GEOGRAPHY

Paper 0976/12
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.

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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.

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| Paper 0976/22 |
| Paper 22 |

Key messages

Although candidates were often competent in measuring 360° bearings, they were often unable to give a compass direction correctly. The 16 points of the compass are specified knowledge on page 21 of the syllabus.

In questions on landforms from Theme 2 of the syllabus, care should be taken to see whether the question requires a description of the landform or an explanation of its formation.

In photograph questions, candidates should focus on what can be seen in the photographs and not on theoretical knowledge. This was evident in **Question 3** and **Question 5**.

The term *relief* is still misunderstood by some candidates (see **Question 1(c)** below).

General comments

Candidates performed equally well across the six questions with the exception of **Question 2** which was slightly easier than the rest. There were many outstanding scripts with many candidates scoring marks in the fifties. There were few very low scoring scripts.

Question 1

(a) Many candidates were able to gain full credit on this section, showing good skills of finding features on the map and identifying them using the key.

(b) Many candidates scored three marks by noting the *flow to the east* or *south east*, the *meanders* and *variable width*. Far fewer noted the *tributaries* or many *bridges* along the course. Some candidates reversed the flow direction but only a small minority had tributaries flowing out of the river which has been a problem in previous examination sessions.

(c) Those candidates who knew that relief included height and gradient tended to score well. They noted that A was generally higher and steeper than B. They often illustrated their answers by quoting accurate figures, remembering to include the units (metres). Some candidates wrote answers about land use, settlement and communications which were not relevant to the question set.

(d) Answers to the question based on the cross section were very variable. P was a road (the E22) and Q was the Vramsan River. It was made slightly more difficult by the south west/north east orientation of the section line. The answers could be arrived at by measuring the distances of P and Q from the edge of the cross section and then comparing the distances with the map. For **part (iii)**, credit was given to responses which showed the relief rising towards X to over 150 m but below 180 m.

(e) Answers to these questions were also variable. In **part (i)** credit was given to answers between *4000* and *4300 m*. Some of the answers gave figures which were clearly not correct such as 1.27 m and 4 000 000 m. In **part (ii)** a large number of candidates failed to give the correct compass direction of east or east north east, but then went on to give a correct 360° bearing of between *77°* and *80°*. There was a large number of candidates who answered 'north east east' which is not a correct direction. The grid reference was well answered with most candidates scoring two marks for *360987*.

Question 2

(a) The majority of candidates gained credit for the definitions of transnational corporation and globalisation, with the former proving more difficult than the latter.

(b) In **part (i)** candidates had to describe how features of a country changed as it develops. Most were very successful in noting that the number of people per doctor would *decrease* while the food supply and cell phone use would *increase*. In **part (ii)** explanations rather than descriptions were required. For the fall in the number of agricultural workers, many candidates referred to the *move to secondary and tertiary employment, rural-urban migration* or the fact that *countries could afford to import food*. For increases in energy use, candidates tended to refer to *developments in industry, transport and the home which required more energy*. The reasons given for increased adult literacy were more varied but with *increased school attendance* being the most frequently given.

Question 3

(a) The question required candidates to describe the features of bay and headland coasts shown in Figs. 3.1 and 3.2. Many candidates were able to gain full credit while others found it difficult to score more than one or two. A wide variety of features was given credit. In Fig. 3.1 these included the *beach and sand,* the *crescent shape,* the *vegetation of bushes,* the *gently sloping nature of the land and beach,* and the *small sand dunes*. In Fig. 3.2 credit was given for the *cliff,* its *stepped profile,* the *wave-cut platform,* the *rocks and boulders,* the *layers in the cliff,* the *colour variation in the rocks* and the *grass*. Some candidates wrote in detail about how the coastal features might have formed. This was not required by the question and was not given credit.

(b) Most candidates were very successful in explaining how differences in rock type resulted in the formation of bay and headland coasts. All that was required was to note that *softer rocks would erode more easily and form bays but harder rocks would resist erosion and form headlands*.

Question 4

(a) Questions requiring descriptions of distributions are very common on this paper. Candidates were generally very successful in this one on the population of Botswana, with many scoring full marks. The best answers included word descriptions, for example, *very sparse*, as well as figures, for example, *less than 1 per km^2*. Candidates used compass directions in their answers and generally refrained from referring to the top and bottom and left and right of the map, which has been the case in previous papers. Credit was given for general points such as *overall sparse, small areas of denser population (>10/km^2), large areas of very low population (< 1/km^2 or 1–10 km^2),* and *denser areas along borders*. Credit was also given for references to locations such as *more dense in the east or south east*, and *sparse in centre, west or south west.*

(b) When relating the population distribution of Botswana to annual rainfall, most candidates were able to score at least one and often two marks. These were for *there is a larger population in the wetter areas* and *most areas with less than 300 mm of rainfall have less than 1 person per km^2*.

(c) Candidates were equally successful when relating the population distribution of Botswana to relief. Two marks were often scored for *the area above 1200 m in the south east is more densely populated* and *there is no strong relationship between population density and relief*.

Question 5

Full marks were common for both parts of the question. The best answers concentrated on what could be seen in the photographs and not on giving textbook descriptions of tropical rainforest and desert vegetation.

(a) Examiners accepted points such as *dense vegetation, forest or trees, climbing plants, palms, emergent trees, green or luxuriant vegetation, and varied species*, all of which were visible in the photograph.

(b) Some answers contained irrelevant information because candidates failed to follow the instruction to write only about the trees. Others referred to features such as deep roots which were not visible in the photograph and were not given credit. The better answers described the trees as *tall, sparse (or few in number), with branches at the top (or bare trunks), wide trunks, straight trunks, little foliage and all of the same species.*

Question 6

(a)   Most candidates were able to identify the *growth of industry* and *rural-urban migration* as causes of urbanisation.

(b)   The vast majority of candidates plotted the graph correctly and recognised the *positive correlation*. Good candidates recognised that South America was an anomaly with its *high urbanisation but low GDP per capita.*

(c)   Some candidates found this more challenging but many gained full credit. Credit was given for a variety of approaches to the question. Many candidates noted that urbanisation had gone on between 1960 and 2015 in all four continents, as all urban population percentages had increased. They also noted the rapid urbanisation in Africa and South America, although Africa was still less urbanised than other continents in 2015. They also noted the small changes in North America and Europe and that these continents were already quite urbanised in 1960.

GEOGRAPHY

Key messages

This report refers to the performance of centres in the June 2019 examination. However, the comments made here are equally applicable for centres that make their entries for the first time in November 2019 or during 2020.

There was an increased entry for the June 2019 session compared with that for the IGCSE Geography Coursework component in June 2018. The number of centres grew by 8% worldwide, with this increase coming equally from a variety of locations overseas as well as from UK centres. There is now a significant number of centres, especially from the UK, which have opted for 0976/03 rather than the 0460/03 component.

For established centres, the quality of the coursework submissions continues to improve. Virtually all candidates follow the Route to Geographical Enquiry. Their coursework is the product of much hard work as well as both analytical and presentational skills and knowledge and understanding derived in the main from their geography lessons. Fieldwork which has been organised to collect geographical data for this coursework has in most cases achieved its aim, with candidates collecting enough data to enable them to achieve their potential.

Furthermore, almost all markers used the *Generic mark scheme for Coursework assessment* found in the IGCSE syllabus document, with the marking being carried out both consistently and conscientiously. The team of Cambridge International Moderators would like to thank the markers for the high level of comments on scripts to justify the marks awarded. In most cases this has certainly ensured the smooth running of the moderation process.

For new centres, if you have not already done so, then you should submit an outline proposal for approval by Cambridge International. This details the nature of the coursework that you are planning for your candidates to undertake, and should be based on the route to geographical enquiry. Besides the *Moderator's Comments on School-Based Assessment of Coursework* report on the submitted coursework, it is the main opportunity for Cambridge International to offer advice based on good practice as well as comment on proposals which may hinder a candidate. Provided suggestions are at an appropriate level for those studying IGCSE and the topic is on the IGCSE syllabus, then approval is nearly always forthcoming. Once submitted, there is no need to resubmit this year on year if the proposal remains unchanged.

It is also recommended that teachers who are new to the coursework option attend the relevant course for IGCSE Geography operated in their region. In addition, there is training available online. There is also the Coursework Handbook available from Cambridge International which includes examples of coursework which are annotated to show how they should be marked.

Once again, it must be stressed that this report focuses on points where the moderation process could have been a little smoother or where candidates could improve their coursework in order to access the higher grades. Where there were problems it usually stemmed from centres whose staff had not received training on how to run and/or mark the coursework option.

General comments

The team of Moderators reported that they were very impressed by the range of studies and the high standard that was exhibited across all the assessment criteria, regardless of the location of the centre. They also reported that the best studies were those that were concise and kept to the word limit. It was also noted from some of the evaluative statements and photographs, that many candidates seemed very enthusiastic

regarding working out in the field as opposed to the classroom, and that they felt they had learnt a lot through the experience. It was stated that, by and large, the studies were well focused and that most achieved a good balance between the five sections of their studies. If anything, there was a tendency to make the introduction and methodology too long and the analysis and conclusion too short. The range of methods of presentation was thought to be very effective, and that the variety of these seems to grow year on year.

This session, the number of Physical Geography studies has caught up with the number of Human Geography ones. The former are still predominantly on rivers or coasts while the Human Geography ones tend to relate to tourism, urban land use or environmental quality. Once again there is no evidence that candidates do better in one than the other. Both seem to yield an equal amount of primary data, although there appears to be a greater use of secondary data in human geography topics.

Comments overall

Centres must be commended on the organisation of their fieldwork data collection programmes. There was very limited evidence to indicate that candidates had little idea of the purpose of their data collection. Some even undertook a pilot study, which is to be recommended if the timetable allows.

Although data collection is normally a collaborative exercise, individuality is key to reaching the highest marks. It is therefore important that a group of candidates undertake a range of different hypotheses on any one topic. One model is to have one overarching hypothesis and then each candidate attempts a maximum of two sub-hypotheses. In other cases, each candidate was given one hypothesis by the centre and then he/she uses their own initiative in devising another. The latter was always approved by the centre, since it had to be workable. This session it resulted in a variety of different studies and clear evidence of an individual's own work. However, there are some centres in which all candidates do the same hypotheses and submit the same computer generated graphs. In many of these cases Moderators reported that very little individuality was demonstrated. Some centres choose to undertake their fieldwork under the auspices of a field study centre. This is to be encouraged, but it is important that individual candidates test different hypotheses, use different parts of the data collected and produce different graphs.

Some candidates undertook too many hypotheses. In order to stay within the word limit, this tended to sacrifice a depth of analysis and explanation in which candidates could demonstrate their level of understanding. There are still some centres where the majority of their candidates clearly exceed the word limit. A very small number of studies were over 10 000 words. One of the skills being tested is the ability to be concise. Cambridge International would expect all candidates to adhere to the word limit of 2000 words, give or take the odd one hundred words. Writing well over 2000 words means that a candidate tends to lose focus on the aims of the investigation. Please encourage candidates to declare their word count in future submissions; this should help them to analyse their findings in a more succinct fashion. Please note that where text is placed in tables, this also counts towards the word limit.

In general, markers were very accurate in applying the *Generic mark scheme for Coursework assessment*. In nearly all centres it was applied consistently and this made applying adjustments relatively easy. Once again there were a number of centres whose marks had to be adjusted, but this was usually within the range of –2 to +2. While many were negatively adjusted, this was not always the case, and there was an increase in those that were changed positively compared with this time last year. While most centres' marks were not changed, there seemed to be a pattern of negative adjustments above 48 marks and positive ones for those below 35. As was the case last year, *Knowledge with Understanding* and the C*onclusion* were adjusted negatively, while *Organisation and Presentation* were adjusted positively. Those very few centres which had a large adjustment applied were generally relatively new to the moderation process; the reasons would be detailed in the document *Moderator's Comments on School-Based Assessment of Coursework* which each centre receives.

The criteria of *Knowledge with Understanding* tended to be assessed a little too highly. Whilst it is inevitable that much of a candidate's knowledge will be demonstrated in the introduction, for instance, with the description of relevant theories, it can still appear in all the other sections, and in particular the analysis, when explanation for the patterns that have been identified are sought. Likewise, understanding should be assessed throughout the study and relevant comments made on the script, for example, when a theory has been appropriately applied or indeed a well reasoned account of why it has been dismissed.

On many occasions the introductions were too long. This often consisted of extraneous background detail of the study area or redundant geographical concepts, for example, of river features which do not appear in the

remainder of the study. Glossary definitions are often superfluous; thus, when quoting theory all candidates should be advised to link it to the study area and/or the aims of the investigation. All hypotheses should be justified, albeit briefly, together with a summary of the expected outcomes. The theories that appeared the most often were the urban land use models, especially of Burgess and Hoyt, and the Bradshaw and Butler's models. The candidates as a whole are utilising these far better than in the past, with frequent references to them, not only in the introduction, but in the analysis and/or conclusions. Despite the above, the majority of candidates' introductions were well focused on the aims of the investigation, with clearly justified hypotheses backed up by relevant theory.

The criteria for the *Organisation and Collection of Data* were by and large accurately assessed by the markers and very few adjustments had to be made. Most centres arrange for candidates to collect enough data between them to ensure the opportunity for sufficient depth of understanding and detail to be demonstrated in their analysis. The advice that at least 50 questionnaires should be undertaken by a group as a whole is now well understood. Those candidates who go out and collect data on their own are the ones who are more likely to fall well short. In addition, in river studies there is no shortage of the different parameters on which data is collected, but sometimes the amount of data on each parameter is limited by the number of sites at which data was collected. It is understood that student safety must not be compromised, but centres which can only undertake data collection at two or three sites instead of the recommended minimum of six, might consider measuring each site at three different cross sections each 100 m apart.

Many centres are advising their students to write up the data collection in tabular form. This is largely designed to save on wordage, but many are still far too long and thus it defeats the object. Some of the evaluation included in these tables might be better left until the concluding section of the report. In addition, only methods linked to the candidates' hypotheses need to be described. If there are omissions in the description of data collection, then it is referenced to the criteria for site selection and the reasoning behind the methods of sampling adopted. A demonstration of a clear understanding of the latter, for instance, could add to the mark given for *Knowledge and Understanding*. In the former case it is expected that the reasoning for site selection should go beyond the statement 'Our teacher selected the sites on the basis of convenience'. There are some centres which attempt to collect all the data within a one to two hour period. This often, but not always, results in a limited amount of data compared with those who have been given much longer.

There are now only isolated examples of candidates who base their data collection on a preponderance of secondary data. This is unlikely to score at a high level. However, there have been some very good studies which have compared their data with that collected by the school in the past, and this is perfectly admissible. Many of the well organised studies included tables of relevant data after their descriptions of the data collection exercise and usually integrated with their *Presentation and Analysis*. Those who did not include their data should be encouraged to do so, not only to provide evidence that they took part but so that reference can be made to it alongside relevant graphs.

The criteria for *Organisation and Presentation* still tend to be a little undermarked with many markers not giving due credit for elements of sophistication. Most candidates followed the route to geographical enquiry and therefore produced studies with an appropriate structure, which included an index of contents and page numbers. For some, however, the page numbers seemed to be added at the last minute and did not always reflect what was written in the index.

The better organised studies nearly always integrated their graphical presentation with their analysis. This helps to ensure students analyse the data shown by each graph/diagram/map in turn, in order that its relevance to the aims of the investigation can clearly be distinguished and conclusions drawn at the end. There were also some instances of candidates lumping all their graphs together in the appendix. This should be discouraged. Most candidates did submit work with three different graphs, although many still rely on simple methods, for example, pie and bar charts and line graphs. It should be noted that different sorts of bar graphs only count as one technique. Markers should be looking for the ability to use complex techniques in order to award higher level marks, although the use of a complex technique does not always mean that it portrays the data effectively. Where there were multiple river channel cross sections, beach profiles or footpath cross sections to show the amount of erosion, these were not always drawn to the same scale to facilitate ready comparison.

This session, this has also applied to a plethora of radar graphs. Choropleth maps did not always have categories which are equal in size and neatly coloured with a clear progression of levels of intensity of the colour. Some good examples of graphs that were seen and which demonstrated the appropriate degree of sophistication were divided bar graphs and scatter graphs with a line of best fit. Bars, proportional circles and

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pie charts located on maps as well as isolines, flow lines or desire lines were all acceptable. However, the same data presented in a number of different ways is likely only to count once, even though they are complex techniques.

There were also some excellent field sketches which were clearly linked to one of the hypotheses and were very well annotated. Others, however, at times were rather scruffy: the relevance was difficult to ascertain and features difficult to identify. Photographs too should not only be carefully selected to be relevant but they should also be well annotated. Too often, the author was content with just a title and/or a description at the side. Since it is expected that individual initiative is demonstrated in the use of presentation techniques in order to attain the highest marks, it is therefore best to avoid the same range of computer generated graphs appearing in every study that a centre's candidates submit. In addition, such graphs often have labels missing, especially on the Y axis. Candidates should check for this before submission. There were many instances of worked examples of statistical analyses which counted as a complex presentation technique. These included Spearman's and Chi Squared. But candidates have to demonstrate they have done the complete working out themselves and have not just relied on pressing a computer key to get the result.

There are many examples where published maps are very well adapted by candidates to show the locations of the sites of data collection. These too are usually well annotated. Unfortunately, there are still too many occasions where a number of different maps at different scales are included, especially in the introduction, for example, at country/region/local area scales, which are hardly utilised. These often have no scale line or orientation. The latter is often the case where Google maps are used, and to state simply 'not to scale' is not appropriate. It is worth stating here that some of the best maps continue to be those which have been hand drawn and this is to be applauded. Finally, there are still images of both maps and graphs which are scanned into the study and are barely readable. It would be far better to provide the originals.

For many established centres the *Analysis* is now much longer than it used to be, and the quality of both the description and explanation of the data has improved. For new centres it is often too short, with use of numerical data being limited and explanation being rather speculative. In general, phrases like 'It might be explained by…', 'The reason could be…' or 'It may have been…' are to be avoided. In general, the requirement for reasoned explanations at Level 3 is often overlooked by markers when reasons given are very short and tenuous, despite an interpretation of the data which is thorough. The best reasons are based on theory or perhaps local characteristics of the area such as rock type or human interference, for example, when referring to the variation in sediment shape or size along the length of a river. Once again there were examples this session of purely descriptive accounts being valued at mid-Level 3.

The best analyses picked out the major anomalies from graphs, used numerical values to show why they are anomalies and explained them with reasons that are creditable. Too often such anomalies are put down to unspecified 'errors in the data collection'. It must be remembered that the analysis section is where candidates can really demonstrate their depth of understanding, or not, as the case may be. An example would be in the interpretation of the result of statistical testing such as the coefficient generated from the use of Spearman's Rank Correlation and, in particular, if the result of this value is being significance tested. It is also worth remembering that the depth of analysis can be severely limited by the lack of a sufficient amount of raw data on any one variable for interpretation purposes.

In general, conclusions continue to be too short. Although many of the stated conclusions were clear with each of the hypotheses being confirmed or rejected in turn, there was often a lack of evidence to support these assertions. This should include several examples of key data, usually in numerical form, which the Moderators reported was often absent. This included direct references to graphs and often the results of statistical testing. Many candidates did, however, link their results to the geographical theory outlined in their introductions. Nevertheless, the lack of key data limited progression into Level 3 of the assessment criteria for *Conclusion and Evaluation*, despite the presence of a sound evaluation. Therefore, some markers were a little generous when assessing these criteria.

Evaluations tend to be done well. Candidates in general seem to be very good at criticising their data collection strategies as a whole, although there could be greater reference to methods of sampling, especially where a questionnaire was carried out. Most managed at least two valid suggestions on how the problems they identified could have been solved, which went beyond 'Collect more data' or 'Sample more sites'. Some candidates also stated how their study could be extended should it be repeated. Although there was often some evaluation of methods used to collect the data in the methodology section, markers should note that a separate section entitled 'Evaluation' is expected as part of the conclusion.

Administration

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Almost all centres submitted their coursework samples to Cambridge International on time, before the 27th April deadline, with the appropriate paperwork completed. The latter consisted of the Candidate Summary Assessment Form together with the MS1 or the Internally Assessed Marks Report. Please make sure that an individual Candidate Record Card is attached to the front of each script and not sent in the overall package in one pile. British centres also managed to return their samples to Cambridge International speedily, having received the request for specific scripts. This was much appreciated by the Moderators. In addition, please ensure that candidates are listed in candidate number order on the Coursework Assessment Summary Form.

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

There are still a number of instances, however, of errors in the paperwork being reported and thus it is worth restating the following.

Errors usually took place in one of the following instances:

> Most commonly where the addition of the assessment criteria marks on the individual Candidate Record Card was incorrect and this was subsequently transferred to the Coursework Assessment Summary Form and then to the MS1 form.
> Transcription errors from the Coursework Assessment Summary Form to the MS1 form. Occasionally, this may occur where an internal moderation has taken place and the candidate's original mark has been entered instead of the changed mark.

Although Moderators do correct these errors whenever they are found, it is recommended that all centres should have their candidates' marks double-checked.

If they have not already done so, could markers please make comments on the actual studies (in pencil) to justify the marks/levels awarded for each of the assessment criteria. The wording should reflect the wording/phrases used in the generic mark scheme, and this will then aid the smooth running of the moderation process.

Where a centre has more than one marker, it is essential that an internal moderation takes place. There is evidence that these have been conscientiously carried out by most centres and marks changed accordingly. However, the change for an individual candidate is not always reflected in the change in marks for individual assessment criteria, only the overall totals. This information is essential for the moderator's job to be carried out effectively. There have been occasions when one marker's marks from a centre have differed markedly in standard from those of the other markers, and an internal moderation is the best way to resolve this problem.

GEOGRAPHY

> **Paper 0976/42**
> **Alternative to Coursework**

Key messages

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

When answering hypothesis questions that ask whether you agree or not, always give your opinion at the start of your answer before any supporting evidence. This will usually be *Yes, No* or *Partially / To some extent*. Do not just copy out the hypothesis if you agree with it. It is important to make a decision and state it as well as provide the data or evidence for your choice. Be clear in your decision – expressions such as '*might be true*', '*could be false*', '*true and false*' are too vague.

If you are provided with a decision about a hypothesis, e.g. *True* in **Question 2(d)** – do not then disagree with it and try to justify your view. You need to support the decision made with evidence. Note that if the question requires data as evidence, you must give numbers and statistics; descriptive statements will not count for credit. If evidence is asked for, this can include numbers and descriptive statements.

When giving figures in an answer always give the units if they are not stated for you. It is also important that your numbers are clear, e.g. a 1 can look like a 2; 4 can look like a 9; a 7 can look like a 1, sometimes a 2 looks like a 5. Candidates' writing must be legible; credit cannot be given if the answer cannot be read. This caused some reading issues with **Question 1(b)(i)** this session.

When shading or completing graphs, use the same style as that provided in the question and make sure a sharp pencil gives a good dark image. Check you understand the scales used and the importance of any plots already provided. If adding plots to complete a graph, these should be in the same style as the plots already on the graph, e.g. crosses should be crosses not dots – ref. **Question 1(c)(i)**.

When completing pie charts or divided bar graphs, complete these in the order of the data given and in the order of the key which conventionally will be clockwise on a pie graph and from left to right on a divided bar graph. Make sure your shading matches the key, e.g. if diagonal shading slopes to the right, do not draw yours sloping to the left. This was important in **Question 2(c)(i)**.

If you are referred to data from a table or graph, it is more sensible to use the exact figures from the table rather than make erroneous judgements from the graph.

When you think you have finished, go back and check that all graphs have been completed; too many candidates lose easy marks by missing out graphs, e.g. **Question 1(b)(iii)**, **Question 1(c)(i)** and **Question 2(c)(i)**.

Read questions carefully and identify the command word, e.g. *Describe...*, *Explain…* A question that asks '*Why?*' requires a reason to be given not a description.

Check you are using the resources that a question refers you to, e.g. **Question 1(c)(ii)** Fig.1.4 and Table 1.1.

Take into account the marks awarded. Examiners do not expect you to be writing outside the lines provided, so do not write a paragraph when only two lines are given – this wastes time.

Be careful with the use of terms such as 'majority' when the correct term would be 'highest' or 'most'. The 'majority' must be more than 50 per cent of the statistics being described and is not a term that will be accepted if the data involved are less than 50 per cent, e.g. **Question 2(c)(iii)**.

It is important that, when you write the remainder of an answer elsewhere, you signal it by writing something like (*continued on page 14)* to ensure it is seen. It also needs to be noted that a significant number of candidates gave the wrong sub-section number to their extra work this session which made it more difficult to match to their earlier answer and credit correctly. This year, as in 2018, some candidates chose to write long answers and frequently wrote down the sides of the pages or were given separate 4–16 page booklets despite additional pages with lines being provided for this very purpose! As there are always spare pages at the back of the exam paper, centres should not be issuing separate booklets for extra work.

General comments

Most candidates found this examination enabled them to demonstrate what they knew, understood and could do. It appeared to be a positive experience for many candidates with most questions being attempted by candidates and most achieving marks on most sections. Weaker responses scored well on the practical questions such as drawing graphs or completing tables, making calculations and making choices from tables. Stronger responses scored well on the more challenging sections requiring judgement and decision-making on hypothesis choices with evidence and other written answers.

There is less general advice to be given for areas for improvement with this paper than with others. As there are no question choices to make, it is difficult to miss sections out – though candidates do (especially in the completion of graphs) but less so than in previous sessions. There were no reports of time issues as the structured booklet format does not allow or encourage overwriting of sub-sections.

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

Centres should be aware that, although this is an *Alternative to Coursework* examination, candidates will still be expected to show that they know about fieldwork equipment, how it is used and fieldwork techniques. Some fieldwork experience is vital even if there is only limited opportunity within the centre. Familiarity with maps, tables, sampling methods, measuring instruments and the various graphs and other refining techniques listed in the syllabus are also important for success in this examination.

Question 1 proved to be slightly more difficult than **Question 2** as is often the case with physical geography. This question focused on the topic of investigating temperatures around a school in South Korea. It involved knowledge of digital thermometers and the use of anemometers plus analysis of temperature data, and focused on describing and explaining differences between temperatures in built-up areas and rural areas. A map of the area was provided alongside photographs of a digital thermometer and an anemometer in the insert along with a detailed table of temperature data, a vertical bar graph, a vertical line graph for completion and analysis in the structured answer booklet. Candidates needed to make judgements about two hypotheses using data as well as applying knowledge and understanding to agree or disagree with them.

Question 2 proved to be slightly less difficult than **Question 1**. This question was about the effect of tourism on traffic in a town in the UK. It required ideas about how to make a traffic survey reliable, recording and producing graphs using traffic survey results plus analysis of the comparative frequency of cars and tourist coaches through the day. The question finished by asking candidates to describe a sampling method to use with a questionnaire about a traffic-free zone and to list advantages and disadvantages of this development. Tables of traffic survey results at different times were provided in the insert and a table of traffic survey features, a recording form including the use of tallies, and a vertical divided bar graph were provided for completion exercises in the answer booklet. Candidates needed to make judgements from evidence with regard to one hypothesis; they were told that the students had decided that the second hypothesis was *True* and needed to justify that decision instead of making their own judgement.

Comments on specific questions

Question 1

(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) **T**he 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 2

(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.