

GEOGRAPHY

Paper 2217/12
Paper 12

Key messages

To perform well on this paper, candidates need to:

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

General comments

The examination differentiated effectively between candidates of all ability levels. Many candidates performed very well across the paper and demonstrated excellent Geography. Most candidates made good

attempts at their chosen questions. Weaker candidates found it difficult to interpret questions and write relevant answers. There was sufficient time to complete the paper.

As required, most candidates followed the rubric by selecting a question from each section. Occasional rubric errors were seen once again this series, candidates are reminded to answer one question from each section.

Candidates' presentation of answers was variable, though almost all were legible.

Questions 1, 4 and 6 were the most popular questions within each section; a significant number of candidates answered **Questions 3 and 5**. There were good answers to all questions, including those requiring extended writing. There were numerous excellent answers to all part (c) questions, including case studies. High quality answers in these sections were characterised by developed ideas with some clear place detail and/or data. Weaker responses tended to offer generic developments of ideas with little place detail or statistics to support them. Other weak responses were characterised by simple, brief statements. In some cases, a significant amount of detail included by candidates was not relevant to the question being asked, and sometimes long introductions occupied much of the answer space. To maximize their marks scored on the part (c) questions, an area for improvement for some candidates would be to develop or link relevant ideas and omit detail which is not relevant to the question.

To gain marks at the highest level, case studies require place specific information. Candidates should carefully consider their choice for each question ensuring that they select an appropriate example and that they have included appropriate place specific detail. It should be noted that case studies are not always required in part questions. For example, on this paper, neither **Questions 3 nor 4** required case studies. Where case studies are required, place specific detail needs to be included for maximum marks. Other styles of questions may also benefit from the inclusion of specific reference to place (e.g. **Question 4**) and statistical information related to the topic (**Question 3**) may also be relevant.

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

Comments on specific questions:

Question 1

Question 1 was more popular than **Question 2** with most candidates attempting it. Overall performance on this question was slightly better than on **Question 2**.

- (a) (i) While there were many correct definitions, some did not score the mark as they did not state that many people lived in 'a small area/per square kilometre'. Some wrongly defined 'overpopulation'.
- (ii) This was answered correctly by many candidates. Errors were usually the result of confusion over the number of zeros or dividing area by population. Most candidates gave answers to two decimal points as required,
- (iii) Most candidates linked the distribution to the sparsely, moderately and densely populated areas and therefore were able to gain three marks. Some candidates were unable to look at the continent as a whole to describe the distribution, but instead focused on countries or used inappropriate terms such as 'above' or 'below' the equator. It is essential to be able to accurately use compass directions in this type of question.
- (iv) Some candidates missed the key word 'physical' or were confused with human factors. Better answers linked population density to different factors, especially relief and climate, or gave reasons why the chosen factors affected population density. Weaker answers simply stated factors without providing any explanation.
- (b) (i) Many candidates failed to score because they did not compare the two areas but only referred to one island. Most correct answers focused on building height and the amount of vegetation or open space. Relatively few answers referred to the buildings on Male being closer together. Many answers, in whole or in part, did not relate directly to population density; for example, they included writing about cars, crowded streets and ships.

- (ii) This was well answered, with many candidates gaining 4 or 5 marks for identifying, and in some cases developing, a range of problems caused by overpopulation. Some weak answers included vague generalisations that gained no credit (for example, single words such as 'overcrowded', 'crime', 'congestion', and 'pollution').
- (c) There was a variety of case studies; the two most popular countries named were Mexico and Poland. Most candidates suggested a variety of reasons for migration, but many did not develop them sufficiently. Some candidates only used statistics to compare two countries, usually Mexico and USA. Even if they use statistics, candidates should include some written development (for example, the most common developed response about finding paid work was the idea of remittances being sent home). Less popular answers focused on countries where people were forced to flee because of war or a natural hazard. In these cases, Syria tended to be the named country. Many of these were excellent answers as they offered developed reasons based on the perils of living in a war zone or the inability to cope with a hazard such as drought.

Question 2

Only a small proportion of candidates answered this question. While some excellent answers were seen, generally the performance on this question was not quite as good as on **Question 1**.

- (a) (i) Many candidates gave an acceptable definition of 'inequalities'. A significant number responded by confusing the term with unfair or offering the word 'equal' rather than one showing understanding of its meaning.
- (ii) Most candidates described a problem and scored marks, with the most common types chosen being air pollution and noise. Some candidates correctly identified pollution types but did not go on to state a problem or referred vaguely to 'health problems' or 'disease'.
- (iii) Many candidates gave good answers which referred to ideas such as high car ownership, commuting, migration or population growth. Some candidates answered the question incorrectly by focusing on the problems caused by traffic congestion.
- (iv) Generally, candidates referred to the lack of houses for the large population and many developed this idea by referring to the need for many people to live in squatter settlements. Other common answers focused on people not being able to afford the available houses and old housing needing renovation.
- (b) (i) Most candidates used the maps well to describe three appropriate changes in land use.
- (ii) This question discriminated well. More perceptive candidates did concentrate on conflict, such as that caused by renovation of housing and changes to the industrial structure, or suggested ideas such as conflicts created by two neighbouring land uses. Weaker answers simply described problems such as people losing their homes, traffic congestion and various types of pollution.
- (c) A variety of countries was selected with India and various African countries, such as Nigeria, being common. Some candidates showed thorough knowledge of the reasons for rural to urban migration. Few candidates were able to link their developed statements to place specific references. As in **Question 1(c)**, weaker candidates suggested a variety of reasons for migration, particularly employment and the provision of various services, but did not develop them.

Question 3

This question was less popular than **Question 4** and, in general, candidates performed slightly less well on this question than on **Question 4**.

- (a) (i) Most candidates correctly estimated 17 km.
- (ii) Most candidates identified the correct landforms, though not all selected 'wave-cut platform'. The most popular distractor was a spit and, despite the instruction to select 'two' landforms, some selected three or more.
- (iii) Most responses gained at least two marks for knowing that soft rocks are less resistant to erosion and then stating that a bay was formed where the soft rock had been removed. Full marks were

obtained by the reference to the idea of formation of a discordant coastline (alternating bands of rock of different resistance).

- (iv) This question was a good discriminator. Where candidates realised that a beach was formed by depositional processes, they usually scored at least three marks by referring to constructive waves (or loss of energy), shallow water in the bay and deposition of sediment. Weaker responses incorrectly tried to explain that the formation of the beach was related simply to erosion of the rock forming the bay.
- (b) (i) Most candidates correctly identified the appropriate methods.
- (ii) This was another question which discriminated well. Better candidates were able to explain how each of the shown methods of coastal management protects the coastline. Weaker answers were characterised by repetition of ideas about each method 'absorbing the power of the waves', or just stated that the different methods 'stopped erosion' by the sea or waves. The purpose of groynes was well understood by most candidates, and there were many appropriate references to them reducing longshore drift.
- (c) Most candidates gave some description on the conditions required for the development of coral reefs. A minority described the conditions in detail and developed their ideas by using appropriate statistical data to gain full marks. Some candidates offered only simple statements such as the coral reefs need 'warm water', 'clean water', etc. Some candidates wrote that coral reefs need 'a warm temperature', though did not relate development of the reefs to the temperature of the water. There were candidates who included irrelevant detail about the location and characteristics of the different types of coral reefs, while others focused more on their destruction by people or rising global temperatures.

Question 4

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

- (a) (i) Most candidates correctly estimated 1050 mm.
- (ii) While many candidates correctly identified both climate graphs, some candidates mixed up **C** and **B**, and others just seemed to guess with all combinations of answers seen.
- (iii) Most candidates correctly identified climate graph **D** and then referred to valid ideas such as high temperatures and rainfall, and 'all year round'.
- (iv) This was a challenging question for candidates. Many responses scored only one mark for reference to the position of such areas being on or close to the equator. Better answers referred to the position of the overhead sun and the convection process.
- (b) (i) Many candidates scored three marks by correctly using evidence from the map. Where candidates missed the instruction 'using evidence from Fig. 4.2 **only**', they gave general reasons for deforestation, such as farming, and did not score.
- (ii) This discriminated well. The best answers focused on problems in the local environment, notably habitat loss, impact on the food chain, animal deaths, soil erosion, or human problems such as flooding or loss of homes, culture and livelihood. Some candidates included global problems which were not required as the question clearly stated 'the **local natural** environment'.
- (c) It is vital that candidates read the questions carefully. Many described the impacts of deforestation on local people and ignored the global element. This meant that they gave similar responses to those given in (b)(ii). Most candidates who did interpret the question correctly described the problem of global warming, linking it with an increase in greenhouse gases such as carbon dioxide and gained Level 2 marks. Better answers then included ideas about melting ice, rising sea level and their effects on people and wildlife in other areas, such as polar bears. A few good answers also referred to effects of changing climate patterns and/or named places affected. Weaker responses incorrectly wrote about problems in the local forest environment, naming those regions, and many mentioned global warming but then switched back to writing about local issues.

Question 5

This question was answered by several candidates but was not quite as popular as **Question 6**.

- (a) (i) Most candidates drew an appropriate best fit line.
- (ii) Many responses correctly identified the positive relationship shown on the graph. Relatively few commented on the extent of the relationship or referred to anomalies.
- (iii) The most common answer was to explain that families could afford to send their children to school where GDP was high so they gained skills and got a better paid job. Some candidates also explained that in more developed countries where families were richer there was less need for children to work rather than attend school. Weak answers repeated the answer to the previous question, rather than attempting to explain the relationship.
- (iv) Knowledge of the HDI varied considerably. Many candidates gave a list of development indicators which sometimes included relevant ideas, such as life expectancy and GDP, but also others which are not used in HDI calculations. Many candidates included literacy as an indicator rather than years of schooling. Better answers referred to the HDI being a composite indicator which scores from 0 to 1, with scores closer to 1 indicating a higher general level of development.
- (b) (i) Most candidates gained two marks for recognising that more energy is used in North America and quoting appropriate statistics to support this. Others also recognised the greater variation in energy used in different parts of Africa than in North America.
- (ii) While this was a challenging question for many candidates, it discriminated well. It produced some excellent responses, which included ideas about population size, presence or absence of energy resources, ability to afford to develop or import these resources, and examples of what leads to a greater energy demand (e.g. manufacturing industry, vehicles and electrical appliances). Weaker candidates misinterpreted the map key and merely stated that some countries were more developed and would thus use more resources, or focused on oil rather than energy in general.
- (c) Many countries were named, most commonly Iceland, Germany, UK and USA, along with a small number of LEDCs. Most candidates identified or described the different types of energy resources but did not explain their importance to the country. The most common valid explanations referred to the availability of a resource (or suitable conditions to generate it) within the country, or some energy sources being renewable or non-polluting. Some candidates did not answer the question and explained why different resources were not important or why it was important that a country should have a variety of different energy resources.

Question 6

This was more popular than **Question 5**. Generally, candidates performed equally well on both these questions.

- (a) (i) A common error was to define tourism rather than the tourist industry. While there were a significant number of correct answers, many re-used the words 'tourism' and/or 'industry' in their answers which was not worthy of credit.
- (ii) Most responses correctly identified examples of the two different types of attraction, though some gave generic answers rather than using Fig. 6.1.
- (iii) Many answers scored three marks by correctly referring to evidence from the map. Where candidates missed the instruction 'using evidence from the Fig. 6.1 only', they wrote about general changes, such as 'pollution' or the creation of the national park, which were not creditworthy.
- (b) (i) Perceptive answers gave three different impacts of the information shown on the notices, while some responses were repetitive or irrelevant (for example, referring to protecting the visitors). Some answers simply lifted advice from the notice shown in Fig. 6.2, rather than explaining how this would help to protect the natural environment. A common misconception was that firearms would harm the environment by fire.

- (ii) This question allowed good discrimination. It was answered well by many candidates who referred to employment, income for local businesses, specified infrastructural improvements and cultural exchange. Better answers also suggested appropriate ways in which money could be used to benefit people in the local area. Some candidates were confused by the mention of 'people who live in or close to national parks' and suggested how they would benefit as tourists.
- (iii) This question was well answered. Many different problems were suggested, and many candidates scored four or five marks. The wording of the question here referred to 'local people'; however, some responses referred to the natural environment and/or the economy. These points which would have been valid had they been elaborated in terms of their impacts on the population; for example, 'water pollution' could reduce fish stocks for local fishermen and 'leakage of earnings from the country' could result in less of it being invested in hospital and schools within the country.
- (c) There were some good answers to this question most gave Lesotho as their example, or focused on countries in the Middle East such as the UAE or Oman. Most candidates could identify a variety of methods used to supply water, but many did not develop their ideas or link different ideas. The best answers focused on three different sources such as rivers, reservoirs and aquifers, and described how the water was treated and moved to where it was needed.

GEOGRAPHY

Paper 2217/13
Paper 13

Key messages

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

- Ensure that the examination rubric is followed correctly, answering 3 questions, one from each section.
- Select the three questions with care. Read them all through and study the resources provided with them before making a choice.
- Answer all parts of the three chosen questions and ensure that sub-questions are not missed.
- Read the questions carefully. If it helps to do so, underline command words and words which indicate the content and context of the question.
- Respond in the correct way to command words used in questions, in particular, 'describe', 'explain' and 'compare'.
- Identify the correct focus specified in the question stem – e.g. causes or effects/impacts, risks or how they are being managed.
- Ensure that they respond correctly to key words and learn the meanings of geographical words and phrases in order to be able to define and accurately use geographical terminology. When defining words or phrases, candidates should not simply repeat a word or words as part of their definition.
- Understand the skill of how to describe a distribution from a map.
- Use the mark allocations and answer space provided in the question and answer booklet as a guide to the length of answer required and the number of clear points that need to be made.
- Write as clearly and precisely as possible avoiding vague, general statements.
- Write in full wherever possible, especially in the final two parts of each question, ensuring that ideas are developed with the correct focus.
- Perform basic skills using diagrams, graphs, photographs and maps of various types, referring to them in an appropriate way to support ideas rather than directly lifting material from them without any interpretation. Practise the skill of describing features or characteristics from a photograph.
- Ensure that direct use is made of a figure if the rubric of a question requires candidates to do so.
- Have a range of case studies so that appropriate ones can be chosen for the topics tested.
- Ensure that each case study used is at the correct scale. The syllabus identifies the scale required for each case study. Local examples often made good case studies.
- Avoid writing a long introduction to any question (e.g. to provide locational or background information) at the expense of answering it in detail.
- Develop points and link ideas wherever possible in case studies and include place detail.
- Write in detail and develop ideas in **(b) (ii)** questions where development marks are available.
- Give an overall trend when describing a graph or map (if appropriate) and then provide more specific detail.
- When using the extra pages at the back of the question and answer booklet indicate that the answer is continued and clearly show the number of the question on the extra page. Try to continue answers on the specified continuation pages rather than inside the answer booklet.

General comments

The examination was considered appropriate for the age and ability range of candidates and it differentiated effectively between candidates of all ability levels. Stronger candidates performed very well across the paper and some excellent Geography was seen. Most candidates were able to make a genuine attempt at their chosen questions. However, weaker responses were characterised by an apparent difficulty in interpreting questions and inclusion of irrelevant material. Candidates seemed to have sufficient time to complete the paper.

Most candidates followed the rubric by selecting a question from each section as required. Occasional rubric errors were still seen and a reminder to candidates to answer one question from each section would be helpful.

Questions 1, 4 and 6 were the most popular questions within each section. There were good answers seen to all questions, including those requiring extended writing, particularly the case studies on problems caused by a dependent population, strategies to reduce the impacts of urbanisation, formation of an ox-bow lake and the causes of deforestation. High quality answers in these case studies were characterised by developed ideas with clear place detail or good use of a diagram as appropriate. Weaker responses tended to be generic developments of ideas with little place detail to support them, whilst other responses were characterised by the use of simple, brief statements. In some cases a significant amount of detail included by candidates was not relevant to the question being asked, and sometimes long introductions occupied much of the answer space. An area for improvement for many candidates would be maximizing the marks scored on the part c questions.

Case studies require place specific information to allow access to the highest level. This requirement can vary between questions – a country (**Question 1**) or an urban area (**Question 2**) or an area of tropical rainforest (**Question 4**). Some candidates do not carefully consider their choice, limiting their mark by inappropriate choices. Where an 'area' is required, choosing a country usually tends to be unacceptable as this is likely to be at too large a scale.

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

Comments on specific questions

Question 1

The majority of candidates answered this question.

- (a) (i) This question required candidates to make use of Figure 1.1 only to define optimum population. Where candidates did so, their responses usually gained credit through an appropriate link to GNP per person. Where candidates did not follow the rubric of the question, their answer generally did not gain credit.
- (ii) This question was well answered and candidates generally performed well. The majority of candidates correctly included the relationship between population and resources and included both to give appropriate definitions for under-population and over-population, making impressive use of the resource provided.
- (iii) Most candidates were able to offer some explanation as to why countries become over-populated although only the best responses clearly identified the role of birth rates, death rates, immigration and/or resources. Some responses deviated from the point of the question and gave several reasons to explain high birth rates or low death rates without giving an overall answer to the original question.
- (iv) This question was answered well with candidates showing a good understanding of the problems caused by over-population. A good range of mark scheme responses was seen. In answering such questions vague statements should be avoided such as references to "traffic" rather than "traffic congestion" or "lack of services" rather than a reference to pressure on specific services such as health and education. Any reference to 'pollution' should always be specified.
- (b) (i) This question was well answered, with the majority of candidates being able to correctly interpret the resource to identify three ways in which Canada could reduce the impacts of over-population. Answers that did not receive full credit lacked explicit use of the resource and had not taken full account of the rubric instruction to use "Figure 1.3 only" or had missed key words and phrases from their answers.
- (ii) Candidates were able to identify that countries with large areas of land may have a large population and went on to develop the idea to suggest a suitable reason to explain the large population. Candidates did not always include a reference to resources which is required for a full and balanced response to a question which relates to under-population.

- (c) A wide range of appropriate examples (UK, Japan, Italy) were seen and responses included references to both young and old dependant populations. Answers which focused on old dependants tended to be more detailed. The best responses showed very good knowledge and understanding with clearly developed ideas, substantiated with relevant place specific knowledge. Sometimes, the focus of the question was incorrect and responses focused on the problems caused as a result of over-population.

Question 2

Far fewer candidates answered this question than **Question 1**. Candidates in general performed marginally better on this question than on **Question 1**.

- (a) (i) This question was more challenging than expected. A significant number of candidates did not produce a precise definition, referring to the growth of the urban area rather than an increase in the proportion of people living in the urban areas.
- (ii) Most candidates answered this well and correctly interpreted the resource to answer both questions correctly. The only issue was that some candidates did not identify that it was over 75% – they had not made correct use of the key provided.
- (iii) There were mixed responses to this question and the skill of describing a distribution is something that would benefit from greater practice. Most of the mark scheme points were seen with correct identification of the fact that the cities are mainly in LEDCs, coastal and a lot are found in Asia. Many candidates scored 1 or 2 marks on this question but few scored all 3 marks. The “overall trend” mark scheme point is a straightforward one to access but is not always present in responses.
- (iv) This was generally well answered and candidates were able give reasons for the rapid growth of cities relating to push and pull factors. Most candidates avoided repeating push and pull factors which has characterised responses to similar questions in previous years examinations. Most answers were migration focused and few included references to birth and death rates.
- (b) (i) The best responses made clear use of the photograph resource and compared the locations of the squatter settlements X and Y. Some responses did not gain credit as they did not offer comparison.
- (ii) This question was well answered and candidates demonstrated a sound knowledge and understanding of the problems faced by people living in squatter settlements. Development was often seen and there were some detailed responses showing a wide variety of mark scheme ideas.
- (c) Candidates were able to select either an MEDC or LEDC context here and most gave an appropriate example of a named urban area. This question was generally well understood. There were some very well developed responses, particularly detailed when referring to strategies to overcome the problems of living in squatter settlements, urban sprawl and traffic congestion. Some answers were written in simple and generic terms, did not sufficiently develop their description and therefore, did not access Level 2. The best answers included clear place specific detail such as named parts of the urban area or named schemes.

Question 3

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

- (a) (i) Whilst some very good definitions were seen, candidates were not always able to give a precise definition of the term *drainage basin* and would benefit from greater knowledge of the correct definitions of key terms.
- (ii) There were some good responses here where candidates were well prepared and could correctly identify the processes from the diagram. Some candidates found it more challenging than expected to be able to name these terms. Knowledge of key terms and being able to accurately define them should remain a focus for centres as preparation for this examination.
- (iii) There were some good responses seen for both parts of this question where candidates had clearly understood the idea of variation and made reference to a range of mark scheme ideas. This

question differentiated well and the most able candidates were able to make the links – for example, between seasons and the amount of vegetation/transpiration.

- (b) (i) Some candidates made good use of the photograph to offer three differences and there were accurate comparisons relating to slope and sinuosity. Some candidates found this question challenging and did not offer an answer that compared the two photographs. Candidates also made reference to expected differences that were not visible from the resource such as velocity.
- (ii) This was well answered and most candidates showed a reasonable level of knowledge about the processes of transportation. There were many responses which gained full credit. Sometimes, an incorrect link was made between a key term and definition and greater precision in the knowledge and use of key terms remains an area for improvement for some candidates. There was some confusion with the processes of erosion in the weaker responses.
- (c) There were some very accurate explanations of the formation of an ox-bow lake with a clear sequence evident and good use made of appropriate key terms. Many candidates produced very good responses, enhanced by a diagram that helped to display their understanding of the processes. There were some excellent diagrams with very clear annotation provided. Most candidates were able to gain credit as they understood the question and were able to present some simple ideas to explain the formation of the feature. Some candidates confused where erosion and deposition took place on a meander or did not show sufficient understanding of the role of erosion as well as deposition. Good practice in answering a question such as this is to describe the process as a step by step sequence making fluent use of correct key terms.

Question 4

This was more popular than **Question 3** and was answered by a significant number of candidates. The overall performance on this question was not quite as good as **Question 3**.

- (a) (i) Some candidates correctly identified the position of hot deserts but unfortunately, there were mixed responses to this question. As a topic, “hot deserts” does not seem to be as secure as other topics with candidates.
- (ii) Responses to this question were better and most candidates answered this well, correctly identifying how rainfall and temperature range vary between the two climates. Some responses did not effectively compare and therefore did not gain credit.
- (iii) This question was not well answered and candidates did not seem to have detailed knowledge of how latitude or atmospheric pressure influenced climate. There was slightly more secure knowledge of Equatorial regions than hot deserts.
- (iv) The best responses to this question show good knowledge of how distance from the sea and wind direction influences the desert climate. Weaker responses tended to be vague and lack correct use of key terms. There were incorrect references to rain shadow and ocean currents which the question does not ask for.
- (b) (i) This question was better answered and some good use was made of the resource. Responses that were not based on the photograph were not relevant and therefore did not gain credit.
- (ii) Candidates were well prepared for this question. They were able to offer detailed explanations and developed their ideas well. There was good use made of key terms and a wide range of mark scheme points included.
- (c) The best responses were characterised by well-developed reasons to explain the causes of deforestation. A range of reasons was usually included. Weaker responses tended to list simple ideas without making the link to explain why this caused deforestation. Some candidates focused upon the impacts rather than the causes, focusing on the wrong context for the question, and these points were therefore irrelevant. Candidates seemed to find this question more challenging than expected.

Question 5

Although not quite as popular as **Question 6**, this question was answered by a significant number of candidates.

- (a) (i) This was well answered and a significant number of candidates identified the correct land use.
- (ii) This again was well answered with most candidates correctly identifying the reasons for cultivation in Area A and B. Some candidates lost a mark because they gave the same reason for A and B – the question clearly asks for “different reasons”.
- (iii) There were some very perceptive answers here that gave the full range of mark scheme ideas. Most candidates were able to gain credit and the most common ideas were relating to farmland being destroyed and farmers not being available to work on the land. Generally, candidates performed well on this question.
- (iv) Candidates found this question more challenging. The best responses understood that the focus of the question was political and economic factors and successfully made the link to food shortages. Some candidates included further references to war despite the instruction in the rubric to include “other” factors. The strongest responses made reference to lack of government investment in agriculture, a focus on cash crops and lack of a distribution network for aid.
- (b) (i) This question differentiated well. Some very good use was made of the photograph to identify the land use. Weaker responses tended to include a reference to rice/crops but did not go much beyond this idea.
- (ii) This topic tends to be well understood and there were some accurate and well detailed answers that showed the full range of mark scheme ideas. Weaker responses tended to include fewer ideas – mechanisation, fertilisers and pesticides were the most commonly seen answers. Sometimes, there was a lack of precision in key terms and an incorrect reference to increasing the amount of land available. Some answers did not correctly focus on the area of land shown in Figure 5.2 and included references to irrigation and terracing, strategies that had already been carried out.
- (c) The best responses to this question clearly identified a type of farm or agricultural system in a named area, described the land use and offered clear explanation for the land use. Weaker responses tended to describe processes rather than land use or did not include explanation for the land use they were referring to. Those who did offer explanation, tended to achieve Level 2 or above by reference to the climate, relief or soil. A few very impressive answers linked land use to specific climatic regions by quoting data about temperatures and precipitation. Stronger responses made good use of local case studies.

Question 6

This was a popular question. Candidates who attempted this question performed better than on **Question 5**.

- (a) (i) This was very well answered and mostly correct. There were some incorrect references to refined products such as petrol.
- (ii) This was very well answered with most candidates gaining full credit. Candidates had followed the rubric and made good use of Figure 6.1 to answer the question.
- (iii) This was well answered with most candidates being able to correctly identify the link between the ice melting and global warming. Many candidates gained 2 or 3 marks here for explaining the process of global warming. Some occasional incorrect references to ozone layer depletion still exist.
- (iv) This question differentiated well. There were some excellent responses about loss of habitats and species and the impacts of flooding of coastal lowlands caused by a rise in sea level. Common errors did not explain how the rise in sea level would cause problems for either people or the natural environment or they were vague (for example: “flooding”). Many responses assumed that inundation of the land would be so rapid that it would cause numerous deaths rather than looking at the more likely impacts of this such as the loss of cultivable land or land for settlement.

- (b)(i)** This was well answered with most candidates correctly identifying a period above and below average. The more straightforward mark for the overall trend was less frequently seen and this may be something that centres wish to address.
- (ii)** There were mixed responses here and candidates found this question challenging. The strongest answers made clear reference to a wide range of economic activities and showed good development of ideas. Weaker responses either incorrectly focused on impacts or had not really fully understood the question. Most candidates were able to gain credit for simple ideas relating to deforestation and overgrazing but did not seem to know the appropriate content to answer the question much beyond these ideas. On the whole, the topic of desertification could be better understood.
- (c)** The best responses made good use of appropriate and very specific activities such as tourism or mining in a clearly identified area and candidates were able to write accurate descriptions of strategies to manage environmental risks. The best responses were clearly focused on the management of risks to the environment and had correctly interpreted the question. Generally though, this question was not as well answered as some of the other case study questions. There were some inappropriate examples given of economic activities and an incorrect focus on the impacts of economic activity rather than how these risks are being managed. Many candidates produced an overlong answer about risks with a brief and simplistic mention of management at the end of the answer. As a result, these answers were unable to access Level 2. There were some incorrect references to countries which limited answers to 5 marks due to an inappropriate example.

GEOGRAPHY

Paper 2217/22
Investigation and Skills

Key messages

Practical skills questions need to be completed precisely.
Given data should be interpreted to show understanding.
In **Section B**, careful analysis should be backed up with evidence.

General comments

This paper was comparable with previous years. In **Section A**, **Question 2** proved the most accessible and candidates also did well on **Question 1(a)(i) – (iii)**, **Question 1(b)**, **Question 1(e)**, **Question 3(b)(ii)** and **Question 6(b)**. In contrast, **Question 5** was the most challenging and candidates also found **Question 1(c)(ii)**, **Question 1(d)(ii)** and **Question 6(c)(i)** to be more difficult. In **Section B**, **Question 7** was slightly more accessible, and consequently was vastly more popular, than **Question 8**. However, some candidates were able to score well on **Question 8**.

Some questions were omitted more frequently by candidates. In particular **Question 1(c)(i)**, **Question 1(d)(ii)**, **Question 5(a)** and in **Section B**, many parts of **Question 7** and **Question 8(c)(iii)**, **Question 8(d)(iii)** and **Question 8(e)(ii)**. **Question 8(d)(iii)** was a graph completion and in this case, candidates did probably not notice the question, due to the absence of a blank answer line. Candidates need to be aware of this and read the question paper carefully.

Candidates who make use of the additional writing space at the back of the question paper should ensure that they label their additional answers clearly and correctly as sometimes the wrong question number was assigned. Candidates are encouraged to always use the additional writing pages in the question paper before asking for an additional booklet.

Candidates should look for command words and then follow their direction. They need to study the map and other resources carefully and pay attention to details, such as remembering units and making sure that their handwriting is clear, particularly when writing digits.

Comments on specific questions

Section A

Question 1

- (a) The 1:50 000 map was of Vienenburg, Germany. Fig 1.1 directed candidates towards the south west of the map extract to identify the features. Feature A was a church. Feature B was a mountain hut. Feature C was an observation tower. The height at spot height D was 317 metres. Most responses gained at least 2 marks. A minority of answers gave museum instead of mountain hut due to the similarity of the symbols, or located the features with a grid reference rather than by identifying them. A common error was to omit the units of metres on the spot height or to just state that it was a spot height. Other responses gave the height as 148.7 metres, the height used for the example in the key.

(b) Fig. 1.2 showed the location of two districts. Candidates were asked to compare the routes in these districts to complete the table. Both districts had a dual carriageway, while Jurgenohl had parallel roads and neither had a railway. Again, many responses scored two or three marks. Parallel roads seemed to cause the most difficulty, requiring map interpretation. The other features were represented in the key. A small number of responses put more than one tick on a line. If a candidate changes their mind about an answer, the final decision should be made clear with anything that is not needed clearly crossed out.

(c) Candidates were then directed to look at the Oker river, between the given grid references, and to describe how the direction of flow changed. This went from N or NNE, through NE to E. Most responses scored at least one mark for mentioning one of the directions. Those that did not often thought that the river was flowing south. Another error was to describe in terms of left and right. For two marks, two directions needed to be mentioned and in the correct sequence.

Candidates then had to identify three other physical features of the Oker river, with meanders, tributaries, braiding and a variable width being common responses. Answers that focussed on the features of the river often scored three marks, but many described land use beside the river instead.

(d) The six-figure grid reference of the dual carriageway crossing the Oker river was 027543. A correct answer scored two marks, while 027544, with 5 digits correct, scored one mark. Almost all candidates gained at least one mark.

Candidates were then directed to measure the distance along the river, between the two given roads. A tolerance of 4200 metres to 4600 metres was allowed to account for the difficulty of measuring such a twisty route. However, many responses scored a zero mark as the scale was properly applied. Candidates should be encouraged to make use of the scale line on the map, rather than opting for a mathematical conversion.

(e) Candidates were asked to identify the land use on the floodplain of the Oker river. There was a wide range of possible responses with water storage, forest, grassland, farmland, settlement, industry and mining all occupying blocks of space. Additionally, a railway, roads, and a power line passed through the area and there was a line of trees, a swimming pool and a museum. With so much to choose from, many answers identified five land uses, for five marks.

Question 2

(a) Fig. 2.1 showed the population of South Africa between 1960 and 2015, when there was a period of steady population growth. The graph showed a positive relationship and many responses scored three mark for describing this, backed up with data for two different years. A few responses used data only, not describing the trend and some wrote about a decrease when a slower a rate of increase was the accurate response.

(b) Table 2.1 gave data for birth rate, death rate and net migration, and candidates were asked to calculate the overall population growth per 1000 people, showing their working. The correct answer was 10.8 per 1000 people, given from birth rate minus death rate plus net migration. Generally, correct responses showed correct working, either in words or numerically. Some responses gave the working statement, but lost a mark through incorrect arithmetic. Other errors included using birth and death rates only and a whole variety of calculations involving combining the three pieces of given data.

(c) Candidates were then asked how death rate, life expectancy and natural population growth would change, given a constant birth rate and an increase in cases of HIV/AIDS. Death rate would increase, while life expectancy and natural population growth would both decrease. Most responses scored at least two marks.

Question 3

- (a) The photograph in Fig. 3.1 was of part of Miami and candidates were asked which land use zone was shown. The answer was CBD or city centre, and commercial was also accepted. Common errors here were residential and transport. Candidates then described the buildings shown in Fig. 3.1. There were a variety of styles and heights, but many were tall, flat roofed, concrete buildings with cuboid shapes, built close together. Responses generally noted tall and close together, being the generic characteristics of a CBD, but did not always go into any further detail.
- (b) Candidates then interrogated another photograph, Fig 3.2, of Hangzhou, China and asked to state one difference between the buildings in the two photographs. Many responses stated that those in Fig. 3.2 were more modern. Other possible answers were that those in Fig. 3.2 had larger windows and were uniform in style and age and appeared to be a planned development. Comments on building height and density were not valid, since the field of view of the photograph did not give enough information to determine this and also candidates knew that both photographs were of the CBD zone. Candidates were then asked how the environment had been made more attractive in Fig. 3.2 and most responses were able to identify the trees and / or the water feature.

Question 4

- (a) The map in Fig 4.1 was centred on Central America and showed some of the tectonic plates in the region. Five locations were identified. The plates were converging at D, diverging at A and locked in a conservative boundary at C. There were some accurate responses, but a common error was to mistake converging for conservative.
- (b) The Nazca plate was moving towards the east, at a rate of 40 mm per year. This was clearly shown by the labelled arrow on the plate. Most responses observed the direction of movement, but did not consider that the speed of movement was also relevant. Many answers described the direction in elaborate detail in relation to the other plates, which was irrelevant.
- (c) Earthquakes would be found at C but not E because of the plate boundary at the former but not the latter. Answers needed to give detail about the reasons for earthquakes at C, referring to the conservative boundary, with the plates moving in relation to each other, due to their different speeds. By contrast, E was located in the middle of a plate, well away from the boundaries. Responses usually scored at least two marks, but some referred to the Cocos Plate, which often led to a muddled response.

Question 5

- (a) Fig. 5.1 was a sketch of the site of a new weather station, at a location in the southern hemisphere. The Stevenson screen would be sited with its door on the southern side, so that there would be no risk of sunlight falling on the thermometers when the door was opened. The box would be on the usual 1.25 metre high legs, so as not to be affected by the ground temperature and also to be a standard height, so that readings would be comparable with other stations. Typically, responses mentioned the effect of ground temperature, but incorrectly thought that the siting of the door was linked to the wind and airflow through the box.
- (b) Given that the Stevenson screen was sited at B, candidates were then asked why its thermometer would have a lower reading than one on the wall at A. From the compass on the wind vane, above A, it could be seen that A would be in direct sunlight for at least part of the day, while the thermometer in the screen would always be shaded. Additionally, A would receive heat from the building, either radiating what had been absorbed or giving out heat from internal heating. The bare ground below A would also give off more heat than the grass below the screen. Many responses gained one of these marks, but relatively few wrote enough for two marks.
- (c) Part (c) was well answered. Responses recognised that the tree would intercept rainfall and prevent it reaching the gauge and some further elaborated this point to explain that the water would drip through the tree and could cause the gauge to over-measure later on. Some also wrote about rain splash from the bare ground. A minority mentioned the unevenness of the ground, which was irrelevant.
- (d) Candidates were then directed to look at the wind vane and suggest an advantage and a disadvantage of its site. Its high position meant that it would catch the wind easily, but at the same

time, the slope of the roof would modify some of the air flow. Responses usually gave the disadvantage, but for the advantage many focussed on whether it would be easy to see and read from the ground.

Question 6

- (a) This question began with two definitions. Most candidates knew that secondary industry involved manufacturing or processing raw materials, but were not so clear on assembly industry. The main problem was coming up with a sentence that did not use the word 'assemble'. An alternative would have been 'putting together previously processed components' or 'building a product'.
- (b) Candidates then had to study Fig. 6.1 and consider the location of a new factory for an assembly industry. Town D would be the best location for easy exporting of the finished product, while town A would be the easiest location at which to find labour. This was straightforward and many responses gained two marks.
- (c) Candidates then had to consider first an advantage of rural area C and then three disadvantages compared to locating at the other sites. Responses identified some valid disadvantages such as lack of labour, along with the small local market, and lack of motorway, port, training institutions and government incentives. Greater care is needed when qualifying statements. For example, 'no water' is unlikely and would not be credited, but 'insufficient water' may well be true and would gain a mark. The advantage was more challenging. Many responses saw high unemployment and assumed a plentiful labour supply, but did not consider the effect of low population on labour supply, so could not be credited. Responses that gained marks took into consideration that the lack of population would probably mean cheaper land, with plenty of space and few objections to any air, visual or noise pollution.

Section B

Question 7

- (a) This proved a straightforward opening question with most candidates correctly choosing appropriate pairs for the three marks i.e. *rarely/often*; *expensive/cheap* and *far away/close* or words with equivalent meaning. A significant minority thought high-order goods were bought frequently and low-order goods were bought rarely. A few gave numerical answers, some gave examples of the types of goods and a few missed it out completely.
- (b) (i) The majority of candidates were able to draw three accurate plots and shade the sections correctly using the provided key; most gained full credit here. A few plotted in the reverse order and others added to the length of the bar to match the one above. A small number drew their own separate bar graph which gained no credit. The 45 plot was the one that was most incorrectly plotted. A few did not attempt this question.
- (ii) It was crucial the candidates read the Hypothesis carefully as it refers to '*...numbers...*' not percentages or proportions. Almost all agreed that the evidence supported the Hypothesis and then quoted comparative statistics for the number of high-order goods and services at Central Ladprau Plaza compared to La Villa i.e. 114:7. Stronger responses made good comparisons between the numbers and gained full credit; weaker responses quoted the figures without any qualitative comparisons such as '*more than*', '*only*'. Many compared the total number of shops and services instead of comparing the different order types. Some also compared percentages and proportions which were not relevant to the Hypothesis.

- (c) (i) The key part of the question referred to ‘...using the questionnaire with people...’ In other words, as stated, the students and teacher had agreed the questions they would use and the questionnaire was provided in the Insert for candidates to see. Despite this, very few candidates gave three pieces of advice that the teacher might have given to the students. Instead many candidates suggested what type of questions to use, e.g. have closed and open questions, have tick boxes, ask them why they are there and how they travelled. All of these ideas were already on the questionnaire. There was also too much emphasis on being polite and variations of this idea; some candidates gave three separate pieces of advice as *be polite*, *say please at the start* and *thank you* at the end. Stronger responses gave perceptive answers such as using a sampling method, asking a mix of age/gender, carrying it out in pairs and visiting different areas of the shopping centres. This was one of the least well done parts of **Question 1**.
- (ii) This was a straightforward pie graph completion involving a plotted line exactly at 80 per cent and two shadings using the provided key. Some candidates plotted the line from an anti-clockwise view thereby making it at 55 per cent which was incorrect. It was hard to understand why other plots were not at these two locations but by far the majority did get the two marks available. The horizontal shading was too often seen at a 45 degree angle.
- (iii) Almost all candidates agreed with the Hypothesis but not all compared the main top two reasons for shopping between the two centres; a few compared every reason. The stronger answers did contrast the two reasons in each i.e. *large variety/near work* in Central Ladprau Plaza and *near homes/good value for money* in La Villa using accurate correct paired statistics. Some candidates did compare the reasons but gave no supportive statistics. A few just described the reasons for shopping at one shopping centre and ignored the other. A small number compared the least favoured reasons with statistics which was an odd way to support a Hypothesis which covered the main reasons for people shopping at both centres. It was surprising that some candidates thought the Hypothesis was *partly true* given the evidence provided.
- (d) (i) Almost all plotted 7 correctly although there were a few that did not attempt the question; maybe because there were two genuine zero points on the graphs (monorail in Central Ladprau Plaza and underground train at La Villa), they thought the graphs were complete.
- (ii) This was done well by most candidates who compared different methods of travel between the shopping centres; the better candidates used comparative words e.g. ‘*more than...*’ as well as giving paired statistics. A few thought the numbers were percentages which they were not. Some grouped the data into public and private transport although there was no evidence provided as to which method was private or public. Specific methods of transport needed comparing here.
- (iii) This was quite well done especially by candidates who gave a full explanation rather than just listed words e.g. ‘*weather*’ on its own was not credited but an answer that suggested ‘*if it was raining less would walk to a centre*’ gained credit. Other single words that needed elaboration for credit included distance, money, traffic, access – but overall most did gain good credit here.
- (e) (i) Many candidates chose the correct second row option as the answer. Almost all the other choices were seen as ticked in equal amounts but most knew what a sphere of influence (Sol) was. A few ticked two boxes thereby eliminating the mark for the correct response.
- (ii) By far this proved to be the most challenging question on the paper. Some candidates scored well but the majority failed to gain much credit for their often detailed generic response. The question asked how the students could use the answers to investigate the Sol of the two shopping centres. Candidates who did this well understood that this was a practical question which was basically saying ‘*now you know which districts they were from and how far they travelled, how could this information be used to identify the Sol?*’.

As geographers they were expected to suggest drawing up tables of data from the **Question 3** and **4** answers then, on a map of Bangkok, locating districts where customers had come from and shading these using a choropleth system. They could also have added flow lines from where they lived and ultimately draw a line around the furthest distances to identify the sphere of influence of each centre. Stronger responses did this, often including a small labelled diagram to show that they knew what a Sol should look like. Most candidates just described what the two questions revealed, i.e. knowing or seeing where they came from and how far they travelled. With this information they stated that you could work out the Sol but few actually described how. Some just described what the Sol was and how it could differ depending on the distance and direction of its customers. This was a disappointing response especially as in **(i)** a large majority clearly knew what a sphere of influence was.

Question 2

- (a)** Most candidates correctly ticked the third and fourth rows although a significant minority made incorrect choices with '*Look at different features along the river*' being a popular wrong choice. Quite a few only made one choice when the question asked them to identify two advantages. A small number ticked three choices which meant that one correct choice was cancelled out by an incorrect one.
- (b) (i)** This question proved difficult for most candidates. Many listed the right equipment required but then described how they would measure the depth, width or even velocity of the river which would not give a gradient measurement. It was important to indicate that the measurement would be taken along the river or downstream; quite a few stated '*across the river*' or '*from bank to bank*'; it was unclear where they were measuring the distance. Although they were told the distance at each site was 10 metres, too many chose a different distance or decided to carry out the work at breaks of slope. A few thought measuring river depth would provide the gradient. Stronger responses did describe where they would place two ranging poles with a distance measured using a measuring tape and then they could use a clinometer to measure the angle by focusing it on the same height on both poles. Quite a few stated that the clinometer measured the gradient; it should be the angle. Many candidates missed a few of the stages out but still scored well by knowing the correct use of the equipment though not necessarily in the correct sequence of its use. This was the third highest sub-section on the paper where no attempt was made to answer the question.
- (ii)** There were some very strong to this question. Stronger responses stated that it would be possible to calculate an average and thereby eliminate the effect of anomalies as well as reduce the chances of errors. Less strong candidates did recognise that Group B could calculate an average whereby Group A may have made a mistake with one measurement only. Weaker answers stated that making more measurements would provide a more accurate result which is not necessarily true.
- (c) (i)** Although most candidates did work out that Site 1 had the largest variation in measurements, all the other possibilities were also seen.
- (ii)** Almost all candidates correctly plotted the average angle at 4 degrees and drew a straight line to the 10 on the horizontal axis; occasionally the latter was not carefully placed. A small number drew lines above or below the 4 degree mark; others just put a dot on the 4 without drawing the line in and there were a few who made no attempt at this easy plot.
- (iii)** It is unusual to have a mark scheme where candidates can make one of two possible judgments about the Hypothesis and still gain full marks. However, in this case as in real fieldwork, some statistics do not always provide one clear-cut answer. Although, overall, the gradient did not get steeper between Sites 1 and 5 thereby requiring a judgement that the Hypothesis was *false*, there was a significant anomaly at Site 3 which able candidates could spot consequently the decision that the Hypothesis was *partly false/true* was also allowed providing the evidence included reference to this anomaly and not just Sites 1 and 5. The majority of candidates chose *false* and recognised that overall the gradient was gentler downstream as it went from 9 degrees at Site 1 to 6 degrees at Site 5. A few candidates were confused by the degrees and agreed with the Hypothesis thinking that a fall in degrees downstream meant it was getting steeper.

- (d)(i) This was the least successful sub-section in **Question 2**. Selecting pebbles at random does mean that the choice could be biased and also unrepresentative as the student may have just chosen pebbles s/he likes or chooses them all from the same area. These were popular responses. Many candidates just gave generic or irrelevant responses such as the choice would not be accurate, the pebbles might all be the same weight or shape.
- (ii) The majority of candidates correctly chose the systematic option as the sampling method employed by Group B to collect pebbles at equal distances across the river bed. *Balanced* and *stratified* were the most common incorrect answers.
- (iii) These were two straightforward plots which were correctly drawn by the majority of candidates however this sub-section had the largest number not attempting the graph work at all. It appears that many candidates look at some graphs and assume they are complete because they have many plots on. This is not the case; Site 2 was missing a plot at 13.4 and an average line at 7.2. There were a few misplaced plots from candidates who did not score well; it is important to carefully check the scales. Some plots were put above the wrong Site number.
- (iv) Candidates needed to look at the average size of pebbles on the previous graph and explain, using evidence, why the Hypothesis about the pebble size becoming smaller downstream was *partly true*. This required candidates to identify sites where the size decreased, e.g. Site 1 and 2 and also sites where it increased, e.g. Site 2 to 3. There was also a mark for paired data to support the increase or decrease stated. Stronger candidates did this well often taking the overall Site 1 to Site 5 as the decrease but then recognising an anomaly at Site 3 which produced the highest average size. Weak answers did not identify any sites but just stated that the size increased and decreased. Many quoted individual pebble sizes from the graph that suited their argument; they should have focused on the average to make sensible judgements about the Hypothesis.
- (v) Most candidates picked up marks by referring to the traditional processes of river erosion that would make pebbles smaller downstream, i.e. attrition, abrasion and solution – hydraulic action was not credited as it is not considered a major process in making pebbles smaller. Some candidates explained what the processes did without naming them; a few named attrition and abrasion but then gave the wrong definition to each.
- (e)(i) This sub-section done so well by most candidates. In past sessions asking for a Hypothesis has not resulted in much success but here candidates seemed to know that a Hypothesis should be expressed as a statement or question to be investigated and provided appropriate ones to do with the river's characteristics. Common Hypotheses were related to the width, velocity and depth increasing/decreasing or changing upstream/downstream with measuring the velocity using floats the most popular choice. Inappropriate answers included references to colour change, changes in vegetation, pollution levels or the number of fish changing downstream. There was a significant minority who just gave a topic e.g. *width*, *velocity*, with no Hypothesis stated. These candidates were allowed some credit in (ii) for their method but it was limited to half of the available credit as they had not stated a Hypothesis. Only a few decided to investigate gradient or pebble size which they were clearly told not to choose.
- (ii) Almost all candidates who had stated an appropriate Hypothesis in (i) gained good credit in this question about methodology; indeed stronger responses gave so much detail that they had easily obtained all available credit well before the end of their answer. It was notable that those who chose to use a flowmeter to measure velocity had little idea of how it should be used or how it worked other than putting it in the river and reading the digital display. Candidates who had given inappropriate Hypotheses struggled to describe a relevant fieldwork method; indeed quite a few made no attempt to answer this section if they had not managed to think of a suitable Hypothesis in (i).

GEOGRAPHY

Paper 2217/23
Investigation and Skills

Key messages

Practical skills questions need to be completed precisely
Given data should be interpreted to show understanding
In **Section B**, careful analysis should be backed up with evidence

General comments

This paper was comparable with previous sessions. In **Section A**, **Question 2** was relatively accessible, particularly **Question 2(b)**, while candidates found **Question 4** to be more challenging. In **Section B**, **Question 8** was more popular than **Question 7** by about 7:3, although **Question 7** had some of the best scoring answers for **Section B**.

Candidates need to think carefully about the way they write their answers. They need to express their ideas clearly (**Question 4(c)** and **Question 6(a)**) and ensure that they have completely addressed the question (**Question 2(a)**). Candidates should also practice map interpretation, to go beyond simply looking up symbols in the key.

Comments on specific questions

Section A

Question 1

- (a) The 1:50 000 map was of Bad Gandersheim, Germany. Candidates were directed to the north east quarter of the map to identify the features shown on Fig. 1.1. Feature A was a tower. Feature B was a museum. Feature C was an outdoor swimming pool. The river at D was the Lutter. The type of vegetation at E was deciduous woodland. Most responses were correct. Errors included point of interest for A and mountain hut for B. The mountain hut had a similar symbol to the correct answer, while the tower at A was circled by a point of interest, but the symbol used on Fig. 1.1 was of the tower only.
- (b) Candidates were then asked to describe the relief of the same area of the map. The area contained a high or hilly ridge, running from NW to SE, reaching to over 300 metres in height, with a steep NE facing slope and a gentler SW facing slope. To the east of the area was a valley running south to north, with the tributary valley of the Lutter coming in from the west. Some responses gave these relief points, but many did not understand what was meant by relief, instead describing land use or identifying features by a map symbol. Candidates are advised to practice interpretation of map contours.
- (c) The direction of the major road from Gehrenrode to Altgandersheim was SSE. The majority of responses were correct. The most common error was NNW – candidates had found the places and looked at their relative position, without considering 'from' and 'to'.

The candidates then had to measure the section of the road passing between the lines of trees. The six figure grid references were added to further clarify the position. Answers between 1500 metres and 1700 metres were accepted and some were within this range. Some responses showed the right digits but they were incorrectly placed by a factor of 10 or 100. Candidates should

be encouraged to use the scale line on the map, rather than attempting a mathematical conversion, when measuring distances.

The six figure grid reference of the church at Mechtshausen was 763524. Candidates were given five options to choose from and the majority of responses selected the correct answer.

- (d) The map distinguished between high and low building density in the settlements and candidates were asked to describe the site of the high building density area in Bad Gandersheim. This could be found on the gently sloping lower slopes of the valley, adjacent to the river and mainly on the south side. Relatively few responses addressed the issue of site, most answers mentioned features of the area that could be found in the key which could not be credited.

Candidates were then asked to suggest why Bad Gandersheim had expanded to the south but not to the north. This time responses could make use of keyed features to point out that the railway, main road and industrial areas were on the south side of town. Strong responses also noted that the south had a gentler slope, the original settlement was south of the river and there was no bridge to cross at this point.

Question 2

- (a) Fig 2.1 showed net migration in southern Europe between 1960 and 2011. A point on the graph was indicated (A) with a value of +8, and candidates were asked what was meant by this. The figure 8 indicated 8 people per thousand of the population while + showed that immigration was greater than emigration. Typically responses explained one aspect but not the other.
- (b) Candidates were then asked to describe the changes in net migration shown on the graph. There were two different approaches here. Some responses pinpointed the turning points of the graph, while others looked at when net migration passed from negative to positive or vice versa. Either approach was valid, so most candidates scored at least three marks.
- (c) In part (c), candidates had to select from the table two reasons for a negative net migration from an area. The correct answers were disease outbreak and war breaks out. Responses typically scored either two marks, or zero marks as a result of incorrectly choosing two pull factors as the emphasis was on moving from an area.

Question 3

- (a) Fig. 3.1 was a scatter graph showing population and number of services for some settlements. The term scatter graph was not widely known and line graph was the most common error. Candidates then had to plot the point for market town E, for which the data was given. Most responses did this successfully.

In part (iii), many responses were not sure how to draw a best fit line, incorrectly joining the points together. This made it more difficult to describe the relationship (part (iv)). Some responses picked out the positive relationship, and commented that population was increasing as the number of services increased.

- (b) A minority of responses gave a reason for Settlement A having more services than would be expected for its size of population. Possible explanations included a nearby tourist attraction, many employed there but not living there, a high population in the sphere of influence and the presence of major route ways bringing people into town from other areas.
- (c) Candidates were given a list of settlement types and were asked to circle two that would be rural settlements. The correct answers were small village and isolated house. Most responses gave at least one correct answer, but there was uncertainty over the meaning of some of the terms.

Candidates then had to indicate where a small village would be plotted on the graph. Any position with a population smaller than the smallest large village was acceptable. The majority of responses were correct. Incorrect answers usually were placed with a lower number of services, but a larger population than some of the large villages.

Question 4

- (a) Fig. 4.1 showed the global distribution of coral reefs and candidates were asked to describe the distribution. The most common approach was to use the latitude indications on the edge of the map, which showed the coral to be between 40°N and 40°S. Some responses noted the coastal location. Marks were also available for the idea of a tropical environment and any named location.
- (b) In part (a), some answers referred to locations X, Y and Z suitability for coral, but the question stated the unsuitability of these locations for coral. Location X was too cold and would be lacking in sunlight. Location Y, at the end of the River Amazon, would have sediment laden fresh water. Location Z, with no nearby land, would have too great a depth of water. Most responses gave suitable suggestions for Location X and Location Z.
- (c) Given that coral reefs are a shipping hazard, candidates were asked to suggest why a boat owner, running day trips for tourists, would be in favour of preserving the reefs. Valid answers included the idea that the tourists would want to see the coral and that less coral would mean less tourists and thus less income. Also the boat owner would be likely to know the safe routes through the reef, while taking tourists to coral further away would require more fuel. Some less successful responses wrote from the point of view of the tourist or did not express their ideas clearly.

Question 5

- (a) Fig. 5.1 was a diagram of a composite or stratovolcano. Some responses recognised the volcano type, but invalid answers seen included a destructive volcano or an active volcano.
- (b) Candidates were then asked to add labels to Fig. 5.1 to show the position of the magma chamber and the crater. Most responses had at least one of these correct. Some wrote labels without clearly indicating the part of the diagram being referred to. A line or arrow, linking the label to its location, is needed for clarity. Other features of the volcano shown in Fig. 5.1 included steep slopes, rising to 3000 metres, and layers of ash and lava, with side vents. Responses typically mentioned the ash and/or lava labels and sometimes the layering.
- (c) On the diagram, X represented the location of a village and candidates were asked to suggest why a village was on the slope here. Most answers referred to tourism and agriculture, with suggestion of a fertile soil and the opportunity to make money from tourists coming to see the volcano. Some also suggested mining opportunities. Land further away being too crowded, the volcano perceived to be inactive and not understanding the risk were also valid points.

Question 6

- (a) Fig. 6.1 the photograph in the insert showed a factory. Candidates were told that it was near a river mouth and they were asked to explain three advantages of the site using a table for each answer. The advantage of flat land would be easy construction, open space would enable further expansion, the river could provide a water supply or water for cooling, the river mouth site would enable transport of materials or products, the adjacent road would also allow transport of these or workers and the electricity lines could provide a power supply. Most responses gave at least one valid idea, but these were not always clearly expressed.
- (b) Waste, smoke, steam or gases were all correct answers for part (b), where candidates were asked for an output that could be seen on the photograph (Fig. 6.1). Some responses gave a correct response, but others suggested potential outputs not visible on the photograph.
- (c) Candidates were then given the scenario of new housing on the land between the road and the factory and asked for two disadvantages of this location. Most wrote about noise pollution and/or air pollution and some wrote about the busy roads, with traffic to the factory. Other possibilities were visual pollution and possible flooding.

Part (ii) asked candidates to consider who would be in favour of the housing and who would be against, suggesting a group of people for each, with a reason. Many responses noted that workers could live conveniently close to work, and groups such as 'young people' or 'senior citizens' were often suggested, but without credit worthy reasons. Other plausible groups of people / reasons were environmentalists, objecting to the destruction of wildlife sites or the factory directors, who would be against the loss of a potential expansion area.

Section B

Question 7

- (a) Better responses recognised that the main reason for collecting data at the same time was to achieve comparability between measurements. Stronger answers also suggested that this would remove the variable of time. However, many responses only referred to 'reliable', 'accurate' and 'fair' which did not explain sufficiently.
- (b) (i) The question differentiated well between candidates. The stronger answers described the sequence from positioning the rain gauge in the ground to collecting rainfall in the bottle and then measuring the amount of rain collected. Some responses were too vague in their description of how rainwater was measured in the cylinder. A minority of responses focussed their answer incorrectly on where the rain gauge should be located, and then give reasons why it should be away from trees and buildings. They failed to change their answer when they realised that these ideas were answers for the next section.
- (ii) Most responses correctly identified the two locating factors.
- (c) (i) This proved to be a challenging question. The requirement to answer in the text boxes rather than on lines maybe confused some of these candidates. Many responses merely explained that a wind vane 'shows the direction which the wind is blowing'. They did not include the important idea that it points to the direction which the wind is coming from. Responses were generally more successful in explaining how the fixed points N, E, S, W would allow the direction to be worked out, although relatively few responses described them as compass points.
- (ii) Many responses suggested a roof or the top of a building as a good position for a wind vane. They also explained that the wind would not be obstructed or blocked at these points. Weaker responses just suggested a position which was 'high up' or a 'high point' which was too vague. Also weaker responses suggested that a rooftop location was good because it could be easily seen or prevent interference from people or animals.
- (d) (i) A significant minority of responses did not attempt the question. Most of the responses who did draw the bars scored full credit. Responses need to plot bars on a graph with precision, as a small minority were too inaccurate in plotting 4.4 mm
- (ii) The question was a good discriminator. Many responses made the correct conclusion that the hypothesis was true. Many responses gained full credit by comparing daily rainfall totals when the winds were from the south and south east with those when the wind was from another direction. Some responses did not give paired data to show the difference but just gave evidence from one direction which did not support their statement. Some responses wrongly suggested that the hypothesis was partly correct because they could identify some anomalies to the general pattern. When making such a judgement candidates need to ensure that they look at an overview of all results rather than disagreeing with a hypothesis because the relationship is not perfect. An error made in a minority of responses was to focus on total amounts of rainfall from different directions, rather than daily rainfall totals.

- (iii) Most responses focussed on variation in wind direction, but some incorrectly focussed on rainfall variations, ignoring the emboldened 'wind direction' in the question. Two simple variations given in many responses was that there were more winds from the south in the current year, and the winds mainly came from the south in the current year and from the north in the previous year. Some responses did not support their description with relevant data to score a second mark. Some weaker responses mixed up which graphs showed the different years and therefore gave answers which were the reverse of the correct ones.
- (iv) A small minority of responses had mixed up the years shown by the graphs. Some weaker responses still focussed their answer on wind direction rather than rainfall. Generally responses did recognise that rainfall was higher in the current year.
- (e) (i) Most responses identified a barometer as an appropriate instrument to measure atmospheric pressure. The three distractors were chosen by equal numbers of candidates.
- (ii) Most responses used the data well and plotted it data accurately.
- (iii) Many responses showed an understanding that hypothesis two was incorrect because the graph showed a negative correlation between the two variables. Some stated that the relationship was negative whilst other responses described the relationship that rainfall was lower when atmospheric pressure was higher. Responses to this question needed to give two sets of paired data of atmospheric pressure and rainfall to show the negative relationship. Some responses suggested evidence which was too vague to credit such as atmospheric pressure above or below 1000 mb rather than giving exact data from the graph.
- (iv) Responses needed to compare two sets of data in a table to answer this question. Most responses successfully recognised that atmospheric pressure was higher in the previous year. Many then used valid data to show this comparison. Many responses gave highest or lowest atmospheric pressures from the two years. Two errors in data interpretation made by significant numbers of responses were to give a wrong figure for the highest pressure recorded in the month (usually 1008 instead of 1012 in the previous year and 1036 rather than 1040 in the previous year). They needed to study the data table more carefully. Weaker responses often just picked one day from the month to show the difference in atmospheric pressure, which did not illustrate a valid comparison. Good responses counted the number of days when atmospheric pressure was above or below 1000 mb in the two months to give the best illustration of comparison.
- (f) Many responses scored well on this final section. They described the difference in temperatures when the winds were generally from the north and south and supported these ideas with relevant data. The most common data comparison was between highest and lowest temperatures when the winds came from the north and south.

Question 8

- (a) This was the lowest scoring question on the paper and a small minority of candidates did not attempt to answer it. Most responses erroneously used 'urban' throughout their answer. They needed to refer to a city or suburbs. Responses which referred to the growth of the urban area into the surrounding rural area gained credit for the rural aspect because the term was not used in the question. Many responses did not know the term and referred to pollution, rural to urban migration and counter urbanisation.
- (b) The question was answered well by many candidates. They referred to the pH meter giving a more precise or accurate figure, whereas the water clarity measurement would be subjective and more likely to be measured incorrectly. Some responses made the mistake of explaining why pH was a more appropriate measurement than water clarity rather than considering the fieldwork methods.
- (c) (i) Nearly all responses who plotted the pH value did so correctly.
- (ii) Most responses plotted the depth accurately. The only common error was a small number of responses who plotted the arrow at 25 cm instead of 35 cm.

- (iii) The question was answered well in many responses and proved to be a good discriminator. Most responses made the correct conclusion that the hypothesis was false and explained that most pollution occurred in the newer housing areas. Many responses used comparative pH values between sites one and three to illustrate their conclusion.
- (iv) Although not a high scoring question it did prove to be an effective discriminator. Good responses deduced that expensive housing at site 1 would have better sewage disposal or that the lake would be cleaned. The most common reason suggested in responses was that water in the newest housing area would be polluted by construction materials or waste. However, weaker responses did not explain how the construction waste could get into the lake. Some responses merely described the three areas from the table but did not link the descriptions to sources of water pollution. Other responses wrote about air pollution from traffic on the road, better security at the expensive housing estate and the impact of litter in the three water bodies. None of these ideas were credited.
- (d) (i) Many responses suggested that the results would be based on subjective decisions. The other commonly suggested reason was that the two responses had looked at different parts of the site or different buildings within the site in making their decisions. Some weaker responses did not understand the basis of an environmental survey being conducted by the responses themselves and wrote about 'asking local people' or using a questionnaire.
- (ii) This was a difficult question for many candidates. The most common answer referred to working in groups and discussing the scores or averaging them out. Other popular suggestions were to do the survey at the same time or to survey the same buildings. Whilst many responses were credited for these suggestions they did not give a reason for their suggestion. As in the previous question weaker responses confused the methodology of the environmental survey with that of a questionnaire.
- (iii) Most candidates generally plotted the results accurately. The main error was that a few responses did not draw the horizontal bar from zero.
- (iv) A large majority of candidates correctly identified vandalism or graffiti as having the same score at the two sites.
- (v) Over half the responses correctly calculated the difference in total score. Some responses did not do the calculation but left their answer as '+5 at site 1 and -6 at site 3' which was not credited. Some responses failed to do the maths correctly and calculated either +1 or -1.
- (vi) The question was generally well answered but also proved to be a good discriminator. Most responses agreed with the hypothesis. The main supporting statements either related to the highest environmental score at site 1, or the predominance of positive scores at site one and negative scores at the other two sites. Responses found it more difficult to give precise supporting data. The better responses correctly calculated the different total environmental scores for the sites, but few responses compared statistical data from the four main categories in the survey.
- (e) The final question was another good discriminator. Better responses made a variety of creditable suggestions for the positive scores awarded in the environmental quality survey. These included ideas such as no clearance of vegetation, lack of traffic, lack of people, undisturbed habitats and no pollutants entering the lakes. Weaker responses often failed to score because they merely repeated the positive descriptions from the recording sheet.