3 by covering the wide range of ideas required. Anti-natal policies predominated, which was expected, however there were some answers about pro-natal policies. Those that referred to the 'Code de la Famille' in France contained some impressive specific details. Many chose the Chinese One Child Policy and focused entirely on penalties or incentives, rather than looking at a range of ideas, such as how the policy was enforced. Many responses included superfluous material, such as explaining why the policy was necessary or evaluating its impacts.

Question 2

- (a) (i) This was usually answered correctly.
- (ii) Candidates found this question challenging, perhaps not familiar with the term 'hierarchy of settlements'. Most responses mistakenly commented on the distribution of the settlements of various sizes, or wrote about services.
- (iii) Many candidates completed the table accurately, putting the words in the right places. However, some mismatched pairs of words e.g. 'few and high' or reversed 'convenience' and 'specialist'.
- (iv) Few good answers were seen, the norm being 1 or 2 marks. Most candidates who answered this question were not familiar with the term 'sphere of influence' and were only able to provide a vague response.

- (b)(i) Most candidates correctly identified the three functions shown in the images.
- (ii) This question was poorly answered overall with few candidates scoring more than 2 marks. Many descriptions of the services in tourist resorts were seen, fewer responses provided points of explanation. Hotels, restaurants and entertainments for tourists were described. The weakest responses were not clear what was meant by 'service provision'.
- (c) Most candidates correctly named an urban area, some also stated an appropriate function, for example tourism. However, this was a challenging question for many candidates who omitted the case study details. Some good responses were seen though few scored beyond level 2. Many scored in level 1 as they only listed simple ideas. Some attempted to develop ideas but gave information about the settlement which did not relate to its function.

Question 3

- (a)(i) This question was poorly answered, and few candidates could describe the location of the dunes appropriately, such as by stating 'above the high tide level'.
- (ii) Most candidates scored one or both marks by identifying the two correct statements.
- (iii) A full range answers were evident, although few achieved 3 marks. Some responses scored a mark for the sand being blown by the wind. Only a few responses scored more than 1 or 2 marks by adding reference to accumulation of sand and colonization by vegetation. Far more frequent were those responses which demonstrated no knowledge of sand dune formation. A common misconception was that they are formed by deposition from waves.
- (iv) A few candidates gave good responses, describing several parts of the process of longshore drift. Most candidates knew that the process was influenced by the angle of wave approach. However, many used terms such as swash, backwash and prevailing wind direction inaccurately.
- (b)(i) There were some high scoring responses and almost all candidates scored by describing one or more appropriate characteristics of the headlands shown in the photograph. There were frequent references to the steep cliffs, the vegetation on the top and the cave.
- (ii) Strong candidates scored high marks by referring to the impacts of differential erosion on an area of coastline with alternative bands of hard and soft rock. Weaker responses showed enough understanding of how the bay and headlands had been formed for some credit to be awarded.
- (c) Most candidates were able to name a suitable coastal area. However, some named a country, which was too vague. Almost all candidates could mention valid hazards, particularly coastal erosion, tsunamis or storms. Candidates who were able to develop their ideas were able to achieve level 2, usually by linking the hazard with the problems it causes. The strongest responses included place specific detail, but this was largely absent from answers. Weaker responses consisted of lists of simple ideas which gained marks within level 1.

Question 4

- (a)(i) Most candidates answered this question correctly.
- (ii) Many candidates could label a constructive boundary where a volcano may erupt and a conservative boundary where an earthquake may happen, but there were significant numbers who did not score both marks. The boundary between the Nazca and Pacific plates was the most common correct response for the constructive boundary. The boundary between the North American and Pacific plates was most chosen for the conservative boundary.
- (iii) Well-prepared candidates were able to give detailed answers explaining the various processes causing earthquakes on conservative boundaries. Weaker candidates showed misunderstanding by stating that, for example 'plate boundaries are moving'.
- (iv) Many good answers were seen with valid descriptions and appropriate explanations of how a method makes a building safer in an earthquake. Simple descriptions were low scoring. The

question asked about ways in which buildings were earthquake proofed and a wide range of ideas was seen. Some candidates described other ideas such as not building near plate boundaries, which was not relevant in this question.

- (b)(i) This question was well answered by many candidates, though not all picked out the key words from the map key. The word 'hazard' was unfamiliar to some candidates, limiting the marks credited.
- (ii) This question was well answered by many candidates. Strong answers referred to a range of appropriate ideas, some of which were developed. Such as, choosing to live there due to employment opportunities created from tourist visits, or people having lived there throughout their lives, hence having family and friends nearby. Weaker candidates included a limited number of simple reasons such as 'fertile soils'.
- (c) Some excellent responses were seen. Many candidates selected a valid location where an earthquake occurred. Most gave examples from textbooks, however others were South and Central American examples, including recent ones which were familiar to candidates. Some made the mistake of just naming a country rather than a named area. The strongest responses selected a number of different earthquake impacts and developed them with detail. Many strong answers with sufficient description scored 5 or 6 marks and a few included place specific details and scored full marks. This particularly applied to examples of areas where earthquakes had occurred in locations which were familiar to candidates. Weaker responses tended to consist of lists of simple points, often in bullet points. Many of these included a sufficient variety of impacts to reach the top of level 1, but the lack of development and linked ideas prevented the award of higher marks.

Question 5

- (a)(i) Many candidates selected the correct definition, though all were seen, including the 3rd option which defines assembly not manufacturing.
- (ii) Many candidates described two features of the industry shown, however some did not gain credit as they wrote about other features shown in the image or described the location of the factory.
- (iii) Candidates needed to use evidence from Figure 5.1, and those who did were able to make relevant points. For example, about the amount of space available, the flat land and the likelihood of the land being low cost as it is away from urban areas as the image shows. Many responses suggested reasons which did not match the evidence shown in the image, for example good road transport or availability of labour, market or raw materials. All of these are significant factors affecting the location of industry, but they could not be substantiated with evidence from Figure 5.1.
- (iv) Many responses identified the importance of raw materials to manufacturing industries and the importance of reducing costs of transport. There were few candidates who scored more than 2 marks by including further ideas, such as references to raw materials being hard to transport, or them being perishable.
- (b)(i) Many candidates found it difficult to make clear comparisons between the sources of the two gases. They tended to describe each pie chart separately. Those who dealt in turn with the different sources tended to score higher marks, for example 'energy generation is a bigger source of carbon monoxide than sulfur dioxide'.
- (ii) This question was well answered by many candidates, with some high-quality answers seen, which referred to a range of appropriate ideas and some of which were developed. Reference to reducing the impacts of climate change was made by some candidates who showed good awareness of this important issue. Weaker candidates tended to refer to a limited number of simple ideas.
- (c) Many different examples and case studies were seen. Some excellent responses were seen but many candidates did not read the question carefully enough. One of the important words in the question was 'managed' and many weak candidates wrote about the risks to the natural environment from economic activities rather than the management. Economic activities commonly chosen were tourism and logging, with various locations from the textbook or examples local to candidates. Tourism and logging activities worked well here as there are well documented strategies to manage their impacts on the natural environment. However, candidates needed to ensure they named a specific economic activity (many wrote 'deforestation').

Question 6

- (a) (i) Many candidates gave correct responses.
- (ii) Many scored both marks for identifying two natural features. Large areas, gently sloping, fertile soils and scattered trees were the most common correct responses.
- (iii) This question required candidates to relate the natural features of the landscape shown in Figure 6.1 to the land use. Stronger responses did this successfully, but others tended to simply describe the natural features or the land use without linking them together. The main land use in the area shown in the image is arable farming, as a result of fertile soils and large areas of flat land where mechanisation can easily be used. Most suggestions did relate to arable land use, however explanations were often simple and only credited 1 mark. Some irrelevant responses related to climate were seen.
- (iv) This question was generally well answered with many candidates scoring highly. Strong responses referred to the fertilisers, pesticides, high yielding seeds and selective breeding of livestock although a wide range of ideas was seen. Vague methods such as using chemicals and technology needed more precision for credit.
- (b) (i) Many candidates used the graph well to accurately describe the general decrease and/or the fluctuation in sugar cane production. Many candidates used statistics with the most significant data being that for 2001 and 2022 which illustrated the general decrease. Some candidates also referred to intervening years, which was valid if used to illustrate the fluctuations in production.
- (ii) Candidates found this question challenging and few scored more than 3 marks. The most commonly seen correct responses referred to changes in demand, a valid point but often made in detail at the expense of including other factors. Climatic factors such as variation in rainfall, temperatures and sunshine hours were often omitted from responses.
- (c) A variety of case studies was seen, with many African country examples, along with some from South America and Asia. Some were well documented textbook examples, other were examples of more recent food shortages. Well-prepared candidates showed detailed knowledge of a variety of problems caused by food shortages. Many answers described problems for people in detail, such as the impacts of malnutrition. Stronger candidates also included economic impacts on the country or area chosen such as a less productive workforce or higher costs of healthcare provision. Weaker responses listed simple ideas, thus scoring in level 1, rather than attempting to describe problems more fully or to link them together.

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The presentation of answers from candidates was generally acceptable and answers usually included an appropriate amount of detail. Occasionally answers worth a small number of marks were too long, mainly due to the inclusion of irrelevant material, whilst some other answers to questions worth more marks were too brief. However, most candidates were guided by the space provided and the mark allocations, the best responses being concise, yet sufficiently detailed and accurate. Some candidates made use of the additional pages at the back of the question and answer booklet. When using these extra pages candidates must indicate that their answer is continued and clearly show the number of the question on the additional page.

Questions 1, 4 and 5 were the most popular questions. There were good answers seen to most questions. There were many high quality answers to those questions requiring extended writing, including all the **part (c)** questions on underpopulation, traffic congestion, waterfall formation, river flooding, tourism and water supply. The strongest answers were those which included developed or linked ideas but were well focused and succinct. Weaker responses were poorly focused with brief lists of simple points, sometimes in bullet points, not all of which were relevant. Some responses included general introductions with irrelevant information about the topic being tested which were not required.

To enable access to the higher levels, candidates need to include place specific detail related to their chosen example.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres prepare future cohorts of candidates.

Comments on specific questions:

Question 1

- (a) (i) This question was approached with confidence. Most candidates were able to write an appropriate definition of migration, with 'the movement of people from one place to another' being by far the most common response.
- (ii) Most candidates performed well on this question, with the majority accurately identifying both an internal and an international migration route. It was evident that the majority found the resource showing migration routes in Central America accessible. Most responses were flawless and included a wide selection of migration routes. The most commonly cited example for internal migration was Mexico City to Monclova, while for international migration, typical routes included Guatemala or Guatemala City to Mexico City or Mazatlán. There were, however, occasional instances where candidates confused internal and international migration routes or named examples which were not shown on Fig. 1.1.
- (iii) This question involved candidates describing three pull factors attracting migrants from Central America to MEDCs in North America. Many candidates responded well, with most responses focussed on pulls such as employment, education, political security and health care. Occasionally, candidates referred vaguely to 'more resources', 'a better environment', 'safety' or 'advanced technology' which were not credited. However, the most common error was to use single words without any elaboration, for example 'education'. Candidates needed to describe each pull in such a way as to make it clear that the pull factor was 'the availability of better or good education' or 'access to high quality schools' and/or 'further education institutions'.
- (iv) This task discriminated well, most candidates were able to explain at least one issue whilst many others suggested three or four valid ideas. There were many perceptive responses which showed real understanding, the most common ones relating to jobs, housing, discrimination and language.
- (b) (i) Candidates generally encountered few issues in identifying the three urban areas from Fig. 1.2, based on information about population change presented in the compound bar graph. Most responses were accurate, although a small minority made errors in interpreting the data, for example, some used San Jose as both an urban area with the smallest increase of international migrants and also an urban area with a decline in the number of internal migrants.
- (ii) In this question candidates were required to discuss how far they agreed that receiving large numbers of migrants benefits urban areas in MEDCs. This gave them the opportunity to evaluate this issue which is important in many parts of the world. Clearly there are pros and cons of any migration, to both the receiving area and the destination and many candidates were successful in identifying appropriate benefits and problems faced by urban areas when receiving international migrants. For full marks candidates were expected to consider both benefits and problems, in doing so making a clear evaluative statement. Perceptive and well-informed candidates did this well, whilst others gave one sided responses which did not show the same informed understanding of the situation. Benefits generally were based on the provision of a workforce (skilled, low cost) and the impact that increased labour has on the economy. A significant number also considered the positive impact of increased cultural diversity. Problems frequently tended to focus on the need for temporary housing, whilst others took a more extreme view about problems involving racial tensions and/or criminality.
- (c) As expected, this case study discriminated well and some candidates produced excellent responses describing the problems caused by underpopulation. Candidates generally selected appropriate named examples, with Australia, Botswana and Canada proving by far the most popular. A significant number of responses were purely descriptive, restricting them to Level 1 marks, however, the majority of candidates identified appropriate issues to discuss in detail, including both economic and cultural issues. There was evidence of a minority misinterpreting the

question, placing emphasis on discussing issues surrounding an ageing population rather than underpopulation. Others wasted time by writing lengthy introductions and including details about the causes of underpopulation rather than focussing on its effects.

Question 2

- (a) (i) Approximately half the candidates who selected **Question 2** answered this correctly. The most common incorrect answers were high-cost housing and outer suburban residential area. A few ticked more than one box, which scored zero marks.
- (ii) This was correctly answered by almost all the candidates.
- (iii) The most common correct answers were in relation to the trees/vegetation and tall buildings. Some candidates used the term 'skyscrapers' which was not valid. A small proportion of candidates mentioned the oval shape or the geometric layout. Many candidates wrongly referred to roads and other features in the surrounding area rather than the industrial park.
- (iv) Candidates found this question challenging. Those who read the question stem and understood that this was a redevelopment of a disused/brownfield site avoided the pitfall of writing about deforestation and ecosystem damage. Some candidates were able to suggest reasons why people may be for the building of the high technology industrial park, however relatively few could suggest valid arguments why some people would be against it. Job creation was seen as being the most common benefit. Many candidates mentioned air pollution and noise pollution as disadvantages, however it was rare to see this explained in the correct context i.e. during construction or as a result of increased traffic. A significant number of candidates made it difficult for themselves as they clearly imagined this development to be heavy industry rather than a high technology industrial area. Modern high technology industries tend to deal with research and data/programming so they do not produce bulk products so atmospheric pollution and noise from production would be unlikely.
- (b) (i) Many candidates described one or more appropriate features shown in the image. Most correct answers referred to significant features such as shops, hotels and tall buildings. Many observed that there were lots of people walking around the area, along with features such as tram lines and cycle lanes.
- (ii) Whilst there were a few outstanding answers, showing excellent understanding, the general quality of answers here was poor. A number omitted the question and of those who did answer it, few seemed to have a clear understanding of what is meant by 'sphere of influence', with many vague references to shops, services, advertising and large numbers of pedestrians or tourists. Rarely did answers show any understanding that the area is likely to have excellent access and contain shops selling specialist or comparison goods or providing high order services, thus attracting people from a wide area around Amsterdam.
- (c) This case study discriminated well, and some excellent responses were seen. A variety of examples was used, including well documented textbook examples and ones which were local to candidates. Most common answers referred to the large population, high car ownership, inadequate roads, accidents and rush hour. Candidates listing several of these ideas scored marks within Level 1, however the better responses were those which were developed or linked ideas, allowing candidates to access higher levels. Place specific detail was seen in a number of answers, particularly those using local examples which were familiar to candidates. There were some excellent answers based on local knowledge, including the frustrations caused by poorly maintained roads, failure of traffic lights (robots), or the coincidence of work and school times causing rush hours. As in some of the other case studies some candidates wasted time by including too much background information about the urban area, along with irrelevant information about the effects of traffic congestion.

Question 3

- (a) (i) Most candidates answered this question correctly, identifying the peak discharge of 55 cumecs from the hydrograph.
- (ii) This question discriminated well. Well prepared candidates gave well rehearsed definitions whilst weaker candidates confused overland flow with stream flow and confused throughflow with

percolation and groundwater flow. Some candidates defined the processes by directly using the words being defined in their definitions, for example 'overland flow is when water flows over the land'. Credit is never awarded for such responses.

- (iii) This referred to peak discharge which, as shown in the hydrograph, is delayed. Many candidates identified overland flow and throughflow as reasons for this lag time, whilst others commented on the distance that the water needs to travel from the place it falls within the drainage basin to the channels. The role that vegetation/forests play in delaying discharge was also well understood by the more able candidates.
 - (iv) Generally, the candidates were successful in stating the effects of deforestation and reservoir building on discharge, and many could also effectively explain why they impact discharge for additional marks. Many referred to deforestation increasing discharge, and deforestation decreasing discharge as water is held behind the dam.
- (b) (i) Stronger candidates realised that the focus of the question was a comparison of the inner and outer banks of the river not the vegetation or river processes. The best answers were comparative, stating that Bank X was low, flat and covered with rocks or pebbles whereas Bank Y was high, steep and composed of soil. Weaker candidates did not compare or focused on details which were not relevant.
- (ii) Here it was necessary to explain why the two banks differed from each other. Weak answers tended to do little more than in the previous question where they had described the features as they did not differentiate between the two command words describe and explain. More perceptive candidates identified the section of the photograph in the image as being a river meander, and explained that Bank Y, being the outer bend, was subjected to erosion due to the high velocity whilst Bank X received deposition due to the low velocity of the river. Impressive responses were occasionally seen from high scoring candidates which used terminology such as hydraulic action, abrasion and helicoidal flow.
- (c) The full range of answers was seen here, with well informed candidates producing excellent answers detailing the process by which waterfalls are formed, accompanied by informative, fully labelled diagrams and explained using appropriate terminology. At the opposite end of the spectrum some candidates omitted the question or wrote irrelevant points. Many candidates showed some understanding that the flowing water eroded the soft rock, undercutting the harder rock so that ultimately it collapses and retreats. The level of understanding and detail included distinguished between Level 1 and Level 2 responses. Weak attempts with simple statements scored Level 1 marks but provided these processes were understood and linked together in the correct sequence candidates scored marks at Level 2 or above.

Question 4

- (a) (i) Most candidates successfully identified northern Hokkaido. An occasional error seen was that some candidates ticked two boxes.
- (ii) Many candidates gained two marks by referring to coastal areas in the south, east or south east of Japan. Others named at least two appropriate islands with a very high risk of earthquakes, such as Shikoku and Honshu. Common errors were references to plate boundaries, none of which were shown on Fig. 4.1, or descriptions of discrete locations with very high risk rather than describing the distribution as required. Some referred to the coast as the 'edge' which was not acceptable and directions were occasionally confused.
- (iii) This question discriminated well. Most candidates recognised the significance of Japan's proximity to many plate boundaries with better answers then going on to describe the impacts of plate movement, friction, the build-up of pressure, and the sudden release of pressure to gain full marks. Weaker answers did little more than referring to plate boundaries and a significant number of candidates struggled to express this idea correctly, using phrases such as 'Japan is in the middle of plates'. Common errors were to refer to 'plate boundaries moving' and plates 'colliding', neither of which are accurate.
- (iv) Many candidates gave good responses, focusing typically on factors such as many MEDCs being wealthy countries with jobs and high living standards, along with references to earthquake proof building design and the sentimental value of remaining close to friends and family where they have

lived all their lives. Weaker answers made vague references to 'technology' whilst a significant number misread the question and wrote about the benefits of living near volcanoes instead of focusing on earthquakes.

- (b)(i) Candidates who had revised thoroughly were able to score full marks. A common error was confusing the epicentre with the focus. Others guessed wildly with answers such as the Earth's core, crust or plate boundaries.
- (ii) A familiar question which discriminated very well. It was well answered by many candidates, with some high quality answers seen, which referred to a range of appropriate ideas which were developed. Weaker candidates tended to include a limited number of valid points. Some answers were too vague, referring only to 'resources', 'infrastructure' or 'earthquake prediction'. Some incorrect responses also suggested that people could be warned and evacuated before an earthquake, which is not possible, although recent advancements in seismology do now enable warnings to be given in some MEDCs seconds before an earthquake occurs. Some answers referred to population density in an attempt to explain the variation, however areas of high population density can be found in both LEDCs and MEDCs.
- (c) Candidates generally named appropriate rivers, either textbook examples such as the Ganges, Thames, Nile, Elbe and Mississippi or named rivers in their own country. The question discriminated well. Low scoring responses consisted entirely of simple statements, some which referred only to heavy rainfall. Stronger candidates developed or linked several reasons to explain how they increase river discharge and lead to flooding. For example, 'deforestation reduces interception and decreases water uptake by roots, leading to greater volumes of water reaching the river'. Some high quality answers incorporated place specific detail, however the lack of such references in many otherwise impressive answers prevented them from scoring full marks. As with other case studies some candidates included irrelevant information, particularly about the effects of flooding, in some cases only briefly mentioning its causes.

Question 5

- (a)(i) This was generally well answered. The majority of candidates correctly identified a distance falling within the accepted range of 50 – 58 km. Only a very small minority submitted values just outside this range such as 48 km or 60 km. Outliers significantly beyond the range were rare and appeared to reflect fundamental misreading of the map scale.
- (ii) Performance was notably weaker here. The task required candidates to describe the island's location and credit was awarded for using direction and/or distance from clearly named location(s) on the map extract. A substantial proportion of responses were vague, including phrases such as 'between two islands', 'in the centre of the map', 'above an island', 'surrounded by islands', or 'close to/near an island'. Even amongst those who realised the importance of using direction and distance when describing a location, frequent errors occurred, such as inaccurate use of the scale or reversal of directions. Basic map skills such as this should not cause problems for candidates at this level.
- (iii) This proved to be challenging for many candidates, the typical score being one or two, with a significant minority getting zero. Responses referring to 'beautiful scenery' and 'relaxing/peaceful/calm' atmosphere were the most common correct responses. Many other responses were too vague, for example 'no pollution', 'clean', 'natural' and 'not damaged by humans'.
- (b)(i) This was well answered. Almost all candidates identified at least one credit-worthy environmental impact, with the four principal forms of pollution, noise, air, land, and water, each earning individual credit when stated. Many extended their answers to include deforestation, linked explicitly to hotel/accommodation construction. A smaller number developed the idea further by referencing loss of habitats or loss of biodiversity. Only a few responses included irrelevant discussion of impacts on people such as traffic congestion or rising cost of living.
- (ii) This discriminated well. Almost all candidates gained marks, typically for 'littering or land pollution' and for 'noise', their negative impacts on people living in the area being self-explanatory. However, many did not score marks for simple references to air or water pollution as these needed to be

appropriately contextualised in relation to their consequences for people. For example, 'air pollution from vehicle exhausts causes respiratory problems/asthma or 'water pollution reduces fish stocks for consumption by local people'. Similarly, ideas such as overcrowding, loss of land, spread of disease and crime lacked the required specificity or relevance and were not credited.

More sophisticated answers demonstrated awareness of socio-cultural and economic disbenefits, including loss of privacy for residents, cultural dilution/commercialisation, inflationary pressure on local goods and services, and the instability of seasonal employment.

- (iii) This question also discriminated well and provided the opportunity for perceptive candidates to suggest a range of plausible strategies. High quality answers referred to several management strategies using developed ideas, typically including limiting visitor numbers, educating tourists about environmental responsibility, installing specific anti-litter signage, providing adequate waste bins, or imposing fines for littering. Weaker responses made fewer points, often at a level which was too extreme or simplistic, such as 'put up signs' and 'fine people for breaking rules'.
- (c) Many examples were seen, common ones being the Victoria Falls, Jamaica, Zanzibar and The Maldives. As expected, this case study discriminated well, with many candidates reaching Level 2. Weaker responses typically made a number of simple statements to achieve Level 1. Many of the ideas included were not related specifically to the place stated but generic. A few however achieved full marks by also including place detail. The most common ideas were 'tourism creating jobs', 'local people selling their wares as souvenirs', 'tourism boosting the economy/earning foreign currency' and 'the creation of better roads and airports'. Some of these ideas were developed through the use of examples such as 'tourism jobs such as boat drivers and tour guides'. As in many other questions the term 'infrastructure' was used by many candidates to mean anything from roads to buildings of any sort and was often used in too vague a manner for credit.

Question 6

- (a) (i) Most candidates answered this correctly.
 - (ii) The majority answered this well, often with reference to Grand Port Bay, a named relevant coastal settlement, or by reference to the coast, some using distance and direction accurately. Common errors were vague references to the Indian Ocean or North of the map, which some wrongly referred to as the north of Mauritius.
 - (iii) This discriminated effectively with good answers making clear reference to likely problems being faced by the people, including economic impacts such as loss of tourist trade and reduced catches for fishermen, or other impacts such as being unable to swim/relax on the beaches and ships being unable to travel into and out of ports. Weaker responses gave vague responses with little clarity in terms of how the people will have been affected. Vague statements such as 'water pollution,' and 'kills the fish' needed elaboration for credit. Many candidates use the phrase 'it affects.....' in questions such as this, which is never credit worthy unless they explain what those effects are. In this case how the oil spill affected the people. For example, 'It affects the fishermen' cannot be credited but 'it affects fishermen by reducing their income' can. A common error was to refer to drinking water being polluted. Whilst the oil may affect desalination plants, people will not directly drink seawater.
 - (iv) The majority of candidates were able to score on this question, often by reference to fish/coral being killed or habitats being destroyed, though many of the ideas were somewhat repetitive. Stronger candidates developed their ideas with full explanations, for example referencing issues such as the loss of sunlight/oxygen or the impact on food chains. An error made by a significant minority of candidates was to write in detail about coral bleaching instead of focusing on the question.
- (b) (i) This was well answered, with many good comparisons of North America and South East Asia. Some lost marks by writing about only one area rather than comparing, whilst others compared two completely different parts of the world in error.
 - (ii) Whilst there were some high quality answers, many candidates did not perform well on this question. Some did little more than make simple statements describing the difference in domestic

use of water rather than explaining it. Others wrote generally about variation in water use, rather than focusing on domestic use. Better responses typically referred to variation in the water supply infrastructure, especially piped water to households, and the use of devices such as washing machines and showers using large amounts of water.

- (c) Many different case studies were well used with Singapore, Lesotho and Zimbabwe being popular choices. The question discriminated well. Low scoring responses consisted entirely of simple statements, often in lists of bullet points such as the use of rivers, dams and wells. Higher scoring answers were developed or included linked ideas such as 'water is collected in reservoirs where it is stored before being piped to treatments plants before being distributed to households'. Some high quality answers incorporated place specific detail, such as the names of rivers or dams, which raised their responses to Level 2, providing sufficient detail had been included within the answer.

GEOGRAPHY

Paper 0460/13 Geographical Themes
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Key messages

To perform well on this style of paper candidates should:

- Follow the examination rubric correctly, answering three questions, one chosen from each section.
- Answer every part of the three questions chosen, in the spaces provided.
- Be familiar with command words used and words which indicate the focus and context of each question.
- Use and interpret a range of different types of graphs to support ideas expressed in answers.
- Interpret photographs, diagrams and maps carefully, referring to relevant evidence in them.
- Be able to describe a distribution from a map and the location of a specific feature.
- Learn specific geographical terms, to define them and/or use them in answers.
- Use comparative words to describe differences or compare features shown on source material.
- Write answers of an appropriate length by considering the mark allocations and space provided in the answer booklet.
- Write clearly and precisely, avoiding vague terms such as 'pollution', 'resources', 'infrastructure'.
- Develop ideas and/or link them to others when extended writing is required in questions worth five or more marks.
- Ensure that responses are entirely based on the source material provided when this is a requirement of the question.
- Learn a suitable range of case studies, including relevant place specific information, and choose them with care to concisely answer the questions selected.

General comments

In this penultimate November session examining the current syllabus a significant number of candidates performed well across the paper, displaying excellent knowledge and understanding and writing answers of a consistently high quality. Whilst other candidates did not perform as consistently across the paper, most did make a good attempt at most parts of their chosen questions. The paper enabled all candidates to show what they knew, understood and could do.

There were a very small number of rubric errors, typically from weaker candidates. In some cases, all six questions were answered, in other cases candidates tended to answer three or four questions from the six, selecting two from the same section rather than one from each section.

The presentation of answers from candidates was generally acceptable and answers usually included an appropriate amount of detail. Occasionally answers worth a small number of marks were too long, mainly due to the inclusion of irrelevant material, whilst some other answers to questions worth more marks were too brief. However most candidates were guided by the space provided and mark allocations. The best responses were concise, yet sufficiently detailed and accurate. Some candidates made use of the additional pages at the back of the question and answer booklet. When using these extra pages candidates must indicate that the answer is continued and clearly show the number of the question on the additional page(s).

Questions 1, 4 and 5 were the most popular questions. There were good answers seen to most questions. There were many high quality answers to those questions requiring extended writing, including all the **part (c)** questions on overpopulation, urban sprawl, delta formation, earthquake response, globalisation and economic activity impact management. However, the inclusion of unnecessary general introductions with irrelevant information about the topic being tested continued to be a concern. The strongest responses were those which included developed or linked ideas but were well focused and succinct, with little or no irrelevant information. Weaker responses were poorly focused with brief lists of simple points, sometimes in bullet

points, not all of which were relevant. To enable access to the highest level, case study answers require place specific detail related to the chosen example.

The following comments on individual questions will focus upon candidates' strengths and weaknesses and are intended to help centres prepare future cohorts of candidates.

Comments on specific questions

Question 1

- (a) (i) Most candidates identified the correct year from the graph.
- (ii) Most responses recognised there was an increase in population, however few described the growth as was required. Constant, steady or rapid growth were some appropriate descriptions. Most candidates were credited a mark for including data with the correct unit, billions. Responses suggested that candidates had read the graph correctly but had misinterpreted the instruction to 'describe the growth'.
- (iii) Many candidates gave an accurate description of the predicted population change with supporting statistics. Reference to exponential rates of growth was not credited, as the predicted growth is rapid but not exponential.
- (iv) The question required reference to both birth rates and death rates. Most candidates stated that the birth rate in Europe will be lower than the death rate and scored a mark. Many candidates explained clearly why birth rates have fallen for reasons such as women being educated and having careers, easy access to contraception and high cost of living reduces the number of children people choose to have. A minority of responses gave reasons for higher death rates which were credited, such as disease, social problems such as alcohol abuse or conflicts and war.
- (b) (i) Many candidates recognised this was a negative relationship and that as women in education increased, the fertility rate decreased. However, fewer scored the mark for statistics as they read the incorrect axis from the graph or misinterpreted the scales, such as by stating 10% women had secondary education in 1980.
- (ii) This question was generally well answered with many scoring high marks by referring to a range of appropriate ideas, some of which were developed. Many candidates understood the significance of tradition and religion and were able to give reasons why they make it harder to reduce population growth in many LEDCs. Weaker candidates usually gained some marks, although they tended to include a limited number of valid points which were simply stated.
- (c) A full range of responses were seen. There were many excellent responses, some of which included accurate place detail having chosen a country which they were familiar with. Many candidates wrote with confidence, some including a range of well explained ideas. Very weak responses tended to at least gain level 1 marks using simple statements, or were able to reach level 2 by linking one or more of their simple ideas together. A minority described the causes of overpopulation in error, and no credit was awarded for this. It is very important that candidates read the question carefully.

Question 2

- (a) (i) Many candidates stated an answer within the tolerance of 17.5 to 18 per cent.
- (ii) Most candidates were able to score two marks here. It is important that the candidates plot the pie chart in the in the same order as shown in the key. Here the line was drawn at 95 per cent. The shading must also match that shown in the key, so for the 2000–4999 the shading lines had to be vertical.
- (iii) Most candidates correctly chose a clinic. However, a significant minority chose a hospital as perhaps they had not read that the population was between 500 and 999. There were some good explanations seen for the clinic, most being related to the clinic being a basic need required by the inhabitants who could not afford or were not able to travel elsewhere for treatment. A few referred

to the other options (e.g. the hospital) explaining they were not viable due to the threshold population not being met. Weaker responses mainly scored only 1 mark for the choice of the clinic.

- (iv) A full range of marks was credited. Stronger responses gave several valid reasons such as people moving to urban areas or mechanised farming has reduced work in rural areas. Weaker candidates stated some simple reasons, such as employment, education and health care. Some answers focused on high death rates and/or decreasing birth rates. However, a variety of push and /or pull factors were needed to score full marks.
- (b)(i) Three clear characteristics of the settlement shown in the photograph had to be described. However, this was generally poorly answered by many candidates who did not use the photo to describe what they could see. Whilst all mark scheme points were seen, few candidates scored all 3 marks, missing obvious ideas such as small, rural, or dispersed.
- (ii) Candidates found this question quite challenging. The most common correct explanations given for the location of the settlement were those relating to access by the road and the avoidance of high land. Many weaker responses were purely descriptive rather than providing any explanation.
- (c) There were a wide range of example urban areas referred to, including New York, Sydney, Dhaka and London. However, some responses mistakenly referred to effects on humans rather than on the natural environment. Reference to global impacts was also seen, when the focus of the question was the surrounding rural area. Where candidates had correctly interpreted the question, ideas such as deforestation, loss of habitats, named types of pollution and flooding received level 1 credit. To achieve level 2 marks, there had to be a development of the level 1 ideas by linking them together, such as deforestation causes death of plants, or the loss of habitats causes the migration of species.

Question 3

- (a)(i) Many candidates correctly identified the method of coastal management as a 'groyne'.
- (ii) Some candidates scored both marks, by reference to beach material being trapped and thus preventing longshore drift. Few responses referred to the beach being built up or widened, which is what protects the land behind the groynes. Many incorrectly suggested that wave energy is directly decreased by the groyne, which is not the case.
- (iii) The most often seen response was that the power of the waves will be reduced, many candidates scored just 1 mark for making that point. Few candidates were able to fully explain their understanding of how the protection works, such as by stating 'rocks in the metal cages help solidify the cliff and absorb wave energy'.
- (iv) Many candidates gave good responses here, explaining several ideas and scoring high marks. Typically, candidates wrote lists of features which needed to be protected, whilst some of the better answers also referred to issues such as destructive waves breaking on a coast consisting of rocks which are not resistant.
- (b)(i) There were many high scoring answers, and almost all candidates scored some marks by describing one or more appropriate features of the headland shown in the photograph, such as the steep cliffs, the vegetation on the top of the cliffs, the cave and the arch.
- (ii) This was well answered by many candidates who gained high marks by referring to specific named processes of erosion and their effects. Good answers explained how the headland results from the resistance to erosion of outcrops of harder rock. Or explained the sequence of formation of caves and arches on the headland. Some answers made reference to the formation of stacks and stumps which was irrelevant, as these features are not shown in the image.
- (c) Many candidates found this question challenging. Most did not appear to be well prepared and showed little knowledge of deltas and their formation. Some responses described the slowing down of the river and consequent deposition of sediment. The strongest added detail, such as that the river would be carrying a heavy load and by describing the process of flocculation.

Question 4

- (a) (i) Most candidates used the map well to correctly identify a plate moving from west to east.
- (ii) Many candidates gained both marks for identifying two plates at a convergent boundary. However, a common error was to name plates at a divergent boundary.
- (iii) A full range of responses was seen. The weakest responses typically scored 1 mark, for the idea of earthquakes occur on or close to plate boundaries. Other weaker candidates listed areas, often at continent level, or gave a list of plate names rather than stating that earthquakes occur between two correctly named plates. Many answers correctly referred to the Pacific Ring of Fire.
- (iv) Well prepared candidates were able to give full answers describing the different stages of the processes. Weaker answers gave ideas such as 'plate boundaries move' and 'plates collide' which did not gain credit.
- (b) (i) This question was generally well answered with many candidates describing direction and distance accurately, especially from Pokhara and Kathmandu. Weak answers made errors such as referring to near or close to rather than using the scale to give an accurate distance. Some needed more practise using compass directions or gave vague ideas such as between India and China.
- (ii) Many candidates wrote in detail, referring to a range of appropriate ideas some of which were developed. Weaker candidates gained some marks with a more limited range of valid ideas which simply stated why the earthquake was hazardous.
- (c) Some excellent responses were seen. Many candidates selected a location in Japan or New Zealand, although a significant minority selected other valid examples. Some candidates made the mistake of just naming a country, which was too vague. The strongest responses selected a number of strategies and developed them in some detail, such as earthquake proofing, education about earthquake response, evacuation drills, improving health care and rescue procedures. Whilst many strong answers with sufficient description and explanation gained five or six marks. Those that included place specific details gained full marks. An error made by some candidates was to explain earthquake prevention and prediction. Whilst reference to monitoring was valid it is not possible to predict earthquakes with certainty and prevention is impossible. More detailed responses which referred to sirens and warnings on mobile phones that occur immediately before the earthquake were credited, but often such comments were too vague and did not indicate that they were warnings sent out immediately before the earthquake.

Question 5

- (a) (i) Many candidates selected the correct measure for GNP, although a common incorrect answer was government spending.
- (ii) More candidates correctly stated the correct percentage for agriculture in 2011 than the percentage for services in 2021. The 2021 statistic was more challenging because of the cumulative nature of the graph.
- (iii) Candidates needed to look at the resource carefully if they were to describe the changes accurately. Whilst all the changes were relatively small, they were noted by perceptive candidates. A common error was to comment on the total value reducing rather than the changes for each sector.
- (iv) Many candidates stated good and varied reasons for a smaller percentage working in agriculture in MEDCs and could explain each one fully. Mechanisation and education/skills were common answers which were often well explained for full marks.
- (b) (i) This question was generally well answered, with most candidates identifying the positive relationship. Stronger candidates addressed the 'to what extent' part of the question by referring to the relationship not being perfect. Weaker candidates did generally identify the relationship, and many attempted to use statistics to illustrate this.
- (ii) Candidates appeared to be familiar with the Human Development Index (HDI), and well-prepared candidates gained marks by referring accurately to the separate measures used to calculate HDI.

Most also knew that it is a composite indicator, using a simple 0–1 scale to make valid comparisons. In contrast weaker candidates still appear not to have covered HDI in their studies and included little in their responses that was credit worthy.

- (c) Some excellent responses were seen here which demonstrated a very clear understanding of globalisation, with full description and explanation often extending to the continuation pages and going well beyond what was necessary. Many of the ideas in the syllabus content guide were frequently seen; particularly the role of technology, of TNCs and transport links. Good use of place specific detail, especially place names, enabled strong candidates to gain full marks here. Weaker responses demonstrated some understanding of globalisation, although the ideas expressed were not as broad or as in depth.

Question 6

- (a) (i) This question was not well answered. Many candidates omitted to use the resource to correctly select assembly.
- (ii) Many candidates gained both marks for identifying two inputs. Machinery, labour and components were frequent correct answers.
- (iii) This question was not well answered, suggesting that not all candidates are familiar with the differences between the three types of secondary industry stipulated in the syllabus. Whilst some gained all three marks, stage two was often misunderstood with few actually referring to putting components together, instead incorrectly referring to manufacturing.
- (iv) This question was generally not answered well with few candidates gaining full marks here. Correct responses referred to how mobile phone production suits a transnational company. Such as that the sale of products and acquiring of components operates worldwide and that there is available cheap labour for assembly in LEDCs, for example.
- (b) (i) This question was well answered by many candidates who used the photograph to describe what they could see accurately. A wide range of features was credited, and some candidates were very observant with references to features which were less obvious, nevertheless still valid. References to surrounding features such as roads and housing were not relevant. Some candidates tried to explain why the factory was located there rather than simply describing its features.
- (ii) This question was not well understood and few candidates scored full marks here. Common correct responses referred to the transport of raw materials and/or finished products and to the need to keep these costs low. However few responses were developed fully or referred to other ideas, such as reference to bulk or to the perishability of products.
- (c) Candidates could refer to any relevant economic activity here. Many different examples and case studies were seen including well documented management strategies such as in tourism or manufacturing, although other examples also worked well. Excellent responses referred in detail to varied management strategies or approaches. Weaker answers often misinterpreted the question and simply considered the risks to the natural environment; these did not gain credit. Some weak responses referred simply to deforestation rather than the economic activity, and whilst relevant management strategies were credited here, candidates need to clearly state the economic reason for the deforestation, such as logging or mining.

GEOGRAPHY

Paper 0460/21 Geographical Skills
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Key messages

- Paper 21 is a skills paper and candidates are required to use the resources within the questions, including maps, cross sections, climate graphs, diagrams, proportional circles, scatter graphs and photographs.
- Candidates must read the questions carefully and identify the command word(s) to respond as required.
- Candidates should have a thorough understanding of geographical terminology and be able to use this in their answers. Language used should be precise and vague terms such as *quality of life*, *resources* and *infrastructure* will not be credited.
- Candidates should not rewrite the question in their response. They should use the time and answer space available on the response to the question.
- The space for each answer is appropriate to the number of marks available and should be used as a guide. If the additional pages are used candidates must clearly state the question number(s) their response relates to.
- Handwriting should be clearly legible.

General comments

Candidates responded to this paper positively. Most attempted to answer every question and the no response rate was generally low. There were no noticeable timing issues. Where candidates scored lower marks, it was usually due to a lack of knowledge and understanding of certain areas of the syllabus, although failing to identify the command word, misuse of geographical terminology and unclear responses also contributed to lower marks, particularly in questions requiring an extended response. Mapwork skills continue to improve. However, many candidates would have benefitted from more practise studying how relief of the land is shown on a map.

Comments on specific questions

Question 1

- (a) Candidates demonstrated sound map skills and were able to interpret the 1:50 000 map of Blessington, Ireland and its key. The type of road at A was *National Secondary Road*, Feature B was a *river (Brittas)*. The land use at C was *coniferous plantation* and height above sea level of the spot height at D was *321m*. Feature E was a *Holy Well*.
- (b) This question asked candidates to identify three services in the settlement of Blessington. Correct answers were *post office*, *police*, *fire station*, *school*, *college* and *church/chapel*. Some candidates did not understand the meaning of the term 'service'.
- (c) This question was worth 4 marks and candidates had to describe the relief within an area of four grid squares on the map surrounding Slieveroe. Responses needed to focus on relief, the height and shape of the land. Unfortunately, many responses described on human features from the map. The relief of the area is *highland/hilly/upland* but not mountainous. The *highest* spot height is *332m* and the *lowest* point could be calculated as between *180 – 190m*. Some candidates identified these figures but omitted the unit of metres. The area also has recognisably *steep slopes* and (*river*) *valley(s)*. Candidates could also gain credit for identifying that there are *two peaks/hills* and that between these there is a *saddle/col*.

- (d) Many candidates also found using the map cross-section, Fig. 1.3, challenging. However, many were able to correctly identify the marked features, A,B and C. The map key showed three different types of road which were marked on the cross-section, with A – *third class road*, B – *regional road* and C – *other road*.
- (e) The distance to the nearest 500m along the regional road R410 between the two points in **part (i)** was *3500m*. Many correctly identified the right distance. **Part (ii)** asked for the six-figure grid reference of the road junction at the church in Eadestown, which was *951178*. While some candidates did understand how to read a grid reference, many did achieve the mark. **Part (iii)** responses looked for a description of the distribution of settlement in a designated area to the north-west of the map. Where three marks were achieved it was almost unanimously for *linear, along the (third class) road and isolated dwellings*. Despite this, there were other creditable ideas and candidates should be encouraged to think more broadly. A creditable summary of the distribution was *uneven*, yet this was rarely identified. There were also *two main settlements* (Baysland and Newtown). Linking the settlement distribution to relief was also creditable as the settlement is *on low land/avoids high land or on gentle slopes/avoids steep slopes*.

Question 2

- (a) This question considered the climate of the Atacama Desert, Chile. Candidates were presented with a climate graph which they needed to complete in **part (i)** to show the temperature in March as *24 °C* and the rainfall in March as *14 mm*. Most candidates knew that temperature is shown as a line and rainfall is shown as a bar on a climate graph. Candidates must remember to use a ruler and HB pencil for graph work as lines drawn without a ruler are often inaccurate. Some candidates would benefit from practise calculating a range, as required in **part (ii)**. The range is the highest temperature minus the lowest temperature, in this case *26 °C – 18 °C* to give an answer of *8 °C*.
- (b) By interpreting the climate graph, candidates had to identify two correct statements to describe the climate of the Atacama Desert. The correct statements were *temperatures are high throughout the year* and *there is low annual rainfall*. Where candidates selected the incorrect answers they were usually *rain falls throughout the year* and *there are four seasons*, the graph showed neither of those were true.
- (c) Candidates found this question difficult. Many stated that Chile is in the southern hemisphere, which was copied from the question. Evidence from Fig. 2.1 was necessary. Some of those responses which looked for evidence from the graph mistakenly focused on the rainfall rather than the temperature. Responses should have stated that there are *higher temperatures at the beginning and end of the year/from October to April* or the *highest temperatures are in December and January*. Alternatively, they could have stated there are *lower temperatures in the middle of the year/May to September* or the *lowest temperatures are in June and July*.
- (d) Fig. 2.2 shows a photograph of a type of vegetation found in the Atacama Desert and candidates had to explain two ways that this vegetation had adapted to the climate. Some responses explained features that were not shown in the photograph, such as the root system, which could not be credited. The most common answer was it *stores water*, however fewer explained how water is stored in *thick stems/in the large body/in the fleshy body*. Credit was given for *spines/spikes/thorns/no leaves to reduce evaporation/transpiration*. Only the strongest candidates identified that vegetation was *widely spaced to reduce competition for water*, had *green stems to photosynthesise* and was *short to protect from the wind*.

Question 3

- (a) This question required understanding of the hydrological cycle and the appropriate geographical terminology associated with it. Many candidates did not appear to be familiar with the required terminology. **Part (i)** contained a sketch of the hydrological cycle with labelled arrows naming each process. Candidates needed to complete three labels themselves, with two examples given. *C is evaporation*, *D is precipitation/rain(fall)* and *E is overland flow/(surface) run-off*. **Part (ii)** asked for a definition. Candidates showed understanding of infiltration, where *water enters/is absorbed into the soil/rock*. There was some confusion with Interception which is where *water is collected/trapped by vegetation* (not absorbed).
- (b) Despite some challenges in **part (a)**, many candidates responded positively to **part (b)**. Strong candidates used Figure 3.1 to prompt their response, explaining clearly how deforestation disrupts

the hydrological cycle in **part (i)**. The most common explanations were that deforestation creates *less interception/transpiration/evapotranspiration* and *more overland flow/(surface) run-off/infiltration/saturated soil*, resulting in an *increased risk of flooding*. Candidates could also have gained marks for stating that there will be *less precipitation/rainfall*. Finally, in **part (ii)** candidates had to suggest another way that people can disrupt the hydrological cycle, and this was also responded to well by most candidates. Marks were given for a wide range of answers including *hydroelectricity/dams, climate change/global warming, urbanisation/industrialisation/building roads* and occasionally *agriculture* or specifically *irrigation*.

Question 4

- (a) This question focused on migration from Venezuela and was answered very well. Most candidates received the full 4 marks available. The accompanying resource was a map of South America with proportional circles depicting the destinations of Venezuelan migrants. Weaker responses struggled to describe a pattern, highlighting overall trends and instead described small details. Some listed every destination on the map. The strongest responses identified the overall pattern as *uneven*. There were many acceptable answers with the most common being that migrants go to *neighbouring countries* and move *mainly within South America*. A further mark could be achieved for identifying where in South America, *the north/west/north west*. Or for saying that *most migrants went to Columbia*. The concept of most cannot be applied to more than one country, hence *most went to Columbia and Peru* was not credited. Some candidates identified that *smaller numbers of migrants moved to Europe/Spain/Spanish-speaking countries* or *North America/USA*. *To coastal countries* was another valid point.
- (b) Having described the pattern of migration, this question asked candidates to think about why people migrate. Many responses scored 2 marks and varied possible answers could be linked to *food supply, employment opportunities, wages, inflation, housing quality, healthcare facilities, education facilities, crime, political instability* or *war*. The reasons could either be explained as push factors or pull factors. Vague reasons such as 'for services' were not credited.
- (c) In **part (i)** candidates were required to suggest an economic opportunity that migrants bring to the country they have moved to. Some candidates misread the question and suggested an economic opportunity brought to the migrants. Marks were predominantly awarded for the concept of *migrant labour* which is usually *cheap* and *filling less favourable job roles*. This labour can also be *skilled* when migrants having a *high level of education*. This migrant labour will *increase GDP/tax revenue*. In **part (ii)** a social problem for migrants was sought, with almost all answers centred around *racism/discrimination* and occasionally *language difficulties*. *Loneliness* would also have been creditable.

Question 5

- (a) Many candidates found this question challenging. Comparison between two tourist locations in Spain was required but many described two discreet photographs, with no similarities or differences drawn. The command word compare requires comparative language within the response. The two photographs were often described well independently. In similarities *both areas were mountainous*, and *both had beaches/swimming*. Comparative language of *more or less* could have been used, providing it was clear which photograph was being referred to. For example, Fig. 5.1 had *more high-rise buildings, more people, more sunbathing, more hotels/apartments* and *more shops/restaurants*. It also has a *promenade* which Fig. 5.2 does not. Alternatively, Fig. 5.2 is *more rocky* and has *more trees/is more natural*.
- (b) For **part (i)** candidates needed to focus on Fig. 5.1 to suggest two reasons why the local population would welcome tourists to this area. Weaker responses ignored the word local and took a national approach to the question which resulted in no credit. Locals would welcome tourists due to the *employment opportunities/increased income* they would bring as well as more *business/sales opportunities*. In addition, *new skills* and *new languages* would be brought and *named infrastructure such as roads/electricity/water and sanitation would improve*. Locals may also be able to *preserve their local culture* as a result of tourism. Conversely, in **part (ii)**, the focus was on Fig. 5.2 to suggest two ways that tourists could damage the natural environment. The most commonly credited answer was *litter*, followed by *water/air/noise pollution*. Marks could also be awarded for *destroying habitats/disturbing wildlife, deforestation, destruction of coral reefs* and *footpath erosion*.

Question 6

- (a) Overall, **Question 6** was probably the most challenging question on the paper. Many candidates were confused by the data provided in Table 6.1 and struggled to understand how it was linked to development. Table 6.1 showed four development indicators for seven different countries. In **part (i)** the question asked why the percentage of population living in urban areas can be used as a development indicator. Responses were generally vague. Candidates could have responded that in an urban area there is *less agricultural work* and *more education, healthcare, sanitation* and *electricity* and *this results in urban areas being wealthier*. **Part (ii)** was much better understood, candidates had to rank the data for the percentage of population living in urban areas. After Singapore came *Norway* and *Nicaragua*, then after Nigeria came *Moldova* and *Pakistan*. Attention was drawn to a data anomaly in **part (iii)** and responses had to identify what was unusual about the data. Moldova's literacy rate was very *high* when *compared to its life expectancy/GNP/urban population* which were *mid/low*. The comparison needed to be between Moldova's development indicators, not comparing Moldova to the other countries.
- (b) For **part (i)** candidates were required to plot the literacy rate (*58 per cent*) and life expectancy (*66 years*) of Pakistan onto a scatter graph. The weakest candidates did not realise that each square on the graph represented either 2 per cent or two years, but most gained the mark. **Part (ii)** required candidates to describe the relationship between the two development indicators. Most correctly identified a *positive correlation/relationship* because the *higher the literacy rate the higher the life expectancy* and the *lower the literacy rate the lower the life expectancy*. Whilst **part (ii)** was answered well, many candidates could not understand how these two development indicators were linked in **part (iii)** and found this final question part difficult. Credit was awarded for explaining that the *ability to read and write leads to a less manual (safer) job* and a *better educated population would lead to more doctors, for example*. Alternatively, the focus could be personal health and a *knowledge of diet/healthy lifestyle*, such as literacy enables people to *earn more money to spend on diet/healthy lifestyle* or *being more able to access health advice*.

GEOGRAPHY

Paper 0460/22 Geographical Skills
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Key messages

- Candidates approached this paper positively and many of the best answers were succinct. Candidates should plan their longer written answers to elicit more focused responses. For example, in **Question 3(b)** statements should focus solely on links between building material and the part of the house they are used for.
- Candidates should make sure they read the whole question carefully. For instance, in **Question 1(e)** some candidates ticked multiple boxes on one line despite the instruction 'Use only one tick for each row'. **Question 5(a)(ii)** requires a description of the decline in rainforest from **Figure 5.1** and not rainfall as done by some candidates.
- Whilst candidate performance in **Question 1** which tests mapwork skills, has shown improvement, more practice on distance calculations, and compass bearings would benefit some. Many answers in **Question 1(c)(ii)** and **(iii)** were just outside the tolerance, so candidates should be advised that it is worth double checking their answers to ensure accuracy.
- Candidates should be reminded that when describing locations or the situation of a place from a map e.g. **Figure 4.1**, they need to use named features such as cities or oceans as well as directions and distances. For example, in **Question 4(a)(i)** when describing the location of Mt St Helens, instead of 'near the ocean', candidates should have stated, 'near the Pacific Ocean'. Similarly, instead of 'near Seattle', 'South of Seattle' or '150 km from Seattle' is more specific.
- Candidates should study the key words in each question carefully. For example, in **Question 1(g)** they are asked to compare relief and shape of two locations. Some candidates only described one location and others referred to human features rather than relief and shape.
- Candidates should try to avoid vague terms. For example, in **Question 4(c)** some candidates should state 'roads were flooded' rather than refer to 'transport links' or 'infrastructure'. In **Question 6(c)** they should ensure that the type of pollution is specified not just use the word pollution on its own.
- Candidates should be able to use correct terminology when identifying features for example, in **Question 6(b)** many candidates referred to hydro-power rather than hydro-electric power. In **Question 4(a)(ii)** they should be able to distinguish clearly between constructive and convergent plate boundaries. Candidates should know the names of different types of graphs, for instance many could name the pictogram in **Question 2(a)(i)**
- Candidates should fully erase or crossed out answers which are not required, for instance extra ticks in the tables for **Questions 1(b), 1(e), 2(a)(ii) and 2(b)**.
- If candidates run out of space and write on the additional pages, they should make sure that their answers have the question number and part written accurately.

General comments

The paper was answered well with many candidates attaining a high level. A wide range of marks were seen and some excellent answers to all questions. All candidates demonstrated some geographical knowledge and understanding. Most made good use of geographical terminology and demonstrated their geographical skills in interpreting maps, graphs and photographs. The standard of mapwork skills continues to improve.

Generally, candidates performed equally well across all the questions. **Question 1(a), 2(b), 4(b) and 5(a)(iii)** were answered particularly well. However, parts of **Question 6** provided more challenge. Most candidates made good use of the examination time and completed the paper.

Whilst good use was made of English to convey geographical ideas, a minority of candidates' handwriting could have been neater.

Comments on specific questions

Question 1

- (a) Candidates were able to find features on the map from **Figure 1.1** and identify them using the key with ease, and therefore, scored well on this question. Feature **A** was either a lake (as in the key) or reservoir (stated on the map). The type of road at **B** was a third class road, which many recognised as being under construction. The land-use at **C** was natural woodland, but some candidates mistook it for mixed woodland or stated Muck Rock. The height above sea level of the triangulation pillar at **D** was 171 metres.
- (b) **Part (b)** was answered well with most candidates clearly able to choose the correct grid reference for the viewpoint at **E** on **Figure 1.1**. from the four choices. They found this an easier task than having to give the six-figure grid reference themselves.
- (c) There were many candidates who demonstrated that they had clearly practiced the skills needed to answer **part (c)** but some still require more support, especially with measuring distance in **(ii)**. In **(i)** the compass direction from Killester station to Donaghmede station was North-east. In **(ii)** the distance between the two stations was 5400 m. Owing to the smaller scale of the map (1 to 50 000 instead of 1 to 25 000), a tolerance of 200 metres was allowed. In **(iii)** the compass bearing between the two stations was 48°, with a tolerance of 46 to 49°.
- (d) Since **part (d)** was based on part of the urban area of a large city, Dublin, the candidates had plenty to choose from when selecting three leisure facilities in the area west of easting 19 and south of northing 38, with boating activities, golf course, trailhead and nature reserve being the most common. Many scored the full 3 marks, but there was some confusion regarding what constitutes a leisure facility. Consequently, some gave answers such as, school or police station. Some looked at the wrong section of the map, especially to the North and gave amenities which were not in the designated area. Candidates must look at the key in conjunction with the map, since copying just from the key led to some incorrect answers, such as picnic site or viewpoint.
- (e) This question was answered well, with most candidates able to locate the two areas shown in **Figures 1.2** and **1.3** for comparison of their features. Many scored 4 or 3 marks by placing ticks in the correct boxes and demonstrated good map reading skills. The most common error was to place the motorway and or the youth hostel in the 'neither of these areas' column. Some candidates put more than one tick per row and lost marks since it was clearly stated in the question stem that only one tick per row was required.
- (f) Many candidates scored the mark for noting that the site of the power station in grid square 2023, was away from residential areas. However, those that said it was close to water either missed out stating why this made it a good site or referred to the generation of power by HEP. Careful study of the key would have shown that it was a fossil fuel power station. However, the advantage of being next to the sea to receive fossil fuels or as a source for water for cooling would have been credited. Few noted the relatively large site or the fact that it was flat.
- (g) Although many valid comparisons of the relief and shape of North Bull Island with the land east of easting 26 were seen, few answers gave more than two. For the relief many contrasted the flat nature of North Bull Island with the steeper land east of easting 26. Others suggested that the latter was higher and some gave the highest points of each area, 4 m v 171 m. For shape, many stated correctly that North Bull Island was longer, and others said that it was smaller. Elongated or thinner for North bull Island was often compared with circular or wider for the area east of easting 26. The frequent use of 'mountains' instead of 'hills' showed a lack of understanding of the scale of geographical features. The most frequent error seen was to describe human features such as roads, land-use, settlement, and golf courses. Weaker responses often described only one of the areas, and for some others it was difficult to ascertain which area was being referred to.

Question 2

- (a) (i) **Figure 2.1** is a pictogram or pictograph. This was not universally well known. Many hoped that **Question 2(a)(ii)** would help them, so wrote 'population density graph'. Other incorrect responses seen were tally graph, and bar graph. Quite a few candidates gave no response.
- (ii) In most cases, **Figure. 2.1** was successfully interpreted by candidates as showing population density and not population size or structure.
- (iii) Similarly, most candidates correctly calculated that **Figure 2.1** showed that 255 people per square kilometre lived in the Philippines in the year 2000. A few incorrectly added a decimal point and so stated 25.5 people per square kilometre.
- (b) Most candidates accurately interpreted **Figure 2.2**, which showed the population distribution in the Philippines, by selecting the three correct statements from **Table 2.1**. These were that the population distribution varied throughout the Philippines, the highest population density was in central areas, and the lowest population density was in western areas. The most common error was to suggest that all parts of the Philippines are densely populated.
- (c) Most candidates were able to make creditworthy statements to describe the relationship between population and relief in the Philippines. Some noted that the relationship was an inverse one. Most correct answers however, identified high relief having a low density of population and areas with low relief having a high population density. The data obtained from the key in **Figures 2.2 and 2.3** was used equally as much as the qualitative statements. However, some candidates using data tended to get more mixed up, for instance leaving out the < and > before the heights or using relief figures for density. Some responses incorrectly described the relationship between population density and gradient which was not shown on **Figure 2.3**.

Question 3

- (a) **Figure 3.1** was generally interpreted well with the majority identifying the country with the largest circle and therefore the largest urban population as Nigeria in part (a)(i). Similarly in part (ii), the country with the largest proportion of its circle shaded in orange thus, having the largest share of its urban settlement living in squatter settlements, was Sierra Leone. The responses to part (iii) were varied in quality. Advantages usually stated that it was easy to read, understand or to compare countries. Some better responses referred to how it could show a relatively large amount of information or commented on its visually clarity. The main disadvantages were either the lack of numerical data, making it difficult to read off exact figures, and that some pie charts were too small. Some candidates appeared unfamiliar with being asked to comment on a data presentation method and their answers were either too vague, for instance 'It is inaccurate', or they contradicted themselves across the two parts of the answer. Some responses did not address the question, for example stated there was not enough information about the countries or cities or referred to the ease of drawing pie charts.
- (b) (i) This question was answered well with many candidates able to link the material to the relevant building part seen in **Figure 3.2**, a photograph of a squatter settlement in Columbia. A wide range of building material was identified. Many referred to the metal roofs, variously described as sheets or as corrugated, and composed of zinc, tin or steel. Asbestos and plastic sheets were also appropriate for the roofs. Glass for windows and wood for doors or building supports also gained credit regularly. Bricks were often mentioned but were not credited unless they referred specifically to the walls of the houses. Weaker responses tended to list the types of materials but did not say how they were used. Some tried to explain why the materials were used, for instance 'metal to keep the rain out', having not read the command word correctly. Parts of the houses which could not be seen in **Figure 3.2** were not credited, for instance 'concrete was used for foundations'.
- (ii) Candidates had few problems in answering this question. Reference was made to building in storeys or more commonly 'building houses on top of each other'. Other common and correct responses referred to wooden or concrete supports such as pillars or poles, or the use of stairs. More vague responses which were not creditworthy mentioned building along or across a slope or building houses next to each other for support.

Question 4

- (a) (i) This question proved difficult for many candidates. Many mentioned, fold mountains, other volcanoes, settlements, and the plates from **Figure 4.1** but without sufficient precision for credit. For instance, 'in fold mountains' should have referred to 'the Cascade Range', and 'between plates' was better stated as 'near the boundary of the Juan de Fuca and North American Plates'. 'Between Mt Hood and Mt Rainier' was creditworthy but any reference to Seattle often lacked either how far it was from Mt St Helens, which could be calculated from the scale on the map, or that it was 'South of Seattle'.
- (ii) Candidates in general did much better on this part of the question. Many recognised that this was a destructive or convergent plate boundary. Some interpreted the creation of fold mountains however, as a constructive plate boundary. Most stated that the plates were moving past each other, which was clear from **Figure 4.1**. Some better responses added that the Juan de Fuca Plate being heavier, was subducted underneath the North American Plate.
- (b) Many candidates scored well on this question since there were a lot of impacts on the human environment to choose from on **Figure 4.2**, such as the destruction of forests, fish farms, settlements, and apple orchards. Some focused on transport and stated that 'road and rail bridges were washed away' and that 'barge transport had been halted'. It was expected that impacts not stated on **Figure 4.2** required a link to this resource for instance, 'Water supply was disrupted due to mudflows and ash'. Some referred to the impact of lava, for which there was no evidence on the resource, and therefore could not be credited. A few weaker responses gave rather vague statements such as 'roads were affected' instead of stating how they were affected, for instance by being destroyed, blocked or flooded.

Question 5

- (a) In part (i) most candidates were able to use **Figure 5.1** to correctly state the amount of tropical rainforest in 1985 as 386 or 387 mha. In part (ii), many scored a mark for recognising the overall decline in the tropical rainforest from 1985 to 2018. A second general mark could be scored for reference to the fact that any fluctuations were small or that there were only a few. Where the graph was broken up into sections, then appropriate dates were expected. For instance, 'Between 1985 and 2009 there was a steep decline but from 2013 to 2018 there was a more gradual decline'. Such statements were often inaccurate, although some candidates did recognise that the amount of rainforest had increased from 1989 to 1990 and was constant between 2009 and 2013. A frequently seen error was to discuss rainfall and not rainforest, suggesting these candidates had not read the question carefully. Part (iii) was done well, with most candidates able to show the calculations of a simple subtraction exercise, to arrive at a total of 709 165 square kilometres of rainforest lost between 1970 and 2018. A very small minority omitted to include the minus sign in their workings.
- (b) (i) A wide variety of answers were seen here, with most candidates achieving at least one mark. Many stated both arable and pastoral farming for the two marks. There was also frequent reference to commercial farming. Surprisingly, few mentioned plantation farming or gave examples of actual crops, although oil palms and rice cultivation were seen. Others referred to subsistence or shifting cultivation.
- (ii) This question was done well with most candidates referring to loss of habitat, soil erosion or a reduction in biodiversity. There was also some mention of drought or desertification, while a few others suggested flooding. Some candidates stated global impacts such as an increase in carbon dioxide levels or global warming. These were not credited since the question specifically referred to the local natural environment.

Question 6

- (a) Most candidates were able to define a non-renewable resource. The best answers were those that were relatively simple, for example 'It is a resource that cannot be used again' or 'It is a resource which is finite'. Some candidates made their response too complex, for instance, referring to the potential of the resource being formed in the future, which was not credited.
- (b) Many candidates failed to identify the type of renewable energy sources in **Figures 6.1 and 6.2**. The complete terms were expected i.e. hydro-electric power (HEP) and geothermal power respectively. Therefore, hydro-power and thermal power, both of which appeared numerous times,

were not creditworthy. HEP was correctly identified more, but quite a few referred to **Figure 6.2** as nuclear or solar power. Vague terms such as 'water' and 'steam' were also seen.

- (c) (i) This question was well answered with most candidates opting for a bar graph and some, a pie chart, to show the data in **Table 6.1**. The most common errors were suggesting a line-graph or a histogram.
- (ii) Many candidates found this question difficult. The best responses were those which were specific to solar power. The argument against was usually better presented than the one in favour. This was because the arguments in favour were far too generic, for instance 'it is renewable', 'it does no damage to the environment', or 'it causes no pollution'. Those who stated that it produces no carbon dioxide, or that it is a clean form of energy, or does not contribute to global warming got credit. Some candidates pointed out that solar power has low maintenance costs, is suitable for battery storage and is more reliable in countries with a high amount of sunlight during the day. These were all creditworthy. The against argument was often based on the high cost of installation or that some countries do not get enough sun to make it reliable. Unfortunately, some candidates spoilt their argument by assuming that in cloudy conditions solar power does not function, which is not the case, however it is less efficient. Some also stated that some countries do not have the large land requirement, or that this reduced land for other uses. The fact that solar farms can be visually intrusive was also valid.

GEOGRAPHY

Paper 0460/23
Geographical Skills

Key messages

- Candidates approached this paper positively and many of the best responses seen were concise and focussed on the command word in the questions.
- Candidates are encouraged to use pencil to outline the areas that they need to look at on the map. This will prevent them from looking back to the question paper and then returning to the wrong map squares.
- The 1 km grid squares can be used to check that distance measurements are reasonable.
- When directed to use the figure provided, candidates must follow that instruction to show their use of geographical skills. Giving information from their own knowledge is not relevant to a question testing skills.
- Candidates sometimes omit graph completion questions, due to not reading the paper carefully.
- When a response continues on to the additional pages candidates must ensure they label the continued part of their answer with the correct question number.

General comments

Candidates performed equally well across all questions in the paper, some very good answers were seen and a wide range of marks. Candidates seemed to find **Question 1** most accessible. Possibly due to straightforward opening questions involving map feature identification. However, there were also some challenging parts in **Question 1**, notably **Question 1(d)(ii)**, **Question 1(d)(iii)** and **Question 1(e)(ii)**. The other more challenging tasks were spread across the remaining questions, in **Question 2(d)**, **Question 3(a)(iii)**, **Question 5(c)** and **Question 6(c)**.

Comments on specific questions

Question 1

- (a) Using the 1:50 000 map was for Dungarvan, Ireland, candidates were directed to look at the area in the north of the extract that was defined by **Figure 1.1**. They then had to use the map to identify features **A** to **E**. The type of road at **A** was secondary and feature **B** was a river. The height above sea level at the triangulation pillar shown by **C** was 176 m, while feature **D** was parking and the land use at **E** was a coniferous plantation, with either of these words alone being unambiguous and thus scoring a mark. Most candidates scored well on **part (a)**, particularly the road type and the land height. A few did appear to be looking at the wrong place on the map, and a small number seemed to be trying to answer entirely from **Figure 1.1**, as they responded with 4-figure grid references.
- (b) **Figure 1.2** identified two squares in the north of the map extract and candidates had to compare the features in the two areas by completing the table provided with a tick in each row. Land above 170 m was only in **area A**, while **area B** had a church, a stream and an electricity transmission line. Both areas had sections of the track, while neither area touched the regional road. Most candidates scored at least half the marks, and many got 5 or 6. Those with just one wrong had usually not spotted one of the features in **area B** and thus ticked for neither area. Those with many wrong responses appeared to have been looking at the wrong squares. Locating and outlining the two squares in pencil before tackling the question would probably eliminate such errors.
- (c) The settlement pattern in grid square 2292 was 'linear', with all buildings adjacent to the road. Many candidates suggested this, while some opted for 'dispersed'. Others described the pattern rather than identifying it.

- (d) The questions in **part (d)** involved the national secondary road, which stretched across the map from west to east. The junction with the national primary road was at the eastern end and candidates had to give the six-figure grid reference of the road junction, choosing from the four options. The correct answer was 278957 and the majority of the candidates answered correctly.

The other sections of **part (d)** proved to be rather more difficult. The distance from the junction to the western edge of the map, along the national secondary road was 9 km, with distances between 8.9 km and 9.2 km being accepted. About half the candidates were within this range and a few were just outside of it, but others gave a wide range of suggestions, usually as a result of incorrect mathematical conversions to apply the scale. Candidates should be taught to use the scale line, to avoid calculation errors.

Part (d)(iii) asked for the compass direction from the road junction to where the road left the map on the western edge. The closest compass point on the 16-point compass was west, however many candidates saw that it was slightly north of west and so opted for north-west or west-north-west. Some gave a bearing.

- (e) The River Brickey could be found to the south of the map and candidates were asked to describe the features of the river. Many got their 3 marks for mentioning tributaries, meanders and that the river was flowing into the sea. Some included the flow direction of south-east and mentioned the gentle gradient. A few noted one of the straight sections. Comments about the roads, bridges and nearby golf course did not score.

A sizeable proportion of candidates misinterpreted the question in **part (e)(ii)** and wrote about the southern part of the river rather than the relief to the south of the river. Some restricted themselves to immediately south of the river, where they could score for mention of the flat floodplain at less than 10 m above sea level, but the whole area south could be considered, with hills peaking at 263 m, steep NE-facing slopes and features such as valleys and a col. There was a high omission rate for this question.

Question 2

- (a) **Figure 2.1** gave data about migration from India to a variety of countries in both 1990 and 2020 and candidates were asked to describe the changes. All countries had seen an increase in migrants except for Pakistan, where the number had decreased. This summary was enough for the 2 marks, but some gave other details such as the country with the largest and smallest number of migrants in each year or the greatest increase. Those who only scored 1 mark usually mentioned the overall increase in countries except Pakistan but did not describe the change in Pakistan.
- (b) **Figure 2.2** showed the location of the countries listed in **Figure 2.1**, and candidates were also provided with their GNI per capita for 2020. From this information they had to suggest why the migrants were moving to these countries. Many candidates correctly deduced that the countries were wealthy, giving the potential for higher pay, and that many were also in relatively close proximity to India. Some only scored 1 mark as they discussed wealth in both parts of their answer and/or did not consider the information on the map. Those who did not score had ignored the instruction to use the Figures provided, and so suggested other reasons for migration, such as better education or moving to be with relatives.

In **part (ii)** candidates were again directed to **Figure 2.1** to see the data for Pakistan and they then had to suggest a reason for the change using the table of GNI per capita in **Figure 2.3**. Many noted that Pakistan had the lowest GNI per capita of the listed countries, thus putting it lower than India. However, again some did not use the data as directed and suggested political reasons instead.

- (c) Next candidates were provided with data about workers in the UAE and asked to produce a divided bar graph to show that 88 per cent of workers were immigrants compared with 12 per cent born there. Many did this successfully, though a few were inaccurate with plotting and some shaded only one of the sections.
- (d) In this question part candidates were asked to describe an economic benefit for India of many people migrating to other countries. Some mentioned that the migrants would send remittances home or eventually return with new skills. Others suggested that the Indian government would have less expenditure on such items as housing, healthcare and benefits. However, many candidates

did not focus on the economy and instead suggested that people remaining would have more chances of a job or have access to more resources, or that the country would benefit from reduced overpopulation. These responses were not credited.

Question 3

- (a) **Figures 3.1 and 3.2** were population pyramid graphs for Switzerland and Uganda in 2022. Candidates had to read the Switzerland graph to give the number of females aged 40 – 44. Many got the correct answer of 300 000. Those who did not get the mark usually wrote 300 as they had not considered the axis scale label.

The Ugandan pyramid was drawn with a gap on the male side at age 20 – 24. Candidates had to add the bar to show 2 million males in that age group. Many gave a correct answer here, but this part also had the highest omission rate across the paper, suggesting that even with the instruction in bold, candidates had failed to see the question.

Candidates were then asked to describe three differences in the shape of the two population pyramids. This was the hardest part of **Question 3**, with many analysing the shape but then making statements about birth rate, death rate and life expectancy, or writing about numbers in various groups rather than simply describing the shape. The pyramid for Uganda was wider at the base, while that for Switzerland was wider in the middle and at the top. The Switzerland pyramid was also taller and convex overall, while that for Uganda was concave. A few made 3 straightforward shape statements, but many had a mixture of these along with interpretive answers, so scoring 1 or 2. Some did not address the shape at all and some only considered 1 pyramid graph rather than commenting on differences between the two.

- (b) In this question part, candidates had to study a predicted population pyramid graph for Switzerland in 2052. They had to focus on people aged 0 – 19 and describe the predicted change from 2022. This required careful comparison as the increase was small and indeed some suggested that there was no change. A few thought that the population of people aged 0 – 19 was set to decrease.

In **part (ii)** candidates were told that some countries such as Switzerland have an ageing population and they had to suggest two problems this would cause. Many easily scored the two marks with suggestions such as 'strain on health services', 'increased need for pensions', 'shortage of workers', 'higher taxes for the working population' and a 'reduction in overall tax revenue for the government'. Weaker candidates went in the wrong direction here and gave reasons for declining birth rate.

Question 4

- (a) The photograph, **Figure 4.1** in the Insert, was of an active volcano in the Philippines and candidates were first asked to name the type of volcano, which was a stratovolcano. Composite cone was also a valid answer, but some candidates just put 'cone', which was considered too vague. Others suggested 'active', which was given in the stem of the question and, therefore, did not gain credit.

Four marks were then available for describing the features of the volcano and once again this was to be done using information from the resource provided. Most responses scored some marks and many did get them all. In particular they pointed out that the volcano was tall and steep, with rocky, ash-covered slopes. Many interpreted the photograph as showing some gas emission at the vent, which was also acceptable. A few mentioned the dissected slopes, and some noted the cone shape with a few pointing out the concave profile. Many mentioned the vegetation, but such descriptions were often vague, such as calling it 'greenery', or made assumptions, such as saying that it 'surrounded the volcano', when only one side could be seen on the photograph.

- (b) Most candidates knew what was required in **part (b)**, where they had to suggest three opportunities that volcanoes offer people. Those that missed out on marks were often too brief, such as writing tourism, without saying why it would be an opportunity, or mentioning good soil, without reference to the fertility provided by the ash. However, many did write enough to make these points and had other suggestions such as geothermal power, mining, leisure opportunities and research.

Question 5

- (a) **Figure 5.1** was a climate graph for Jambi in Indonesia. Candidates had to read the graph to complete a table with three pieces of information. The temperature in August was 27 °C, the annual temperature range was 2 °C and the rainfall in November was 310 mm. Many candidates either scored 3 marks since they either knew how to read the graph. However, some mixed up the rainfall and temperature plots, taking the temperature as the bars and the rainfall as the line. A few that were otherwise correct missed the temperature range mark, as they gave the calculation rather than the answer.

Misunderstanding of **Figure 5.1** also had implications for **part (ii)**, with some seeing a cold season and also a hot season and a high annual range of temperature. Those who had interpreted the graph correctly were able to point out that the temperatures were high throughout the year and that the annual rainfall was also high. These answers were to be selected by ticking the table provided. There appeared to be a fair amount of indecision on this. Some left more than the two ticks required, which meant they lost marks.

- (b) Candidates had to study a world map showing the distribution of areas with equatorial climate, they were asked to describe the distribution. Most said equatorial climate areas were on or near the equator or between the tropics. For the second mark they could refer to a minimum of two of the continents involved or point out that the areas were also along coastlines.
- (c) In this question part candidates were asked to explain one way in which vegetation adapts in areas that experience an equatorial climate. This proved to be difficult as many are more familiar with desert adaptations and so they wrote about those. A few did mention that drip-tip leaves would shed water, or that large leaves would maximize sunlight capture, or that tall straight trees could reach the light, but others mentioned features, such as buttress roots, without explanation of the need for stability in the wet ground.

Question 6

- (a) A further photograph in the Insert, **Figure 6.1**, showed a farm in the UK and candidates were asked to describe the features of the farm, again referring only to what was shown on the resource. Many scored well on this. They noted the arable land but also the presence of sheep. They pointed out that the farm was large scale and made use of machinery and that the land was gently sloping and divided into fields by fences or lines of bushes or trees. A few said that it was an 'agricultural farm', which was considered too vague.

- (b) **Figure 6.2** was a graph of the area used to grow wheat, oats and oilseed rape in the UK in 2000 and 2018, and candidates had to select the correct information to compare the amount of land used for wheat and oats in the year 2000. Many pointed out that more wheat was grown, but the response needed to use statistics for the second mark, and many candidates struggled with this. They often rounded the wheat amount to 2100 thousand hectares or omitted to state any units in their answer. Those who misread the question compared both wheat and oats across the two years.

Part (ii) looked at oilseed rape crops, with candidates being required to describe the change in the number of hectares between 2000 and 2018. This was quite straightforward with a clear increase as noted by many. A few referred to a decrease because they were describing 2018 going back to 2000, which did not really make sense.

- (c) Finally, candidates were told that many UK farms are intensive farms, and they were asked what intensive means. Answers needed to mention the size of the land. Thus, comments about high use of labour, capital or technology, or just high output, all had to be connected to some consideration of land size. Few were able to do this successfully. Weaker candidates considered it meant that the farmer had to work really hard at their job.

GEOGRAPHY

Paper 0460/03
Coursework

General comments

While this is a report for the November 2025 examination series, the comments made here will be of use to centres making their entries for the first time in June and November 2026.

The table below shows the range of topics undertaken by centres. The number of centres entering for human and physical topics were equally split, with coasts being the most common. This was followed by tourism, urban settlement, and rivers.

	topic
Human	environmental risks of economic development
	population and migration
	settlement and service provision
	tourism
	urban settlement
Physical	coasts
	rivers
	soils and vegetation

Whilst some centres conducted investigations in their school grounds, or nearest urban area, others went much further, for instance from Lima five hours south to the sand dunes surrounding the desert oasis of Huacachina.

It is strongly recommended that centres read this report to help ascertain what is viewed as good practice. The report should be read together with the *Moderator's Comments on School-based assessment of coursework* which each centre receives.

Training is available online for teachers who are new to the coursework option. There is also a Coursework Handbook available from the School Support Hub which includes examples of coursework which are annotated to show how they should be marked.

It is expected that primary data is collected as part of a group exercise and is then collated by a teacher when candidates return to their centre. The complete data set(s) are then made available to all candidates for each to work on their own individual hypotheses. However, there were cases where candidates collected their data either individually or in small groups. This resulted in less data being collected, which was not sufficient for an in-depth analysis. For safety reasons, Cambridge International Education does **not** endorse candidates being allowed to collect data on their own, 'in the field'. Should a candidate need to add extra data for their own study to that which has already been collected as a group, it is expected that they are accompanied by an adult, especially when administering questionnaires in urban or rural areas, or collecting data on a river or along a beach.

If a centre is unable to send candidates out in the field to collect primary data, there is the option of using quantitative secondary data, for instance from the internet, although the centre should inform Cambridge if this is the case. An example would be weather statistics available from local weather station websites, but the source must be clearly stated. An alternative is to use past data collected by the centre on previous fieldwork excursions. In this case reports should be written as if the current candidates carried out the fieldwork themselves, with a detailed account and justification of the methodology included. The methodology should not be replaced by an evaluation of what the past candidates did. The place for this is in

the *Conclusion*. Furthermore, centres which submit essays which are an amalgam of texts written on geographical topics and sourced from the internet do not follow 'The Route to Geographical Enquiry' and therefore do not possess numerical data which can be presented graphically and analysed. This is not therefore appropriate for the requirements of this component.

While the data collection must be a collaborative exercise, centres should avoid candidates using the same computer-generated graphs in every study. Individuality can be enhanced by candidates researching their own background information and attempting at least one hypothesis which is not attempted by other candidates. In addition, candidates should be encouraged to take and use their own photographs as well as construct their own graphs, maps, and field sketches.

Key messages

- Some very good Geography was seen. Most centres demonstrated a very good grasp of what was an effective topic, with their candidates undertaking appropriate hypotheses. A clear understanding was demonstrated by most candidates of the 'Route to Geographical Enquiry', resulting in well organised studies containing the five sections outlined in the syllabus, often with an accurate table of contents. Some centres' coursework needed to expand their *Analysis*, which was sometimes too short because of lengthy *Introduction* and *Observation and Data Collection* sections. Some tables of contents contained page numbers but these were not always accurate, or the page numbers did not exist.
- Many candidates displayed a very good background knowledge of their chosen topic, although this was not always well linked to the stated aims of each study. Geographical models outlined in the introduction were often given no attention, or only cursory attention, in the *Analysis* and *Conclusion*.
- Some geographical theory should appear in all introductions. While a good understanding of such theory was demonstrated, it tended to be more focused where the hypotheses appeared first and the theory could be utilised to justify them. In turn the theory should be linked to the area of study, for example when reviewing siting factors ideal for a retail outlet or factors influencing soil infiltration.
- The most successful conclusions were reached because of clear hypotheses laid out at the beginning of the enquiry. Two or three hypotheses are enough to ensure a sufficient depth of reasoning in the *Analysis*. Many hypotheses and data collected on too many parameters often leads to a simplistic analysis or overly lengthy enquiries which lose focus.
- It is important that enough primary data on any one parameter is collected to allow candidates to exhibit a depth of understanding in their analysis. Not all data collection exercises produced enough data to allow the identification of clear trends and anomalies, as well as the opportunity to perform statistical analysis.
- Data collection methods were generally well described and understood. Some candidates needed to describe sampling procedures in more detail to demonstrate their understanding. Some also needed to include greater justification for the selection of data collection sites.
- All relevant primary numerical data that is used in the study should be included in tabular form. This was omitted in some studies, despite the description of data collection methods appearing in tables.
- Some centres used a very effective range of both complex and simple data presentation methods. Candidates needed to remember to correctly label axes (to include units). Line-graphs were often used inappropriately.
- All maps should have a scale and orientation, and those originally from secondary sources such as Google Maps must be clearly utilised.
- The inclusion of photographs considerably enhanced some enquiries. They should also be individual and not appear in other studies. To be worthy of credit as a complex technique they must be well annotated as well as have a title. Many candidates omitted these.
- Good responses gave well-reasoned explanations to support their findings. In other responses, many reasons given were far too speculative, and were not supported by the findings or theory.
- Most studies clearly confirmed or rejected their hypotheses in the concluding section. Good responses supported this with key numerical data or reference to graphs, and valid explanation.
- Evaluations were variable in quality and sometimes very generic. Most candidates demonstrated that they understood some limitations of the study undertaken. Candidates needed to include sufficient detail when discussing feasible suggestions for improvement or extension should the study be undertaken again. Many candidates omitted comments on the strengths of the study.
- References to shortcomings in the methodology should only be written in the evaluation and not in the data collection section.
- Most candidates adhered to the word limit of 2000 words. A word count should be declared so that candidates can focus on adhering to it; centres are reminded that it is their responsibility to make sure that candidates do adhere to the word limit. Good studies were often those that were concise. Text

placed in tables counts towards the word limit.

- Centres provided detailed comments on scripts. New centres should note that they are expected to justify how the marks were awarded. Phrases from the *Generic Mark Scheme for Coursework Assessment*, which was used by every centre, can be utilised for this.

Comments on specific assessment criteria

Many of these comments are the same as in past examination series. It is hoped these will be of particular benefit to new centres, as well as more established ones.

The criterion of *Knowledge with Understanding* tended to be assessed accurately. Where disparities occurred, it was often because the marker seemed to take only the candidate's introduction into account. This is largely the *Knowledge* element, whilst the level of *Understanding* can be demonstrated throughout the study. For instance, a judgement can be made on how well the theory has been applied such as in the provision of reasoned explanation in the *Analysis* or how perceptive the candidate has been in stating the limitations of the study in the *Evaluation*. *Knowledge* can also be introduced at a relatively late stage such as to explain trends or anomalies in the data. This can be highlighted by markers in their comments made on the scripts.

Most enquiries were well organised with clearly stated aims and hypotheses and positive use of geographical terminology. These were often accompanied by the expected outcomes which were often related to theory. Candidates need to ensure that introductions are not too long compared with the rest of the study. Many followed some initial aims with a prolonged background information section. There were some candidates who wrote all they knew on a topic. Extended paragraphs of the history of the locality are often irrelevant. Glossaries of geographical terms should be avoided since many of the terms are not mentioned again. Many candidates place the theory before their hypotheses, rather than the other way round, which encourages greater selectivity. Some candidates tend to be far too brief in their use of theory; this was common using Bradshaw's Model or The Butler Model, where once having scanned the diagram(s), just a few simple sentences (if any), to explain the relevance to the hypotheses were written. It should be noted that in good responses these theories proved a focal point throughout, with some good comparisons to the data collected.

The wording of the hypotheses is important. Nearly all those that were stated were plausible. Good studies often used two core hypotheses and a third chosen by candidates themselves. This resulted in a more focused study with greater evidence of individual work. The use of four or five hypotheses or a generic guiding question was usually associated with a superficial analysis. Candidates need to demonstrate that they understand the nature of a hypothesis and can clearly distinguish this from the aims. Some candidates expressed their hypotheses as questions rather than statements. This often led to a brief 'yes' or 'no' in the concluding section and did not allow for a full exploration of the findings.

It is recommended that more attention is given to the detail shown on location maps placed in the introduction. To be effective, scale and orientation are essential; simply writing 'not to scale' is not helpful. It is also expected that any map, from whatever source, is utilised by the candidate. This is usually achieved by locating the sites of data collection together with an appropriate key. Good examples are usually well annotated and possess clarity so that relevant detail is easily accessed. However, some candidates include a plethora of maps at different scales (e.g., world, regional and local) with little or no customisation to the area of study. More attention should also be paid to the quality of scanning since in many cases much of the detail, such as the scale, is illegible. This seems to be most common when Google Maps are downloaded. Some maps, which were originally in colour, were downloaded in black and white and specific features were difficult to make out.

The criterion *Observation and Collection of Data* was generally assessed well by markers who are in the best position to judge an individual candidate's contribution to a group data collection exercise.

A positive range of data collection methods were employed which were carried out appropriately. It must be stressed that it is essential to collect enough data to ensure the opportunity for sufficient depth of understanding and detail to be demonstrated in the *Analysis*. Not all centres managed to collect questionnaires from at least the recommended 50 respondents. Those that did not were often single groups of three or four candidates working on their own and not as part of a larger class where data was pooled.

There were surveys where a group asked questionnaires to only five people, for instance, without their data being shared with the other groups. The lack of data inevitably leads to a very limited analysis.

For river studies, ten locations are ideal, although this may not always be achievable due to constraints of candidate safety or of time. In any event, in river studies there is no shortage on the different parameters on which data can be collected, allowing a range of hypotheses, in order that each study is more individual. Where the number of sites is under six, a centre might consider measuring each site at three different cross sections, each a minimum of 100 m – 200 m apart. Few centres explained their choice of data collection sites; for instance, stratified sampling to represent the three stages of a river. Even if sites are chosen by the teacher, the candidate needs to justify why they were chosen. This also applies to traffic surveys and pedestrian counts or sites for beach profiles, or the selection of different beaches to compare.

Few candidates provided enough depth of discussion on their sampling strategy and its justification. This was particularly common for those undertaking questionnaires in urban environments. If respondents are accessed on an opportunity basis, then it needs to be stated and justified. In contrast, the description of the use of equipment for data collection tended to be quite detailed and reflected a high level of understanding. More candidates are now linking their methods to their hypotheses which helps demonstrate their level of understanding. This is particularly the case where the data collection methodology is well set out in tabular form. However, many of these tables also include some evaluation of each data collection technique. Since all wording in tables counts towards the overall word count, this is best left for the concluding section of each study. This even includes where candidates are working on the data from a previous cohort; the emphasis here is on describing the methods they actually used.

Good coursework responses tended to spend longer on data collection. It is evident, though, that time remains an issue for many centres, especially when the time available on the school timetable is limited. A large amount of data can be collected in a relatively short space of time when a large number of candidates is divided into small groups to cover a large area, each coordinated to do similar activities at similar times, such as a pedestrian or traffic count. On return to the school, the data is then coordinated centrally and then shared. Even so, centres that allocated more than half a day for data collection almost inevitably achieved much better results than those which attempted to collect data in one or two hours. Studies carried out in and around the school grounds or nearest urban area seemed to find time management less of an issue. These centres seem more likely to be the ones which undertake a pilot study to aid their time management and amend their procedures.

An increasing number of centres are making sure their candidates include tables of the collected data. These are essential to prove the candidates took part in a fieldwork data collection exercise as well as for reference in the analysis. The best studies integrated these tables with the methods of presentation or analysis. Since it is likely that parts of the data will be referred to in the text of the study, candidates should avoid placing it in an appendix. It should be noted by markers that tables of data are only creditworthy under the *Organisation and Presentation* criterion, in the absence of anything else at Level 1.

The use of secondary data can play a valuable role in supporting the findings of the primary data collection. Comparing data collected at the present with that collected on the same topic in the past would be an example. On the now rare occasions where a centre is unable to collect primary data, then secondary numerical data such as from weather stations or censuses can be used. However, Cambridge International Education must be informed before the data is utilised. There were examples where centres have given their candidates a topic that requires the synthesis in essay format of written information taken from the internet or textbooks. This would not gain any credit for *Organisation and Collection of Data, Presentation of Data or Analysis*. Such studies typically set no hypotheses and collect no primary numerical data.

Organisation and Presentation was the criterion which resulted in the greatest disparity between markers and Moderators. Some studies which scored higher marks were over-marked; often complex methods of data presentation were omitted and/or the location map which had been utilised by the candidate and did not possess both scale and orientation. Meanwhile, some lower scoring studies which used at least three different simple techniques or included one complex technique tended to be under-marked. These techniques must be effective in portraying the data; for instance, there were many examples of line graphs used for discrete rather than continuous data which meant they were inappropriate. Bar graphs were seen in many guises. Different sorts of bar graphs only count as one technique, but this was not considered by some markers. Candidates should be discouraged from presenting the same data in several different ways, since in this case only one technique can be counted. Only the three most complex and effective graphs should be considered by markers. If techniques are not effective then they cannot be accepted. For example, a bar graph with a Y axis label missing or incomplete. Candidates clearly spent a lot of time on their data presentation and often successfully addressed the criterion. It is though worth noting that when candidates

use many more than three techniques (in addition to a location map), their time could probably be used more effectively, for example on a more detailed analysis. Markers should also note that a piece of coursework cannot reach the top of Level 3 for *Organisation and Presentation* without a well utilised map complete with scale and a north sign.

A list of simple and complex presentation techniques for reference by markers is given in the appendix to this report.

All candidates followed the 'Route to Geographical Enquiry' and therefore produced studies with an appropriate structure; thus, little comment is required on the *Organisation*. A few candidates did not write an evaluation or left this to comments on the methodology in the data collection section. It is expected that an evaluation should follow on from the *Conclusion*. Similarly, concluding comments are sometimes made after each hypothesis is dealt with in the *Analysis*. Again, a summary section entitled '*Conclusion*' is still required. Most candidates integrated their graphs and diagrams with the text of the *Analysis*. This helps to ensure they analyse the data shown by each graph/diagram/map in turn, making sure that none are redundant. Candidates should be discouraged from placing all their graphs together in one section, whether it is before the *Analysis* or in an appendix at the end. This also includes beach or river profiles as well as statistical tests and field sketches.

Many candidates provide a table of contents at the beginning of the study. This should contain page numbers for each section of the study, but for a significant number of studies these were inaccurate, especially where amendments to the study had been made. In some cases, the page numbers were listed in an index of contents but there was no pagination. It is recommended that candidates should check this as one of the last tasks before submission of their work. More candidates are including risk assessments which undoubtedly demonstrates their organisation. Few candidates mentioned a pilot study being carried out, prior to the main data collection exercise, which also would have added to the *Organisation*. In many cases questionnaires could be tested in advance at the school.

A wide range of techniques was utilised by candidates to represent their data. There is clear encouragement at some centres for candidates to produce more complexity and this was largely successful. Where this was not the case there is still a reliance on basic bar charts, line graphs, pictographs and pie charts. These techniques can often be located on maps to make the technique more complex. Scatter graphs with appropriate lines of best fit, divided and stacked bar graphs and radar graphs are other techniques used by candidates which have the appropriate level of complexity. Both cross sections produced in river studies and beach profiles are considered a high-level skill, although these must be created carefully to the same scale in order to facilitate ready comparison. Some candidates scanned their profiles to fit the page which meant they were to different scales. There were few field sketches; when clearly linked to the field study area with appropriate annotations, these can considerably enhance a candidate's study. Those that did exist tended to be placed at the back of the study as part of the data collection exercise. A few candidates used statistical techniques such as Spearman's Rank correlation. These can also count as a complex presentation technique, if the candidates demonstrate the complete working themselves.

Many bar, line graphs and scatter graphs were rendered ineffective by incomplete or missing labelling, particularly on the Y axis. Such labelling should include the name of the parameter along with the units of measurement. On some occasions, titles were also missing. Since the majority of graphs are produced by using computer programmes, all centres should advise their candidates that having input the data, they should inspect the results carefully and make any necessary changes. Furthermore, there are still examples of the incorrect use of line graphs for non-continuous data. Their best use is to track data over short or long periods of time.

Few centres produced well annotated photographs, graphs, and maps. Anomalies on graphs, for instance, should be highlighted by a circle leading to an arrow and relevant comment. This was not the case in many studies where photographs had no annotations and were often not referred to in the text. Many others had just a title and/or simple labels which do not count as complex. These served little purpose. Centres should make sure that their candidates know exactly what is expected by annotations; a paragraph written underneath the photograph for instance, does not count. Three appropriate annotations would be expected on any photograph for it to be complex.

It is best that the original hand-drawn graphs, field sketches and diagrams are included in any study rather than being scanned in, albeit at an appropriate place. These become more difficult to read, especially when they are scanned in monochrome. Candidates are reminded that each graph should be drawn by themselves and not by one person in their original group, with the rest scanning it. Furthermore, since it is expected that individual initiative is demonstrated in the use of presentation techniques to attain the highest marks, the

same range of computer-generated graphs appearing in every study that a centre's candidates submit should be avoided. If this occurs, candidates must make every effort to individualise the graph, for instance by using annotations to highlight certain features.

The *Analysis* was overmarked by some centres since the requirement for reasoned explanations at Level 3 was sometimes overlooked by markers when reasons given are very short and tenuous. Some of the marker comments on the scripts revealed that the higher marks were being given for explanations which were not fully developed. The *Analysis* section is where candidates can really demonstrate their level of understanding. Candidates need to ensure a depth of analysis through including enough raw data on any one variable for interpretation purposes. Centres should make sure their candidates have enough data at their disposal and the best way of doing this is via a group data collection strategy.

Many candidates demonstrated that they were able to interpret rather than just describe their findings as well as providing clear links to their hypotheses. Nevertheless, the *Analysis* was the criterion that many candidates would have benefited from improving. Most analyses consisted of description derived from graphs. There was a clear effort to use all the graphs presented and to make some interpretation of the trends or patterns identified. Few responses remained at Level 1, but most remained in Level 2 or the bottom of Level 3 because they did not include viable or detailed explanations. There were some thorough descriptions with good use of data as support, and some good responses used one or more of geographical theory, secondary data, or personal observation of peculiar characteristics of the study area, to support their explanations. In general, however, explanation was speculative and although tenable, there was no clear evidence. Some candidates who identified an anomaly put it down to operator errors which were not substantiated. Phrases such as 'The reason might be/could be/may have been' were very common.

There was limited use of statistical techniques. Spearman's Rank Correlation was utilised principally. Scatter graphs with best fit lines were often used as a precursor to the testing, and there was some provision of worked examples. The correlation coefficient value itself was effectively interpreted. It is important that if centres introduce their candidates to statistical testing, they make sure their candidates not only understand how to use it, but also why they are using it. The centres involved had clearly done so.

The *Conclusion and Evaluation* was marked accurately by some centres but for others there was a tendency for it to be overmarked, especially the higher scoring studies. In the latter, too much credit was given for accounts which lacked key data. This collected evidence should be either examples of numerical data or stated characteristics shown on graphs, maps and tables which are clearly referenced; for example, 'On Fig. 3 it can be seen that...'. Some responses were given high marks even though they used this evidence very sparingly or not at all and generally did not include the expected depth of discussion and explanation.

Most candidates summarised their findings well, although many were too brief. Some Moderators observed that the candidates that produced effective conclusions had very precise hypotheses. All the hypotheses tended to be either confirmed or rejected. They quoted key data or referred to figures (graphs, maps, and statistical tests) used earlier in the study, as well as providing some explanations. Those with more general or vague hypotheses tended to omit evidence to support their assertions, and explanation was rather superficial. Models or theory quoted in their introduction were often not mentioned. Only in the more effective responses was the theory linked to the findings. Most commonly it was the omission of key data which limited progression to the higher Level 3 marks. Some candidates chose to make simple conclusions after each section of their *Analysis*. These must be considered by markers, although a separate *Conclusion* section is still required. The latter can be a separate paragraph entitled '*Conclusion*', after the analysis of each hypothesis in turn, but an *Evaluation* section at the end of the study would still be required.

A dedicated *Evaluation* section is expected as part of the *Conclusion*. Markers are though reminded that they should consider comments made in the methodology section, which usually but not exclusively, refers to the effectiveness of the equipment used. Centres should encourage their candidates to include this only in the section entitled '*Evaluation*' at the end of the study. This includes where secondary data from a past cohort has been utilised in the absence of primary data. Candidates tended to make some valid criticism of their data collection strategies and many came up with one or more realistic improvements. Some suggested how their study could be extended. Less effective responses tended to suggest generic improvements which needed some development, for example, 'We needed more time', 'We should have sampled more sites' or 'We should have carried this out at other times of the year'. There was very little or no comment on sampling strategies especially where questionnaires were the main method of data collection. Most of the evaluation concentrated on negative comments rather than stating what went well and why it was effective. Less effective responses seemed more likely to make positive comments but these were rather superficial, for example, 'The group worked well together and we were able to prove our hypotheses'. The *Evaluation*

remains a good gauge of a candidate's level of understanding of the fieldwork undertaken and therefore should also be taken into account by markers when assessing *Knowledge with Understanding*.

Administration

All centres used the *Generic Mark Scheme for Coursework Assessment*. In nearly all cases it was applied consistently with the order of candidates largely remaining unchanged. This made applying adjustments relatively easy, and for some centres this meant there was no change. For those that were adjusted, this was by no means across the whole mark distribution. There was a pattern of negative adjustments at the top end of the mark distribution and positive ones at the lower end. Some centres were a little harsh and a small positive adjustment was made. Those very few centres to which a large negative adjustment was applied were generally relatively new to the moderation process; the reasons will be briefly stated in the document *Moderator's Comments on School-based Assessment of Coursework* which each centre receives.

Most centres were conscientious in their approach to adding comments to their candidates' scripts to justify the marks awarded. Those who added a cover sheet with some overall comments are also thanked. These generally used the wording from the *Generic Mark Scheme for Coursework Assessment* and facilitated the smooth running of the moderation process. Very occasionally, it highlighted when a marker had misinterpreted the mark scheme. If centres have not done so in the past, it is expected as part of the moderation process that markers make these comments (in pencil) on the scripts for their next submission.

Please make sure you check the latest documentation from the School Support Hub to ascertain the exact number of scripts that should comprise your centre's sample.

Almost all centres submitted their coursework sample submissions to Cambridge International Education on time and before the deadline, with the appropriate paperwork completed. The latter consisted of the Candidate Summary Assessment Form together with the MS1 form or the Internally Assessed Marks Report. Please make sure that an Individual Candidate Record Card is attached to the front of each script and not sent in the overall package in one pile. In addition, please make sure that candidates are listed in candidate number order on the Coursework Assessment Summary Form.

Most of the paperwork was completed accurately and included with the sample. In almost all cases the sample included an appropriate number of scripts representing a fair cross section of the marks awarded (to include the top and bottom of the mark distribution).

Please continue to double check the paperwork to make sure there are no mathematical errors. Very few errors were detected in this session. Errors usually take place in one of the following instances:

- where the addition of the assessment criteria marks on the Individual Candidate Record Card is incorrect and subsequently transferred to the Coursework Assessment Summary Form and then the MS1 Form.
- where there are transcription errors from the Coursework Assessment Summary Forms to the MS1 Forms. Occasionally, this may occur where an internal moderation has taken place, and the candidate's original marks have been entered instead of the changed mark.
- where the original marks are entered on the Internally Assessed Marks Report or MS1 Forms instead of the internally moderated marks.

It is recommended that all centres should have their candidates' marks double checked before submission.

Where a centre has more than one marker it is essential that an internal moderation takes place. There is evidence that these have been conscientiously carried out by most centres and marks changed accordingly. However, the change for an individual candidate is not always reflected in the change in marks for individual assessment criteria, only the overall total out of 60. This information is essential for the Moderator's job to be carried out effectively. There have been occasions when one marker's marks from a centre has differed markedly in standard from the remainder of the markers and an internal moderation is the best way to resolve this problem. Where an internal moderation has resulted in no change of marks this should be stated on the Coursework Assessment Summary Form.

It is worth reiterating that where changes have been made due to an internal moderation, it is the marks resulting from the internal moderation that are entered on the MS1 Forms and not the original mark. Where a candidate's overall total mark has been changed, the individual marks for the assessment criteria on the

Coursework Assessment Summary Record Card must also be changed, in order that they add up to the new total.

Appendix

Simple and complex presentation techniques.

Simple techniques = bar charts, pie charts, doughnut charts, line graphs, scatter graphs, pictographs. Appropriate photographs on their own do not count, but with labels = a simple technique. Appropriate photograph(s) (with a title or description) and tables of data = max. 2 marks in the absence of other techniques only in Level 1.

Complex techniques = located bars or pie charts, desire lines, flow lines, radar graphs, wind roses, river cross sections (need same scale), beach profiles (need same scale), bi-polar graphs, isoline graphs (techniques must be effective), annotated photos (at least three appropriate/relevant annotations), well annotated line graphs (for example, to show anomalies), a scatter graph with a line of best fit, compound/divided/stacked bar graphs and age/sex pyramids. Candidates may include a complete and well worked example of a statistical technique, for example Spearman's Rank Correlation as complex. Any map, whether a hand drawn map or otherwise, if it is well annotated (at least 3 appropriate/original annotations) can qualify as a complex technique. A well labelled field sketch can also be included here.

GEOGRAPHY

Paper 0460/41 Alternative to Coursework
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Key messages

To perform well on this paper candidates should:

- When answering hypothesis questions that ask whether they agree or not, always give their opinion first before any supporting evidence. This will usually be 'Yes', 'No', or 'Partially/To some extent'. If questions ask for answers to support their decision with data, then statistics must be used from the resources referred to. Data is quantitative; evidence can be qualitative or quantitative. If candidates make an incorrect conclusion to the hypothesis, they will gain no credit for the decision, but they will be given credit for evidence which supports the correct decision.
- When giving figures in an answer, always give the units if they are not stated.
- Read questions carefully and identify the command word e.g. 'Describe', 'Explain', 'Suggest'.
- When asked to compare or make judgements, use terms such as 'higher', 'lower', rather than just listing comparative statistics. The use of 'only' with statistics is not accepted as a comparative statement.
- If comparing statistics, it is important to use paired data rather than one set on its own.
- Check they are using the resources that a question refers them to, e.g. 'Support your answer with evidence from Fig. 1.5 and Table 1.2.'
- Attempt all completion tasks on graphs, tables, or diagrams – not all the answers are on lines and in writing. Many candidates miss out on marks by not attempting these questions.
- Take into account the marks awarded as an indication of how much to write for each answer.
- If candidates need to continue beyond the answer lines provided for the question, use the additional pages provided and clearly number the question that is continued on the additional pages.
- When completing graph work, use a dark-coloured pencil. Candidates should use a ruler to draw lines and always shade bar graphs and pie charts accurately, matching what is shown in the key.
- When they think they have finished, check that they have not missed out a question. Some questions might have been overlooked if they are on pages with a lot of graphs or maps. Candidates should make sure they have answered the questions on every page. This applies especially to questions where they are asked to complete tables, diagrams, graphs or maps.

General comments

Questions 1 and 2 were answered with an equal level of success overall.

Most candidates who answered graph completion questions did so successfully, though some candidates omitted them. Some candidates wrote too much in some sub-sections and would have benefited from answering more succinctly. Several candidates did not attempt later questions.

Most points to consider when candidates are preparing candidates for this Paper relate to the misunderstanding of command words and to the use of appropriate fieldwork techniques and equipment. Those questions where candidates did not score well often related to their not having carefully read the question, for example in **Question 2b**, where some candidates wrote about how a maximum-minimum thermometer works rather than how it can be used to measure temperatures.

Although this is an Alternative to Coursework examination, candidates are expected to show that they know how fieldwork equipment is used and to understand appropriate fieldwork techniques, even if they have only limited opportunity for fieldwork. For example, **Questions 1c(i), 1c(ii), 1c(v), 2a(i), 2a(ii)** and **2b** focused on specific equipment and techniques commonly used in fieldwork. Centres are encouraged to carry out basic fieldwork with their candidates, especially using simple techniques which can be done on the school site or in the local area. **Question 1e** tested candidates' ability to describe a new fieldwork method to extend their

work and is a question type that could be improved upon by candidates; candidates should ensure their answers are specific to the question asked rather than generic to all fieldwork.

Comments on specific questions

Question 1

- (a) Many candidates scored full marks for this question, and the concept of different orders of shops and services was well understood. Some candidates mixed up the frequency of use of goods and services and suggested incorrectly that high order examples were visited more often than low order examples.
- (i) Most candidates drew the divided bar graph accurately, though some were not drawn accurately enough to gain credit. A few candidates plotted the segments in the wrong order and did not follow the pattern of the key or the other seven bars. Some candidates did not attempt the question.
- (ii) Most candidates made the correct conclusion that the hypothesis was not true, and stronger responses supported their decision well with accurate data. They recognised that overall, the number of shops and services increased as distance from the station increased, although there were fluctuations within this pattern. Weaker responses did not support their conclusion with data or did not describe the pattern shown by the results.
- (c) (i) Responses to this question were mixed. Knowledge of the bi-polar survey technique was demonstrated by most candidates, but many did not focus sufficiently on using the recording sheet shown in the Insert. For example, few candidates referred to circling the site number, looking at the features identified on the recording sheet, or ticking appropriate boxes. Many candidates focused on the mechanism of judging the quality of the site using the positive and negative numbers, explaining how that worked rather than describing how the candidates would use the recording sheet as the question required. Some candidates did not attempt this question.
- (ii) The focus of the question was on the organisation of a bi-polar survey rather than completing the survey. The most common answers referred to doing the survey in groups and calculating total scores. There were many references to averages but these were often vague and did not explain what the average would be of. Weaker responses showed a misunderstanding of how a bi-polar survey works by referring to asking residents to fill in the survey, including details of how they could use sampling to select them, or simply repeated ideas from the previous question. Some candidates did not attempt this question.
- (iii) Nearly all candidates who attempted this question completed the graph successfully. A few candidates drew the plots inaccurately or did not draw the lines to connect the crosses accurately.
- (iv) Many candidates answered this question correctly and identified that the hypothesis was true, giving relevant statistics to support their answer, usually the total scores for sites 1 and 8. Some candidates referred to the environmental quality increasing away from the station rather than survey scores, but this just repeated the wording of the hypothesis. Weaker responses referred to individual features of the site rather than total scores which did not explain the overall change indicated in the hypothesis. Other responses focused too much on anomalies, and in some cases this was to the detriment of the answers as it led to candidates reaching the incorrect judgement that the hypothesis was partly true.
- (v) The most common correct answer referred to the idea that the scores given by the students were subjective and that people's opinions were likely to vary. Stronger responses also included the ideas that the survey only looked at four features and ignored others such as pollution, and that the site surveys were possibly done under different conditions. Weaker responses suggested that the students would be biased or make a mistake in their survey, but these suggestions were not specific enough to be credited as valid reasons.
- (d) (i) Most candidates plotted the results correctly, particularly the noise level at 80 db. Some candidates misread the scale when plotting air pollution at 285 CO₂ ppm and drew the plot at 280 or 290. A small number of candidates did not follow the key and plotted the wrong notations or plotted the points at a different site than site 3. A number of candidates did not attempt to plot the results.

- (ii) The majority of candidates correctly selected 'noise level' as best supporting the hypothesis, with a significant minority selecting 'air pollution'. The former generally justified their choice well, referring to the reduction in noise levels and increase in air pollution levels away from the station as shown by the statistics. Some candidates only referred to either noise or air pollution rather than both as required in the question. Those who incorrectly selected air pollution rather than noise level were able to score marks for correctly including comparative statements and statistics.
- (e) This question was generally not well answered, though most candidates selected a valid sampling method, usually random or systematic. Stronger responses described their chosen method fully, but weaker responses often mismatched the name of the method and the description. Many candidates that chose random sampling described it by using the word 'random' or 'randomly', and most of those choosing systematic simply stated 'select every nth person' with no elaboration of how this selection would be achieved. Few candidates chose stratified, and only a small proportion understood that this type of sample should reflect the proportion which makes up the entire population. Overall, a clear understanding of the three sampling methods was not demonstrated. Some candidates did not identify a sampling method and wrote their answers about how to use a questionnaire which was not relevant to the question.

Question 2

- (a) (i) A number of candidates did not complete the Table. While many did correctly name both measuring instruments, incorrect answers included suggestions such as a wind vane or made up names of instruments such as a rain recorder, wind velocity measurer or wind cup.
- (ii) This question was generally well answered. Weaker responses sometimes suggested that the wind vane and sunshine recorder should be used inside a Stevenson Screen, and that a barometer and thermometer should be used outside a Stevenson Screen.
- (b) This question was generally not well answered. The question asked candidates to explain how the students would use thermometer to measure the daily maximum temperature, but many candidates explained how the maximum-minimum thermometer works, which was not the question focus. The most common credited answer referred to reading the temperature every 24 hours. Stronger answers also mentioned reading at eye level and reading the temperature in degrees Celsius. Few candidates mentioned the importance of looking at the bottom of the index or resetting the index.
- (c) (i) The correct answer which referred to recording the results of the sunshine recorder at the same time each day was the most popular statement. The option about the sunshine recorder facing north in the northern hemisphere and south in the southern hemisphere was the most common incorrect choice.
- (ii) Most candidates identified card D, with many correctly stating that the burnt line was the longest. Some candidates gave reasons which were imprecise, such as 'the card was most destroyed' or 'the card had the biggest reading'. A few candidates suggested card C because it had the longest distance between the first and last marks, but this card was not burned continuously like card D.
- (d) (i) A number of candidates did not attempt this question. Of those who completed this question, most plotted both days correctly. Where points were plotted incorrectly, this was often due to misreading the sunshine hours scale. It is important that candidates take care and use a sharp pencil. Some did not do this and their plotting was therefore not precise.
- (ii) Many correctly agreed with the students that the hypothesis was false and used evidence well to support their decision. Some candidates did not state that there was no relationship between the two variables and therefore did not explain how they reached their decision, though most responses did illustrate the lack of relationship through appropriate data.
- (e) (i) Most candidates correctly identified the atmospheric pressure reading shown on the barometer. A few incorrectly read the pressure shown by the moveable pointer.
- (ii) A small percentage of candidates knew that 'mb' stood for millibars when measuring atmospheric pressure. Common incorrect answers included megabytes and meter bars. A few candidates suggested the answer 'atmospheric pressure' though this is not a unit of measurement. Many candidates did not suggest an answer.

- (f) (i) Most candidates correctly plotted the bar showing atmospheric pressure and the cross for maximum temperature. Almost all candidates attempted this question. The bar for atmospheric pressure was drawn inaccurately by some candidates; a ruler is needed to draw the bar accurately. Common errors included misreading the pressure scale and drawing the bar to 1014.5 mb.
- (ii) Many candidates correctly agreed with the hypothesis, but most did not use data well to support their decision. Some candidates included data in their answers with limited success as they did not use a sequence of days to show increase and decrease of pressure and temperature. Many chose dates which were wide apart to show that there was a positive correlation between temperature and pressure which was not what was required. Several sequences of dates could have been used to illustrate the link, e.g. 8th to 12th and 4th to 8th, and support the fact that the hypothesis is true.
- (g) (i) Most candidates correctly identified September 11th from the graph. Common incorrect answers were '10th', '12th', '19th' and '10th to 11th'.
- (ii) There were many correct answers of 5 degrees Celsius. The most common wrong answer was 4 degrees Celsius.
- (iii) Responses to this question were mixed. Stronger responses identified the downward trend of both maximum and minimum temperatures during the month and the fact that both fluctuated. Temperature figures and dates were generally well used to support one of the statements. Weaker responses tried to compare maximum and minimum temperatures or wrote about changes from day to day, sometimes accompanied by statistics, rather than giving an overview of changes over the month.
- (h) A significant number of candidates did not attempt this question. Of those who did, many correctly identified one or two features, including that it was portable, automated, all instruments were located on one stand, and it was out in the open. Weaker responses often focused on the idea that a traditional weather station had features not shown in the photograph, e.g. not painted white, not in a Stevenson Screen etc. Some candidates used vague words such as 'technical' or 'technological' which were not specific enough to gain credit.

GEOGRAPHY

Paper 0460/42 Alternative to Coursework
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Key messages

To perform well on this paper candidates should:

- When answering hypotheses questions that ask whether they agree or not, always give their opinion first before any supporting evidence. This will usually be 'Yes', 'No' or 'Partially/To some extent'. Candidates should not just copy out the hypothesis – this was often seen on **Question 1(c)(ii)**. It is important for candidates to make a decision and then provide the data or evidence for their choice. Candidates should be clear in their decision – expressions such as 'might be true', 'could be false', 'true and false', 'generally true' are too vague.
- Note that if evidence is asked for, this can include numbers and descriptive statements. If the question says 'Support your decision with evidence from Fig. 2.5 and Table 2.2' as in **Question 2(d)(ii)** then at least one mark will be reserved for data use from those resources.
- When giving figures in an answer, always give the units if they are not stated for you, for example, in **Question 1(d)(iii)** 'The average morning wind speed = 1.5 m/s in the city centre and 1.1 m/s in the rural-urban fringe'.
- When shading or completing graphs, use the same style as that provided in the question and use a sharp pencil to give a good dark image. Candidates should also check that they understand the scales used and the importance of any plots provided. If adding plots to a graph, use the same style as the plots already on the graph for example on **Question 1(c)(i)** the two plots should be a cross and a black dot like the others already in place and in the key.
- When completing bar or pie graphs, make sure their shading matches the key.
- Use the exact figures from the table rather than make erroneous judgements from the graph if they need to refer to data from a table or graph. Try to avoid words such as 'almost' 'nearly' or 'approximately' and choose a precise number. For example, in **Question 2(d)(ii)** Table 2.2 should be used for accurate percentages using different medical services rather than estimating from the pie graph.
- When they think they have finished, go back and check that all questions and graphs have been completed. The following graph questions were frequently missed out/not completed: **Question 1(c)(i)**, **Question 1(d)(ii)**, **Question 2(c)(i)**, **Question 2(d)(i)** and **Question 2(e)**.
- Read questions carefully and identify the command word e.g. describe or explain. Question that asks 'Why?' require a reason to be given, not a description.
- Check that they are using the resources that a question refers to.
- Be careful with the use of terms such as 'majority' when the correct term would be 'highest' or 'most'. The 'majority' must be more than 50% of the statistics being described and is not a term that will be accepted if the data involved is less than 50%.
- Take into account the marks awarded as an indication of how much to write for each answer.
- If they need to continue beyond the answer lines provided for the question, use the additional pages provided and clearly number the question that is continued on the additional pages.
- Ensure they have the correct equipment for the examination. In this case, a protractor, calculator and a ruler. Some responses included freehand bar graphs for **Question 1(d)(ii)** and **Question 2(e)(i)** which were not accurate. It is also best to draw plots or complete graphs in pencil – sharp pencil provide more accurate plots.

General comments

Most points to consider when candidates are preparing candidates for this Paper relate to the misunderstanding of command words and the importance of experiencing fieldwork – even if it is only in the

school grounds or simulated in the classroom. Where candidates did not score well, it was often related to them not fully reading the question or completely missing out graph completion tasks.

Although this is an *Alternative to Coursework* examination, candidates will still be expected to show that they know about fieldwork equipment, how it is used and fieldwork techniques. Any fieldwork experience is beneficial. Familiarity with maps, tables, sampling methods, measuring instruments and the various graphs and other refining techniques listed in the syllabus are also important for success in this examination. Sampling techniques remain an important part of fieldwork that can be taught in classrooms and questions on this topic are often not well-answered by candidates. Creating and using questionnaires and sampling exercises can be carried out and demonstrated without leaving the school, e.g. sampling of candidates using random, systematic or stratified techniques or using internal questionnaires. Additionally, measuring temperatures and wind speeds is an example of fieldwork methods that could be carried out within most school grounds.

Comments on specific questions

Question 1

Question 1 focused on fieldwork involving different temperatures and wind speeds between the city centre and the rural-urban fringe of Shanghai, China. Candidates needed to understand the advantages of using a digital thermometer as well as the use of anemometers and wind vanes and how and why selected weather characteristics varied between the two different areas. To test practical skills, they needed to make choices from tables as well as complete a scatter graph and a horizontal bar graph. There were also photographs to interpret. Candidates were asked to make judgements about two hypotheses and then to justify those decisions with evidence.

- (a) The definition of the rural-urban fringe involved two points – that it was on the edge or outskirts of a city and that it was the area between the urban and rural land-uses. Most candidates gained one or two marks here; the majority for knowing it was the area or zone of transition between cities or towns and the countryside. A few described in detail the possible land-uses such as farmland and housing which was not a definition so not credited. Use of the term ‘urbanisation’ was seen but this was not the correct context, as urbanisation describes the movement of people into a city. Some thought the rural-urban fringe was the area around the city centre or CBD which was incorrect; others wrote that the rural area was expanding into the urban area.
- (b)(i) Most candidates answered this question well. The most common advantages given were that the digital thermometer was accurate/precise and that it was quick and easy to use or read. Other acceptable answers included that it could measure in Centigrade or Fahrenheit, that it was portable, and that the results were displayed clearly on the screen. A common response that was not credited was that there would be no reading errors; whilst there should be less errors than a traditional thermometer, reading errors can still be made. A few candidates compared this instrument with a traditional thermometer stating the disadvantages of the latter; this was not required in the question and was not credited.
- (ii) In responses to this question, it was not enough to suggest that the candidate should just take more measurements or repeat the investigation as neither of those ideas would make the results more accurate/enable the students to check their measurements were correct. Stronger responses suggested taking more measurements and comparing results in working out an average. Other suggestions included getting other students to take measurements for comparative purposes and taking measurements with a traditional – or another digital – thermometer for comparison.
- (c)(i) Most candidates plotted both points accurately; in a small number of cases the cross and dot were plotted in reverse order. Common errors seen included plotting the points above the woodland area in the urban-rural fringe instead of above the woodland area in urban park in the city centre. There was also incorrect plotting due to inaccurate reading of the scales; a few candidates plotted the morning temperature at 18 °C instead of 18.5 °C. A minority of candidates did not attempt the graph completion.
- (ii) This question was answered well with almost all candidates stating that they thought the hypothesis was ‘True’ and then providing appropriate comparative data for either the maximum temperature or the average temperatures which showed that the city centre had the higher temperatures than the rural-urban fringe. Many candidates gained three marks here; the fourth

mark was for recognising and stating that the temperatures were higher in the morning **and** the afternoon which the paired data revealed. Candidates who judged the hypothesis 'Partly True' often gained credit for the correct comparative data.

- (iii) This question was generally not well-answered. Many candidates just listed factors that might affect temperature such as too many vehicles, air pollution, trees, vegetation and buildings. Very few went on to say how these factors might make the temperatures vary between the city centre and the rural-urban fringe. Many referred to the altitude, the greenhouse effect, climate change, global warming and cloud cover, none of which would specifically cause differences in and around a city.
- (d)(i) The vast majority of candidates knew that the anemometer was used to measure wind speed. The most common incorrect answer was a barometer.
- (ii) The graph completion was well done by most, though a few misread the scale plotting inaccurately at 1.95. It should be noted that bar should have been drawn where the two guidelines were placed next to the 'footbridge over main road' label. A few candidates drew their bar in the gap between the city centre and the rural-urban fringe axis labels. A number of candidates did not attempt this question.
 - (iii) Most candidates made the correct choice of the hypothesis being 'Partly True'. Stronger responses then recognised that the city centre had a higher average wind speed than the rural-urban-fringe in both the morning and also in the afternoon. This was then backed up with paired data to illustrate this statement. Some candidates justified their decision by using the highest wind speeds or individual site wind speeds instead of the average wind speed stated in the hypothesis.
 - (iv) Most candidates correctly identified lines of trees and woodland and the gaps between high buildings as two factors that affect wind speeds in an urban area. Quite a few responses only placed one tick in the table when the question asked for two choices.
- (e) Overall, most candidates recognised that the wind vane was being held up in the air above head height and that the person was standing in an open space away from obstructions such as trees and buildings, which gained two marks. Very few commented that the wind vane was aligned to the compass directions and that the arrow was moved by the wind. Many wrote that the wind vane pointed to the direction where the wind was coming or going to; it was necessary to be accurate here and state that it was the arrow pointing to where the wind was coming from. Few candidates demonstrated knowledge that the arrow pointed to where the wind was coming from rather than going to. Stating 'it shows the wind direction' was too vague.
- (f) (i) This question was answered well, as most candidates made sensible suggestions regarding the use of the measuring equipment at school prior to any fieldwork. These included making sure that the wind vane and thermometer were working properly and would give accurate results so there would be less mistakes and also that they could practise using the equipment and familiarise themselves with how it would be used.
- (ii) Overall, responses to this question were mixed. Stronger responses included the idea that, by checking the temperature over a year, they would be able to compare the current readings and identify changes and trends over twelve months or see the influence of seasons where relevant. Many thought calculating an annual average of temperature or of wind speeds would help to make their results reliable as the question asked.
 - (iii) This question was generally not well answered. Some stronger responses identified that there were some sites that may produce anomalous results, such as the woodland area in an urban park and the main road in front of the school, as they were not typical land uses to represent the two areas and consequently could be made more reliable by changing the sites to more typical ones that would be found in the two areas. Others answered incorrectly or did not provide an answer to this question.

Question 2

Question 2 focused on investigating health issues in two different residential areas of Mumbai, India. They were expected to know, using photo prompts, the conditions which encouraged various diseases to thrive, how to sample people's views using a questionnaire, and how to analyse comparable evidence about which diseases were encountered in each settlement and where they went for treatment. They were also required to describe how they would investigate housing conditions in the areas, as well as complete a bar graph, a pie graph and a horizontal divided bar graph. They also had to make judgements from evidence regarding two hypotheses.

- (a) This question asked candidates to suggest likely risks to the health of people living in a squatter settlement shown in a photograph. This was well answered by most candidates, although a significant number focused exclusively on water-borne diseases when many other risks could have been suggested, e.g. crowded/congested housing, poor sanitation, unsafe housing and litter attracting vermin. Candidates should therefore ensure, when asked to give multiple ideas or suggestions, that each of the ideas they present are distinctly different. Some responses included ideas which the photo could not suggest such as the lack of doctors or air pollution.
- (b) (i) This question was generally not answered well. Very few candidates demonstrated an understanding of why sampling was necessary and provided answers such as that it would be impossible to ask everybody, or that it would save time. Most responses described the information that the sample would give about the diseases and treatment facilities and that the comments could apply to all the people in the settlement.
- (ii) Most candidates knew the difference between 'primary' and 'secondary' data. Candidates should ensure that they focus on more specific definitions for these terms, rather than those that are vague and ambiguous e.g. *it is the data collected by candidates themselves*. Whilst this was credited for this question, this could also be a definition of secondary data.
- (iii) This question was generally not answered well. Stronger responses focused on the fact that the method was unreliable as it would create issues concerning representation from a very specific gender/age group to represent all the views of the people in the settlement. They also highlighted practical issues such as it would not always be mothers collecting their children; there could be others doing the pick-up. The key issue was that the sample was just one gender with a similar age/cohort with children thereby immediately making it unrepresentative and likely to produce similar answers to questions. Weaker responses did not focus on the suitability of the sample chosen as being a problem and gave generic issues such as that those answering the questionnaire might lie, there would be language barriers, they may not be literate, or they might not be interested – none of which were relevant to the issue of the sample chosen.
- (iv) There are three sampling methods that could have been used to answer the question – random, systematic and stratified. Candidates were asked to do three things – name the method, describe it, and explain why it would be reliable. Random and systematic sampling were the most popular choices. For random sampling, responses often suggested 'asking anyone' or 'using random number tables/generators' to pick the sample; weaker responses repeated the word 'random' or 'randomly' in their description. Systematic was usually answered more successfully. A few gave stratified as a method but rarely described it as using age/gender to pick the sample. Most candidates knew that all would ensure there was no bias. Incorrect sampling methods listed included questionnaires, door-to-door interviews and quadrat sampling.
- (c) (i) Most candidates plotted the bar correctly. However, some incorrect plots were seen at 38, 46 and 58; candidates should ensure they check the scale of the graph accurately. A small minority did not attempt the graph completion.
- (ii) This question was well answered, with most candidates correctly judging that the hypothesis was 'True' and that more people suffered from diseases in the squatter settlement than the area of permanent housing with disease names used to illustrate this. A few agreed that, while overall it was 'True', two of the six diseases (malaria and diabetes) were higher in the permanent settlement. Many correctly quoted the total numbers suffering as 259 (squatters) to 161 (permanent housing) to support their 'True' judgement. Weaker responses focused on the differences between individual diseases rather than seeing the overall picture.

- (d)(i) There were quite a few errors in plotting the pie graph and a number of candidates did not attempt to answer this question. The most common errors were plotting the line by going the wrong way round on the graph (anticlockwise) unlike the one provided, or plotting the line at 21% clockwise from 0% instead of taking into account the already plotted 5% and plotting a correct line at 26%. Almost all candidates shaded the slices with the correct style but there were a few seen that shaded the diagonal in a different direction; shading was not always complete.
- (ii) Despite being told to support the hypothesis decision that it was 'False', a few responses focused on supporting that the hypothesis was 'True'. The majority, however, concluded that 69% of people in the squatter settlement and 74% of people in permanent housing areas used private/non-governmental facilities. This gained two marks for the correct use of data. A few responses included the correct figures but did not say which settlement they referred to or did not mention that most people in both squatter settlements and permanent housing used private/non-government facilities. Some answered from the point of view that a low percentage did use the government health care facilities; if this approach was taken the relative word 'only' was needed; 'only 25 per cent' (people in squatter settlements) and/or 'only 21 per cent' (people in permanent housing area) instead of just stating the figures for the marks.
- (e)(i) There were quite a few plots at 85%, 88% and 97% instead of 87% and 98%; both needed accurate plotting for the plot mark. Almost all responses gained a shading mark by using the correct sequence from left to right. This graph completion was the most common of all the graph questions to not be completed/missed out.
- (ii) Stronger responses to this question investigated the data in Table 2.3, the answers given by the people in the two areas, and made comparative statements about the differences in the reasons chosen not to use the government health facilities. Judgements such as 'more people in squatter settlements say that long distance travel is a reason' or 'more people in the permanent housing area thought long waiting times was a reason' were excellent answers. A few responses did not state differences and just listed reasons separately. A common error was to misread the question Table 2.3 presents the answers to and state that people in squatter settlements travel further to the facility, which is not true.
- (f) This question was well answered. There were many suggestions as to how the health of residents could be improved which included building new hospitals/clinics closer to the poor areas, employing and training more doctors and nurses in these areas, providing vaccines, medicines and inoculations, and education about health and good hygiene. Improving the sanitation, sewage disposal and providing clean water were also popular ideas. A few candidates took a wider view that did not improve health directly, such as improving the food supply, providing more work, and building better housing alongside unrealistic possibilities such as weekly check-ups for all, or moving people out of the areas to make it less crowded.
- (g) The majority of answers to this question were quite general and vague. A mark relating to good fieldwork practice such as working in pairs or groups, recording the results, and visiting the areas was credited and most candidates gained a mark for this. A few responses suggested creating a hypothesis to test but did not then go on to suggest a hypothesis. The stronger responses suggested a bi-polar survey, including suggestions of categories to judge and score on such as housing materials, structures etc. Practical ideas such as taking photographs, getting a map or interviewing people were stated in some responses but these ideas were rarely developed e.g. by stating what the photos would be of or what questions they would ask people. Those that suggested more detail, perceived housing conditions as including the supply of water and electricity from outside and also what facilities were inside the houses. Many suggested going into the houses to assess or interviewing government officials – two ideas unlikely to be realised. Some candidates left this question blank.

GEOGRAPHY

Paper 0460/43 Alternative to Coursework
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Key messages

To perform well on this paper candidates should:

- When answering hypothesis questions that ask whether they agree or not, always give their opinion first before any supporting evidence. This will usually be 'Yes', 'No', or 'Partially/To some extent'. If questions ask for answers to support their decision with data, then statistics must be used from the resources referred to. Data is quantitative; evidence can be qualitative or quantitative. If candidates make an incorrect conclusion to the hypothesis, they will gain no credit for the decision, but they will be given credit for evidence which supports the correct decision.
- When giving figures in an answer, always give the units if they are not stated.
- Read questions carefully and identify the command word e.g. 'Describe', 'Explain', 'Suggest'.
- When asked to compare or make judgements, use terms such as 'higher', 'lower', rather than just listing comparative statistics. The use of 'only' with statistics is not accepted as a comparative statement.
- If comparing statistics, it is important to use paired data rather than one set on its own.
- Check they are using the resources that a question refers them to e.g. 'Support your answer with data from Fig. 1.3 and Tables 1.1 and 1.2'.
- Attempt all completion tasks on graphs, tables, or diagrams – not all the answers are on lines and in writing. Many candidates miss out on marks by not attempting these questions.
- Take into account the marks awarded as an indication of how much to write for each answer.
- If candidates need to continue beyond the answer lines provided for the question, use the additional pages provided and clearly number the question that is continued on the additional pages.
- When completing graph work, use a dark-coloured pencil. Candidates should use a ruler to draw lines and always shade bar graphs and pie charts accurately, matching what is shown in the key.
- When they think they have finished, check that they have not missed out a question. Some questions might have been overlooked if they are on pages with a lot of graphs or maps. Candidates should make sure they have answered the questions on every page. This applies especially to questions where they are asked to complete tables, diagrams, graphs or maps.

General comments

On this paper, there were some strong responses to questions requiring explanation and judgement, especially regarding hypotheses. Most candidates answered **Question 2** slightly more successfully than **Question 1**.

Most candidates who answered graph completion questions did so successfully, though some candidates omitted them. Some candidates wrote too much in some sub-sections and would have benefited from answering more succinctly. Several candidates did not attempt later questions.

Most points to consider when candidates are preparing candidates for this Paper relate to the misunderstanding of command words and to the use of appropriate fieldwork techniques and equipment. Those questions where candidates did not score well often related to their not having carefully read the question, for example in **Question 1f** where some focused on seasonal differences in visitor numbers rather than people coming from different parts of the world, and **Question 2d(v)** where many candidates did not explain how factors affected river velocity.

Although this is an Alternative to Coursework examination, candidates are expected to show that they know how fieldwork equipment is used and to understand appropriate fieldwork techniques, even if they have only limited opportunity for fieldwork. For example, **Questions 1b, 1d(i), 2a, 2b(i), 2b(iii), 2d(i), 2d(ii), 2e(i) and 2e(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 school site or in the local area. **Question 2e** required candidates to suggest and describe a fieldwork method of their own. This type of question, or one asking how fieldwork methodology could be improved, is a question type that candidates can improve upon; candidates should ensure their answers are specific to the question asked rather than generic to all fieldwork.

Comments on specific questions

Question 1

- (a) Many candidates gained three marks by clearly describing the main changes in tourist numbers. Weaker responses often referred to an increase, decrease or fluctuation in numbers without including dates or referred to changes without clearly noting the correct start and finish year, e.g. 'tourist numbers increased in 2021 and 2022' rather than 'tourist numbers increased from 2020 to 2022.'
- (b) Random sampling was generally not well described. Some responses simply repeated the word 'random' or 'randomly' while others scored one mark by referring to the idea of 'ask anyone'. Stronger responses included detail about using random numbers to identify the person to approach. A few candidates stated that 'they would use a systematic sample and ask every nth person', which was not what was required by the question which focused on random sampling.
- (c) (i) Nearly all candidates drew the two horizontal bars accurately. A small number were drawn inaccurately; candidates should ensure that they use a ruler. A number of candidates omitted this question.
- (ii) This question was generally not well answered. Only some responses referred to any answer being subjective or that there were no descriptions to accompany the ratings. Many responses included the question being vague, or there being not enough distinction between categories, or the rating scale of 1 to 5 being too narrow which did not gain credit.
- (iii) The majority of candidates chose a histogram as a suitable technique to present this data, but a histogram is used for grouped data, not discrete data like that shown in the Table. Some candidates correctly chose a pictogram.
- (iv) Most candidates made the correct conclusion that the hypothesis was true, and many supported their decision clearly and used data effectively. Some weaker responses stated that it was not true or partly true because some people made negative points, not considering the fact that more responses were positive. To gain credit for data, the figures needed to be accurate and comparative. Individual scores of likes and dislikes were not appropriate as they did not support the overall conclusion to the hypothesis.
- (d) (i) Some responses to this question put too much emphasis on ideas such as dividing up the work between group members and deciding how many sites to work at, rather than describing how the pedestrian count would be done. Stronger responses suggested valid ideas such as using a method of tallying pedestrians or using a clicker to count them, setting a stopwatch or timer to measure the time of the count, and going to the same sites in the morning and afternoon. Few candidates referred to having a line or marker to count pedestrians as they passed it or making a recording sheet containing appropriate spaces for time and location.
- (ii) Most candidates drew the divided bar graph accurately. Some misread the scale or plotted the results at 34 and 48 rather than at 34 and 82, not realising the results should be cumulative. In most cases the shading and order of the results were correct so at least one mark was usually awarded.
- (iii) While many candidates correctly stated that the hypothesis was false some said that it was true or partly true, selectively choosing statistics to support their decision. Stronger responses compared total activities and facilities with pedestrian numbers at the three sites to conclude that the hypothesis was false; they supported their conclusion by describing how site 2 had most facilities and activities but fewest tourists, or that site 3 had fewest facilities and activities but most tourists. Some weaker responses tried to explain the conclusion of true or partly true by comparing morning and afternoon figures, which was not the focus of the hypothesis.

- (e) (i) Most candidates completed the pie graph accurately, but a number did not attempt this question. A common error was reversing the order of the segments and not following the order of the key or making the 1% segment too big. Candidates should ensure that they use a ruler to draw the segments.
- (ii) Most candidates identified the two correct statements from the evidence in the pie graph. Some identified only one statement. The most incorrect answer was 'more visitors came from Russia and Eastern Europe than from Western Europe'.
- (f) There were some excellent responses to this question, including ideas such as availability and cost of flights, variation in levels of disposable income between countries, distance of travel to Dubai from the home country, and the availability of similar attractions such as the beach in the home country. Some candidates misunderstood what was required by the question and did not focus on the variation in the number of visitors from different parts of the world but instead gave reasons for any seasonal difference in visitor numbers.

Question 2

- (a) Many candidates identified both correct statements. The most common incorrect answer was 'to identify different features along the river valley'. A few candidates chose two incorrect statements.
- (b) (i) Responses to this question were varied. Stronger responses showed clear understanding of the use of poles and a clinometer and explained the method of measuring the angle of slope clearly. Weaker responses did not demonstrate knowledge of how the equipment could be used and often did not use the photograph of the fieldwork task to help with their description.
- (ii) There were many correct answers to this question referring to anomalies, checking measurements or working out an average angle of slope. A common error was to simply state that with more measurements the results would be more accurate without explaining why.
- (iii) Most candidates suggested two advantages of using a digital clinometer. The most common answers were about the digital thermometer being easy to use, accurate, fast and portable. Some candidates also identified that it would be possible to store and transfer data. Common errors included ideas that it was more convenient and unbreakable.
- (c) (i) While the correct, site 1, was the most popular answer, sites 4 and 5 were also chosen by some candidates.
- (ii) Most candidates who answered this question drew the angle of slope correctly. A number of candidates omitted this question.
- (iii) Most candidates correctly identified that the hypothesis was true with the exception of site 3 and many used data well to support their decision. Some weaker responses showed limited understanding that the higher the angle the steeper the gradient and made the incorrect conclusion that the hypothesis was true.
- (d) (i) Most candidates placed the four statements in the correct order. Whilst a few mixed up the order of the statements, the most common error was candidates using their own statements that were different to those listed in the question.
- (ii) Most candidates showed some understanding of how to use the flowmeter. It was important that responses focused on using the equipment rather than explaining how it worked. Responses often began by referring to putting the flowmeter or propeller into the river, although some just referred to the pole which was vague. Stronger responses also described how the propeller must face upstream and should not be obstructed. Many candidates also described how the velocity was displayed on the screen. A few weaker responses mentioned the flowmeter floating down the river to determine the velocity.
- (iii) Nearly all candidates plotted the result for site 5 accurately. A small number of candidates did not attempt this question.
- (iv) Many candidates correctly stated that the hypothesis was true and used data well to support their decision. The graph shows a positive correlation and candidates described this relationship as the

slope became steeper, velocity increased. Some candidates thought that site 2 was an exception but it still follows the positive trend shown on the graph.

- (v) This question was generally not well answered, and many responses did not include any explanation of how different factors affect river velocity which was the focus of the question. Candidates often only identified factors without stating how they would affect velocity. Factors most often suggested were obstacles or rocks in the river, river depth, high rainfall and river discharge, but these ideas needed to be linked to an increase or decrease in velocity.
- (e) (i) The last two questions focused on candidates extending the topic of river fieldwork by suggesting their own hypothesis to investigate a different characteristic of how a river changes and describing a suitable fieldwork method. Most candidates suggested a suitable hypothesis or phrased the hypothesis as a question. Many suggestions focused on channel depth, channel width or pebbles changing downstream either in size or roundness. Some responses did not phrase the hypothesis appropriately; it was not enough just to identify a topic, e.g. width of the river channel. Weaker responses suggested topics about features of the valley or surrounding area rather than a river characteristic and a few wrote hypotheses which would have been impossible to test, such as the number of fish in the river or processes like erosion and deposition occurring. Some candidates suggested hypotheses about the velocity or slope despite the instruction not to do so. A number of candidates did not answer this question.
- (ii) A significant number of candidates did not answer this final question and responses depended on the choice of hypothesis in **part (i)**. Many candidates described a method to measure channel width or channel depth, or a method to measure a change in pebble size or roundness downstream. Strong responses described their methodology in detail and included reference to recording results as they did the fieldwork and repeating the method at sites downstream to show how the chosen characteristic varied. Candidates who did not phrase their topic as a hypothesis or question in **part (i)** were still credited with a suitable description of methodology in **part (ii)**.