

GEOGRAPHY

Paper 2217/12
Paper 12

Key messages

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

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

General comments

The examination was considered appropriate for the age and ability range of candidates and it differentiated effectively between candidates of all ability levels. The most able and well prepared candidates performed well across the paper and many excellent scripts were seen. There was clear evidence of good understanding and thorough revision. Candidates seemed to have sufficient time to complete the paper. However, the final parts of the later questions were not always completed with sufficient detail.

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

Questions 1, 4 and 6 were the most popular questions. There were good answers seen to all questions, including those requiring extended writing. The case study questions that were answered the most successfully were about population policies, the causes of flooding and food shortages. However, excellent answers were seen to all six. High quality answers in these case studies were characterised by developed ideas with some clear place detail. Weaker responses tended to be 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 too often long introductions occupied much of the answer space. An area for improvement for some candidates would be maximizing the marks scored on the **part (c)** questions.

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

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

Comments on specific questions

Question 1

This was much more popular than **Question 2**.

- (a) (i) Most candidates read the bar graph correctly. The most common error was 100 000.
- (ii) Many candidates did not explain the terms with sufficient clarity. They missed out the key idea that the terms referred to the difference between birth and death rates, and the difference between immigration and emigration.
- (iii) Many candidates scored full marks though some only identified the first year correctly, not reading the graph correctly for the second year (2005 being a common error) and the third year when 2012 was frequently suggested.
- (iv) As usual with questions on this topic candidates scored well, many gaining full marks. Many different suggestions from the mark scheme were included in answers, the use of contraceptives, education about family planning and the importance of women having careers being very common responses.
- (b) (i) This was a demanding skills question which required accurate interpretation of the scale. Some candidates wrote at length but without clearly comparing the two regions over time. They wrote about each line separately and gave the population at different dates for Europe and Africa. Statistics were used by most candidates with different degrees of accuracy and some omitted to provide the units – billions. As the question related to population growth, it was disappointing to read so many responses that only compared the total population in one year, for example, in 1950, rather than looking at growth over a period of time.

- (ii) This question was accessible to all and the majority scored well. Better responses tended to give succinct and precise answers, whereas weaker answers included vague ideas which by themselves were not worth credit, for example, there are poor services, poor resources, more traffic, crime, low quality of life, etc., rather than clearly stating the problems that are likely to occur with increased population growth. A small minority gave the reasons for population growth in Africa, rather than potential problems it could cause.
- (c) There was a variety of case studies, but the most popular and successful example was China. Within this example the quality of answer varied enormously. The best responses realised that there were two parts to the question and devoted roughly equal time and space to description and evaluation. However, some described features of the one child policy in great detail with less focus on its relative success whilst others focussed on evaluation at the expense of description. Nevertheless, excellent references were seen to how the policy worked and its effects on female infanticide, imbalance of gender and the impact on overall growth of the population. Other popular examples of population policies were from Russia, France and Singapore. Some were impressive but many did not contain the same detail as answers on China and were characteristically weak on evaluation of the policy. Some candidates wrote lengthy introductions to their response about the historical reasons for the policy. This did not gain credit, but simply wasted time and space at the expense of including relevant detail.

Question 2

This was not a popular question, but a small number of the responses were of a high quality.

- (a) (i) Most candidates identified the correct statement.
- (ii) Candidates could usually describe the relationship but many did not give examples of settlement types to illustrate it.
- (iii) Answers varied in quality. Many suggested services which were not sufficiently 'high order' such as churches, schools, supermarkets and banks. Few candidates suggested more than one acceptable example.
- (iv) Answers varied in quality and the question differentiated well. Better responses referred to large population size, sphere of influence, wealthy residents and meeting the threshold population. They showed good understanding of the terms.
- (b) (i) Nearly all candidates gave three appropriate examples.
- (ii) This question also differentiated well. The most common ideas suggested were migration to cities, fewer people in rural areas and subsequent decline in demand which resulted in rural services becoming unprofitable. Too many candidates referred to shops 'moving to urban areas' and another common response was that services 'could not find workers'.
- (c) Many candidates did not understand the term 'function' but continued to focus on service provision with lists of services or named examples of places in cities, such as shopping malls and sports venues, with no relation to the function of the settlement. Valid answers were usually restricted to simple ideas and little development was seen. Very few answers focussed on a specific function, for example, port, market town, tourist resort, which allowed explanation of why it developed in the settlement. Some simply wrote about the settlement in general terms with little or no regard to what the question asked.

Question 3

This was less popular than **Question 4**. However, many excellent answers were seen.

- (a) (i) Most candidates chose 'confluence' but the three distractors were also chosen.
- (ii) Most candidates identified that the river was fast flowing, shallow or contained rocks. There was considerable confusion about whether the river was wide or narrow and had a steep or gentle gradient. The many references to features other than the rivers, for example, vegetation, were not relevant.

- (iii) Candidates found this question difficult. Whilst many were able to identify fast flowing water, few mentioned high levels of energy. Far too many simply described one or more erosional processes without really answering the question.
 - (iv) Most candidates scored well. The most common suggestions were that the river was wider and deeper, flowing in a wider valley with a decreasing slope gradient. Better answers also contained ideas about velocity increase and smaller sediment size/increased overall load. A common error was that the velocity of the river would decrease rather than increase. Another misconception was that the river would become straighter in its lower course.
- (b) (i) Most candidates correctly identified some features from the photograph. The plunge pool, undercutting and the steep drop were the most popular ideas. Few suggested that the waterfall widens as it gets lower or that there is a double/stepped waterfall. Many candidates referred to a gorge or vegetation, features which were not valid as the question asked about features of the waterfall.
- (ii) This was another question which discriminated well. High quality answers made reference to the hard and soft layers of rock, understanding the differences in resistance to erosion. Most answers were communicated in a logical order, and good use was made to link text to the diagram that they had drawn. Although there was no reserve for the diagram, it often enhanced the response and where well annotated helped to take candidates to full marks. Weaker responses were characteristically vague and some only scored a mark for some reference to a type of erosional process.
- (c) The River Ganges was the most common case study. This was also the one that consistently scored higher marks. Good answers included developed ideas about deforestation, heavy rainfall, melting glaciers, low lying land and urbanisation in the catchment. The River Elbe was another common example, as was the Mississippi. These examples tended to include fewer reasons for the cause of the flooding. Some answers focused incorrectly on the effects of flooding; this was particularly true of case studies from the UK. When the question asks for a specific feature, such as the name of a river, this is necessary for full marks. Many candidates who referred to flooding in Boscastle, for example, did not name the river responsible for it, the Valency.

Question 4

This was a popular question.

- (a) (i) When definitions are required candidates should define all parts in italics, not just one of the words. They should not use one of the italicised words or a derivative of it. Many candidates referred to volcanoes (the 'fire' idea) but re-used the word 'ring' rather than using a phrase like 'around the Pacific'.
- (ii) Many candidates scored one mark by making the comparison between location in the middle of the plate and on the edge of it. Few made a clear second comparison. North and south of the Equator was a common acceptable choice, but many negated their point by referring to 'above' and 'below' the Equator. This is not creditworthy in a Geography exam; north and south are the terms that should be used.
- (iii) Where candidates wrote about the appropriate plate boundary they scored well with accurate and well sequenced explanations. A significant proportion of candidates confused convergent and divergent processes and so failed to score.
- Simplistic references to 'plates colliding' are not acceptable.
- (b) (i) The question achieved good differentiation. Most candidates identified the increase in number, but some did not describe the stability in the early years, focussing only on the low number which did not describe change. Some candidates used statistics without interpreting them and describing the changes. Only the best responses were able to differentiate the rate of increase between the earlier and later years.
- (ii) Many candidates gave several ways to reduce the impacts, commonly describing building features, evacuation plans, drills and sometimes specific safety measures against volcanoes. There was some repetition of monitoring or prediction which was not required.

(iii) Many candidates repeated ideas from the previous section and provided they put their ideas into the right context they gained credit. The quality of answer usually varied according to the level of detail given about the various measures taken or not taken.

(c) Common examples included Etna, Sinabung, Pinatubo, Soufriere Hills, Mauna Loa and Eyjafjallajökull (although the latter three were often named as Monserrat, Hawaii and Iceland and so failed to score full marks). If candidates give more unusual examples, that is quite acceptable; however, it is important that they learn the facts accurately and make sure that they are accurate.

Good answers developed their references to ideas such as to jobs from tourism, mining, geothermal power and agriculture. Many weaker responses gave several reasons but did not develop any of them in sufficient detail to score at Level 2. There are still candidates who inaccurately think that people live close because the land is cheap.

Question 5

This was slightly less popular than **Question 6**.

(a) (i) Although most candidates understood the term, they sometimes failed to gain credit because they repeated the idea of 'farming/farming' rather than defining it.

(ii) The question differentiated well between candidates who knew the term irrigation and those who did not and simply wrote about soil fertility. Candidates who understood the term usually scored two marks for the ideas of providing water and how it helps crops to grow.

There were no marks for repeating part of the question, i.e. '...increases the yield of crops'.

(iii) Generally, candidates related their answers well to the diagrams. They identified many of the answers in the mark scheme, most commonly referring to the level of technology, cost and the availability of manpower or cattle.

(iv) Candidates were mostly able to identify at least two methods, usually fertilisers and pesticides. Many gave one-word answers whilst others gave description, both approaches being acceptable in this case. Some candidates made the error of suggesting irrigation.

(b) (i) Although the question appeared to be straightforward, many candidates did not seem to know the meaning of the word 'process'. Some identified three types of farming, others suggested ideas such as grazing rather than focussing on processes carried out by the farmer.

(ii) This was an excellent discriminator. The best responses gave descriptions of diversification, spreading the risk, the use of animals for manure and the use of crop waste for animal feed/bedding and varied sources of income/work at different times of the year. In contrast, weaker answers focussed entirely on producing more, either to eat or to make more profit. These answers missed the idea of 'mixed' farming.

(c) Most candidates chose the Sahel or South Sudan and the Yemen. Some chose Syria and various countries in Africa, such as Swaziland. The best responses discussed not only drought, but also the impact of war including unexploded mines making fields inaccessible for food production. There was a lot of detailed information including names of militia. Indeed many wrote at length about the conflict but did not always manage to link this to food shortages. Weaker responses gave basic ideas such as drought means crops do not grow so there is a shortage. Overpopulation was a common reason suggested for African countries, but this was not developed well by many candidates.

Question 6

This was slightly more popular than **Question 5**.

- (a) (i) Most candidates identified one nuclear power station.
- (ii) Most candidates correctly named the two sources, a few incorrectly named nuclear as non-renewable.
- (iii) Many candidates found it difficult to give comparative answers. They often gave two separate descriptions of the sources and left it to the examiner to make the comparison. Many candidates scored one or two marks for referring to the varying importance of HEP and thermal power. Some referred simply to renewable/non-renewable without being precise about the actual sources of energy shown on the map.
- (iv) This question was not answered well, even by the more able. They did not explain the physical reasons why HEP is developed. There were many irrelevant answers about the economy, skilled workers and demand. Many candidates thought that HEP was produced from the sea. Candidates who referred to rivers often did not develop the requirement for large rivers or fast-flowing water. Mountains and high rainfall were suggested by some candidates but these were in the minority.
- (b) (i) Generally this was high scoring. Most candidates correctly named a pipeline and usually scored a mark for naming a start and finish point. Some candidates worked out correct distances and others referred to the pipeline 'going along the coast' for a further mark. References to dates, included in some responses, were not relevant.
- (ii) This question differentiated well. Common responses included the potential for conflict, reliance on another country and oil being a finite resource. Some candidates wandered off topic and focussed too much on economic problems generally in Mexico. Also some weaker responses stated that Mexico was supplying oil to the USA.
- (c) Many candidates did not immediately focus on a specific economic activity at a named location. These were often revealed later in the answer. Deforestation was often suggested as an economic activity with detailed explanation of its effects on the natural environment, but unless candidates identified an economic reason for cutting down trees, they were limited to Level 2. Many answers focussed on the Pearl River delta area, which gave scope for various environmental impacts. Some weaker responses included the effects on people.

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 sessions. In **Section A**, **Question 6** proved the most accessible along with **Question 1(a)(ii)** and **Question 3(b)(i)**, while **Question 1(b)(ii)**, **Question 1(c)** and **Question 3(a)(ii)** proved to be more challenging. In **Section B**, **Question 8** seemed to be more straightforward and was more popular by 2:1. Only **Question 8(c)(iii)** caused any significant difficulty.

In the map work question candidates should be encouraged to consider whether their answers are realistic. For example, in **Question 1(a)(v)** the three could not have been referring to height as all the surrounding contours indicated land of around 250 metres. Similarly, a feature cannot be all the features in the line of the key.

Candidates should also pay attention to the marks being awarded for each part of the question. In **Question 1(a)(iv)** they needed to include two points about the road, while in **Question 6(a)(i)** there were two things to do to complete the graph.

In **Question 1(b)(ii)** and **Question 8(e)(ii)** candidates were writing about traffic and using the word to mean congestion. This did not really make sense, because traffic does not have to mean congestion, and led to some unexpected answers for advantages and disadvantages of a traffic-free zone.

Comments on specific questions

Section A

Question 1

- (a) The map extract was for Clavier, Belgium and Fig. 1.1 showed some features in the north of the map which candidates were asked to identify. Land use A was park or lawn. Feature B was a conspicuous tree. Feature C was a trigonometrical point. The key showed two types: elevated and ground level. The trigonometrical point in question was the ground level type. It was not necessary to specify the type but copying the line of the key was not awarded marks, nor responses that just wrote 'ground level' without mention of the trigonometrical point.

For the type of road at D, two marks were available as the map key for the roads was set out in a grid, giving two pieces of information for each symbol. In the case of road D, it was a main road (the N63) and also a dual carriageway. Most responses got one mark but not always both marks available.

The height of the land at road junction E was 250 metres. This could be identified from the emboldened contour passing through the junction, which was conveniently labelled close by. It was necessary to include the unit: metres. Some responses mistakenly opted for a height of 3 metres, but the 3 was labelling the small circle, a kilometre stone showing distance not height.

- (b) There were two north-south road routes at Bois-et-Borsu as one passed through the town, giving access to the town centre and the linking roads, while the dual carriageway was a bypass, alleviating congestion by keeping traffic away from the town centre. Responses that made one of these points were credited and such answers usually followed up with a comment on avoiding congestion. However, many responses simply wrote about where the roads were leading which was not creditworthy. The linking road crossed the N63 by a bridge so that traffic on the bypass would not have to slow down for a crossroads. Some responses did refer to the idea that this would decrease congestion and make both roads safer and prevent accidents.

The settlement pattern at Bois was linear. Many of the responses to this were correct.

- (c) The six-figure grid reference of the church at Borsu was 650843 or 650844. There were many incorrect answers, typically 651844, and candidates should be reminded that 650 extends to the right of the 65 northing.

For the distance from the church at Borsu to the road junction at Atrin answers in the range 5050 metres to 5300 metres were accepted. Generally, those that understood the scale did give an answer within this range so had measured accurately.

- (d) Fig. 1.2 represented the cross-section from 660880 to 700840. The line showed the shape of the land and candidates were asked to complete the south east end. A wide range of answers were acceptable. One mark was awarded for showing a rise and then a fall in the land, while the second was for meeting the axis of Fig. 1.2 between 200 metres and 300 metres.

Candidates then had to show the position of the N63 road and the castle at Vervoz. Those who studied the map spotted that the castle was right next to the lake, but careful measurement was required for the positioning of the road. 13 mm to 16 mm from the left axis was the accepted range.

- (e) Candidates were given a list of statements relating to relief and drainage and were asked to tick the four that applied to the area shown in Fig 1.3. The correct responses were 'there are gentle slopes', 'there is a lack of surface drainage', 'the land rises over 300 m' and 'there is a ridge'. Typically responses selected two or three correct statements.

Question 2

- (a) Fig. 2.1 showed the sparsely populated areas of the world and candidates were asked to describe the distribution. There was a mark for stating 'all continents' and then for each continent a mark for going into further detail, either by noting the part of the continent such as 'north of North America' or by naming an appropriate country. Himalayas, Amazon and Sahara were also acceptable ways of delimiting the area within their appropriate continents. Most responses scored at least three marks.
- (b) Candidates were then asked to suggest reasons for the sparse population density. Most responses were rather vague such as bad weather or climate. The best responses wrote that it was too hot or too cold and too wet or too dry or desert. Other ideas included too high, too steep or mountainous, too much vegetation or forested, no or poor soil, no or poor access and lack of resources. Some suggested reasons based on human factors such as birth and death rates and migration, while a few did not understand the term sparse and wrote about highly populated areas.

Question 3

- (a) Fig 3.1 showed an Asian city and its growth in zones over a period of time. Candidates were directed to urban area A and asked to give its maximum west – east distance. Comparison with the scale should have given an answer within the range of 3–4 km and there were many correct responses. There were five separate urban areas in 1971 but variety of answers was seen, probably due to taking the roads as boundary lines.
- (b) Six new urban areas were added by 1981. Many responded correctly. The most common incorrect answer was two, which was the number of areas added between 1981 and 1991. The urban areas added between 1981 and 1991 were in the north and the south east. At the edge of or next to existing areas was also accepted but close to or near were both too vague. The best responses usually gave compass directions.

- (c) Candidates were then asked to give reasons for the location of the urban areas added since 1971, many answers commented on the extension along the coast for a port or tourism or because it was an attractive housing environment. Other responses mentioned expansion along the roads and infill between the older areas.

Question 4

- (a) Fig. 4.1 was a photograph of a cliff which candidates were asked to describe. Many answers noted that the cliff was high and steep but then got distracted by the tourists and the building. A more successful approach would have been to comment on the layers, with the 2-step structure, the cracks, the varying rock type and the vegetation on the cliff face, particularly on the halfway ledge.
- (b) Candidates were then asked to explain how rock X had separated from the mainland. Candidates usually respond well to this type of question and many responses scored three marks. They knew that erosion was involved, with a crack enlarging, caves joining and an arch collapsing. Many answers went into detail about specific erosion processes though this was not necessary. Weaker responses mentioned erosion and the arch collapsing but did not explain how to get to that point.
- (c) Candidates then had to select the statement defining a wave-cut platform. The six similar statements needed careful reading, but many answers correctly identified 'a gently sloping area of rock, formed by erosion, at the bottom of the cliff'.

Question 5

- (a) Fig 5.1 was a diagram showing two plants. Candidates were told that they were in a desert and were asked to add labels to Fig. 5.1 to show how the plants had adapted to dry conditions. Most focussed on Plant A, labelling shallow or spreading roots, thick, fleshy stem and spines or thorns. They also usually labelled long roots or deep roots on Plant B, though further comment on the leaves was also possible with small leaves or sparse leaves. Many responses scored three or four marks but there was a high omission rate for this question, some candidates had gone straight to **part (b)** having not seen an answer space for **part (a)**.
- (b) In **part (b)** candidates were asked how each plant would obtain most of its water. The shallow, spreading roots of Plant A would collect surface water from rainfall or dew, while the long, deep roots of Plant B could tap into the groundwater supply. Responses were usually correct for Plant B, with groundwater being labelled on the diagram.
- (c) To explain Plant A's unreliable water supply, candidates needed to remember the desert location. Thus, rain would be in small amounts and infrequent and, when it occurred would likely evaporate quickly. Some responses commented on rainfall, but many wrote about Plant A's water storage capabilities.

Question 6

- (a) The graphs in Fig. 6.1 showed data for six states in India: two in the west, two in the centre and two in the east. Candidates had to complete one of the graphs to show 60 per cent of the population living above the poverty line in Maharashtra. There were two marks for this, with one for plotting the bar at the correct height and one for shading for West India, as according to the key. Most responses were accurate scoring both marks.

Candidates then had to read the same graph to find out the percentage for the state of Orissa, which was 44 per cent. Again, there were many correct answers.

The state with the lowest percentage of population with a job was Orissa. This was almost always correct.

- (b) The scatter graph showed a positive relationship between life expectancy and doctors per 100 000 people. The responses that correctly identified the relationship usually went on to successfully explain it for a second mark.
- (c) All the graphs in Fig. 6.1 indicated that 'overall the west is more developed than the east'. Again, most responses recognised this.

- (d) Lastly in **Section A**, candidates were asked to suggest why the Indian government prioritises improving water supply over improving electricity supply. Most answers came up with a sensible suggestion such as to prevent disease or to improve life expectancy.

Section B

Question 7

- (a) (i) This proved a straightforward opening question for most candidates; a photograph of a digital thermometer was provided so that candidates could provide some detail about its advantages rather than give generic answers. Most stated that it was accurate and some, using the photo, added that it gave figures to 1 decimal place. Most stated that it was quicker or instant, and the third most popular idea was shared between its sensitivity, its portability, being easy to read and the possibility of having the temperature in different units of Centigrade or Fahrenheit, which were indicated by buttons on the photo. Some vague answers included that it could be used anywhere, it was easy to use or that it was safer. These ideas needed more detail.
- (ii) Many candidates correctly suggested using another thermometer to check – either a traditional one or a second digital thermometer. The other idea that was popular was to get another student to check the temperature at the same time. Quite a few candidates suggested repeating the measurements and then calculating an average, which was not relevant to checking their reading was correct; in order to check it they needed to take more measurements and then see if they were the same. Some just stated ‘repeat measurements’ which gained no credit. A few suggested taking the measurement at the same time at the same location on another day, as if that could check a measurement taken on a previous day. Comparing it with a local weather station, a previous study or secondary data from the internet were other responses worth no marks.
- (b) (i) This was well done by almost all; a small number of candidates miscalculated the temperature difference.
- (ii) This was not well done by many candidates. Responses often just referred to ‘the results’ or ‘the temperatures’ instead of focusing on the detailed data in the table and figure they were referred to, i.e. *Average temperature*, *Afternoon temperature* and the *Difference in temperature* columns where the figures were clearly anomalous. Where they agreed with this, they needed to support one of the statements with comparative data that recognised temperatures were higher/lower – not just different. A common answer was to state that the temperature difference was 21.2°C, which was much larger than the others; at this level they should have stated the next highest or given the difference, e.g. 21.2°C where the next highest was 8.7 or it was 12.5°C higher. Quite a few recognised that the car park should be eliminated because its results were more like a built-up area, which was credited.
- (iii) There were two straightforward plots to add to the bar graph. Most candidates did this well, especially the 29°C plot, which was on the 29°C line. The other plot needed a judgement between two lines at 16.7°C and most did manage this, although less successfully than the 29°C plot with bars drawn at 16.6°C or far too high. A few drew a double width bar at 29°C; others drew a 16.7°C bar in the blank space between built-up areas and rural areas, despite the label for the large dense woodland being provided. While there was no mark for accurate shading on this occasion, it is worth noting that candidates should shade the bars in the same style as the completed bars. If a mark had been available for shading, quite a few would not have been credited with it either through using their own shading or through not shading them at all.
- (iv) This question was done well overall. Most candidates judged that temperatures were higher in the built-up area and then went on to choose one of the columns of data to support this. A few, however, just repeated the hypothesis; they should give a clear decision for credit to gain the reserved hypothesis mark. The most popular and correct response was the average temperature being higher with 31°C being the highest in the built-up area compared to 22°C being the highest in the rural area. Some candidates bizarrely compared the 31°C highest with 16.7°C – the lowest in the rural area. The word ‘average’ was not always included though, which was essential for the statement mark. A few did recognise that the lowest average temperature in the built-up area (22.9°C) was still higher than the highest in the rural area (22°C) which was credited. A few candidates did not specify which temperature column they were using and just stated that temperatures were higher, which was repeating the hypothesis. A small number of candidates did

not read the question – ‘Do **not** refer to results in the car park’ – and used car park results which could gain no credit.

- (c) (i) These were two difficult plots with quite tight tolerances, so it was pleasing to see how many did manage to plot them accurately; not only that but also most realised the top plot was a circle and the bottom plot was a cross – this counted in the awarding of marks. The commonest error was to misread the vertical scale and plot 27.9°C just under 29°C and 17.8°C just under 19°C. There were a relatively high number of *No Responses* on this question; maybe they thought the graph looked complete. In some cases, the size of the plots was large and covered quite an area, making it difficult to judge their accuracy. A thinner pencil might have helped some candidates gain credit.
- (ii) This question was not well done by many candidates. Many candidates decided this was *Completely true* or *Not true* when the anomaly of 8.7°C in the rural area was higher when compared with the two sites with lower temperature differences of 7.6°C and 7.5°C in the built-up area. The best responses realised that, while all the other built-up area sites had higher temperatures, this anomaly meant it was *Partially true*. Many candidates choosing *Partially true* then only gave the anomalous data that went against the hypothesis; they did not give the data that supported it. The question clearly stated ‘...support your answer with data...’ so two sets of comparative data were needed for full marks; one set supporting it and one against.
- (iii) This sub-section was poorly answered by most candidates. Many candidates regarded this question as an opportunity to write a great deal about why heat islands existed in large cities compared to their rural surroundings. While some of these ideas were relevant and credited, the key part of the question referred candidates to data that had been derived from the local map in the insert. The map showed the school buildings and rural surrounds including a tea plantation and woodland with a car park close by. Candidates who scored well on this wrote about the influence of concrete, tarmac and building materials on temperatures and included some references to albedos and the absorption/radiation of heat. They also wrote about the influence of shade and humidity in the woodland. The possibility of heating and air conditioning influences from the school buildings, while marginal at this scale, was accepted. All of these could be relevant to this area and could be credited. What was not credited was related to the influence of tall buildings/skyscrapers on shade, traffic congestion and pollution, the effect of large numbers of people and industry and wind tunnelling – all of which were relevant to large cities but not to this area. Some candidates also managed to include aspects of climate change and global warming in their responses
- (d) At IGCSE level it was generally accepted that an increase in cloud cover during the day would prevent the direct penetration of sunlight to heat the ground and the overall effect would be to lower temperatures during the day, when all these measurements were taken. This was by far the majority view of candidates who gained full credit. A few regarded the clouds as a blanket keeping heat in or reflecting radiation back into the atmosphere, thereby causing temperatures to rise or be stable. Some mentioned the role of clouds keeping heat in during the night, which was irrelevant as temperatures were taken in the morning and afternoon and the question stated ‘...daytime temperatures...’ A number decided that the clouds caused rain, so they would keep temperatures higher.
- (e) (i) The anemometer is a listed instrument in the *Weather* section of the syllabus, but many candidates either left this blank or gave methods of measuring wind speed that were inappropriate, e.g. barometer, wind gauge, windmill, speedometer, wind vane.. Centres should ensure that all candidates are familiar with the purpose and characteristics of all the weather instruments listed in the syllabus. Spelling them correctly would also help so that they are not confused with similarly spelt instruments that exist, e.g. ammeter, used to measure electric current in amps.
- (ii) Despite the Insert showing a photograph of an anemometer and the fact that it is listed in the syllabus as an instrument candidates should have studied, few responses accurately described how it worked. Many said the anemometer or the instrument or ‘it’ was spun round by the wind, but the photograph clearly shows that it is cups that are spun – not moved. Few gained credit beyond the spinning cups. They could not describe how the meter measured the wind speed and not many realised that the kilometres on the display screen would be translated into km per hour. Many wasted time by writing about where the anemometer should be located or on intricate, complex detail of the inner workings that eventually produced a recorded wind speed.

Question 8

(a) A great variety of answers was given here to explain each of the different features of a reliable traffic survey. The mark scheme for this was generous and wide-ranging as there were many possibilities for each of the five features listed. The best answers covered the following for the five rows in the table:

- 1 The key here was to ensure the survey was fair. The survey had to start and end at the same time to ensure the same time period was covered. This would then ensure that data comparisons would be consistent and valid or 'fair'. To be reliable was not accepted as it was stated twice in the stem of the question.
- 2 The student needed to count in both directions to ensure the survey had a total for all the traffic, not just one side.
- 3 It was important to decide and agree on the categories for vehicle types so they were putting the same types in the right categories.
- 4 The tally method is a quick way to count; possibly quicker than counting/writing numbers – it also provides a written record.
- 5 The data recording sheet would provide a uniform record from each site that could be compared and would ensure not only common data for analysis but also that it was not forgotten.

(b)(i) Candidates had no problem in choosing the 'taxi' for the vehicle having the same total at both times, although a few wrote 'None'.

(ii) Again this was very well done; almost all recognised that the percentage of cars went down after 08:30–09:00. This was important as it was leading to (c)(iii) where the hypothesis related to the number of cars compared to other vehicles throughout the day.

(iii) This was very well done by almost all candidates who gave the correct tallies of 10, 4 and 3 in the rows and also added the total to 81 for all three marks.

(c)(i) At this scale, not all these plots were easy, yet most candidates drew their bars very carefully and then shaded the gaps correctly using the key in the right order. There were a few *No Responses* but most candidates gained full credit on this question here. A small number plotted 98 too low.

(ii) Most could understand and read the bar graphs and the times that each related to, so most identified that 19:30–20:00 was the time when the percentage of taxis was greater than the percentage of motorbikes. A few wrote 7.30–8pm, which was allowed, although the syllabus does require candidates to understand and use the 24-hour clock.

(iii) This was the more challenging hypothesis to judge on this paper; the other three were fairly straightforward decisions. The key to success with this question was to read the hypothesis carefully and note that the last three words were '**...throughout the day.**' This was vital in making a correct decision because it was clear that cars were in the majority (over 50 per cent) only at two times out of six time periods: 08:30 and 17:30, i.e. at the start and end of the day. Although they were the main vehicle type at 19:30, overall other vehicles took up 57 per cent at that time, i.e. the majority of the bar. Consequently candidates should have judged that the cars were not the main vehicle throughout the day because in the three bars at 10:30, 12:30 and 15:30 they were always at 29 per cent or less compared to the total of the other vehicles.

Many candidates chose *Partially true* which is not supported by the data *throughout the day*. A few decided it was *True* which the data just does not support. This proved to be a good discriminator in that the more able candidates read the hypothesis carefully, took more time with the data and made a decision that related to the wording of the hypothesis. By correctly deciding the hypothesis was *False/Incorrect*, they often went on to gain four marks.

(iv) This question followed on from the information in the bar graph that showed cars being high at the start and end of the day and lorries/vans being high during the day. Many candidates referred to commuting hours to and from work and/or school to explain the peak hours; they were less successful in their reasons for lorries/vans being high during the day. Those who referred to delivering or transporting goods during working hours gained credit. A few seemed to think that the lorries/vans were carrying tourists during the day or were on the road because there was less traffic

then. Some gave vague reasons such as that was the time when lorry drivers work with no reference to, for example, deliveries to shops/factories in the working day.

- (d) This was done well by most although, despite being told that the hypothesis was *True*, some candidates gave their own judgement which sometimes claimed the hypothesis was *False* – this was ignored for marking purposes. Most could identify and list the times when the percentage of coaches was low or increased/decreased, and they also gave a set of comparative data for the data mark with ‘only 9% at 08:30’ often compared with ‘47% at 10:30’. Some candidates listed all the percentages but did not describe the trend of coach percentages between the times. Some candidates compared the actual number of coaches, but as the hypothesis referred to percentages, using the numbers was not credited.
- (e) (i) A number of candidates did not attempt this straightforward question on sampling methods. The majority that did chose Systematic and wrote that it used regular intervals such as every 10th person, thus gaining three marks. Random sampling was quite popular and descriptions included asking anyone or using a random number generator – not many could develop their description for three marks as was also the case with a Stratified system where candidates just referred to age or gender groups. Quite a number of sampling methods were suggested that are not in the syllabus; indeed that are not even sampling methods, e.g. do a survey, ask questions, do a tally. Candidates should come into this exam armed with knowledge and understanding of the three key sampling methods – Systematic, Random and Stratified.
- (ii) A traffic-free zone is only introduced by a local council or planning authority if, overall, it would create a better shopping experience for people of all ages and fitness; the intention is to attract people back to town centres, not to create problems that will keep them away. Consequently most candidates who understood this correctly judged that advantages included less air and noise pollution, less traffic congestion and risk of accidents, more space to walk and shop in a pleasant, calm atmosphere. Apart from a few just stating ‘less pollution’, which is too vague, the advantages were well done with most candidates scoring two marks.

One consequence, however, of a traffic-free zone is that the traffic has to go somewhere else, so it could lead to all the issues relieved in the centre being transferred elsewhere as well as the need for more car parking around the zone and a possible increase in walking time or extra pressure on public transport. Where a few candidates did not do so well was suggesting disadvantages that the planners would not allow in a traffic-free zone. A number of candidates read the expression ‘traffic-free’ zones too literally and decided that all traffic could never enter the zone – this included all emergency vehicles, delivery vehicles and public transport. This is not the case. The object is to increase access for all groups and increase the income of town centre shops and services.