GEOGRAPHY

| Paper 2217/12 |
| Paper 12 |

Key Messages:

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

- ensure that the examination rubric is followed correctly, answering 3 of the 6 questions only, checking they can answer part **(c)** of each question before they finalise their choice.
- read the questions carefully – underlining key command words and words which indicate the context of the question is a useful strategy.
- know the meaning of, and respond correctly to, common words used in questions e.g. define, describe, compare, explain, cause, effects.
- learn the meanings of geographical terms encountered e.g. population density, international tourist, relief.
- use data and other evidence from resource materials to support statements.
- describe trends and patterns on graphs using statistics where appropriate, without simply listing them e.g. describe trends over time on a line graph by using words such as constant, slow, rapid etc.
- perform basic skills such as interpreting photographs and using maps e.g. to describe a location using distance and directions or describe a distribution.
- write as clearly and precisely as possible avoiding vague, general statements – e.g. 'it will improve standard of living', 'it will cause pollution/cause overcrowding'.
- develop their ideas by elaborating on simple statements wherever possible. This is particularly important where extended writing is required in the final two parts of each question. This can be done by using connecting words such as 'so…', 'whereas…', 'because…', 'on the other hand…' - all these help to make simple statements into developed statements.
- take care when choosing examples to use in case study answers, ensuring they are at the correct scale, and develop ideas by including place specific information.
- identify the correct focus specified in the question stem - e.g. natural environment or people, causes or effects.

General Comments:

The examination was considered appropriate for the age and ability range of candidates and it achieved widespread differentiation. Most candidates were able to make a genuine attempt at their chosen questions and even weaker candidates attempted most sections, though many are let down by incorrect responses to key words in the question, especially command words. **Questions 1** and **5** were most popular. **Questions 3** and **4** were least popular. There were particularly good extended answers on overpopulation, exfoliation, and benefits and problems of tourism. However overall these extended answers and case studies seemed to be less well developed than in recent examinations, with less place specific detail being included. Even where case studies contained developed ideas they tended to be generic developments of ideas with little place detail to support them. Errors were made when identifying case studies, for example studies at the wrong scale, and such errors cost candidates marks.

Whilst there were some rubric errors, the number of candidates who answered more than three questions was relatively small, and there seemed to be little, if any, evidence of candidates being short of time.

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

Comments on specific questions:

Question 1

(a) (i)   Various definitions were used and most gained a mark here. Some however did not link the population size to areas in some way or referred wrongly to resources instead.

(ii)   Most candidates understood that the better the access, the higher the density and many usefully elaborated on access by referring to good transport. There were however a large number of answers that did not show an understanding of the word relief. These candidates wrote about 'much relief' or 'large relief' or interpreted relief as being climate.

(iii)   Many answers did link low densities to extreme climates and high densities to temperate climates as shown in Fig. 1 but little explanation was included. Expressions such as favourable/good climates were vague as was use of the term 'comfortable' for people to live in.

(iv)   Good understanding was shown by many candidates, with many references to job opportunities and migration to areas with industry and natural resources. Other candidates were able to develop this further by reference to examples such as mining, water supply and factories to score full marks.

(b) (i)   Where candidates gave broad judgements for the three groups they scored well however many focused on individual age-group bands on the pyramids rather than the traditional three groupings stated in the question. In fact young dependents and economically active both decreased, only old dependents increased.

(ii)   This differentiated well as candidates needed to ensure that the reasons which they suggested were for likely changes in Japan between 2005 and 2020. Consequently standard LEDC answers relating to issues such as the use of contraception, or people needing less children to send out to work were not applicable to Japan which was an established MEDC in 2005. More perceptive candidates did however realise that developments in health care, improved diet and exercise, improved care for the elderly, and later marriages for example could be used to explain the reductions in both birth and death rates by 2020.

(c)   This case study differentiated well and there were some excellent answers. The most popular examples chosen were China, India, Bangladesh, Nigeria and Zimbabwe. Most candidates did correctly name a country although a few named a city or continent which was not appropriate. One way of including place specific information in this type of question is to choose a country and then develop ideas by reference to cities within it. For example the choice of Nigeria enabled candidates to refer to issues such as lack of jobs, homelessness, growing crime rates, traffic congestion in cities such as Lagos. Many well chosen examples did show very good knowledge of the topic, perhaps through personal experience, although most did not include place detail which is a requirement for full marks.

Many candidates who selected China focused on the one-child policy, which was a solution to the problem of overpopulation.

Question 2

(a) (i)   As Gdansk is in an MEDC, candidates should have matched the port facilities to the location by the river, the 5-storey housing blocks to the inner city and the detached housing to near the city boundary. Many did this successfully, however significant numbers did not.

(ii)   Most candidates correctly referred to the evidence such as the presence of tall buildings, many pedestrians, restaurants, offices. Others however suggested ideas which were not visible in the photograph such as a metro or busy traffic.

(iii)   Most candidates could give one or more reasons for traffic congestion in CBDs with many referring to ideas such as high car ownership, people needing to travel to workplaces and/or shops and an inadequate road network within the CBD.

(iv)   Many good examples were seen of potential solutions and generally candidates scored well on this question. Weaker answers vaguely referred to 'using more public transport' or 'less cars' without

actually suggesting what can be done to convince motorists to do this. Candidates who wrote about specific ideas, such as congestion charging, building by-passes or ring roads, opening metro systems and using park and ride schemes scored high marks.

(b) (i) Despite its relative simplicity this question was generally poorly answered because many candidates did not notice that the question was about the change in **total** population from 1910-2000. Details of changes in central areas and suburbs were described in some detail by many but this was not relevant and was not credited. What was needed was a statement that the total amount had increased from 26% to 77/78% for two marks plus a trend within that time period for the third mark. This question illustrates well how marks are often lost on straight forward questions by not reading them correctly.

(ii) This differentiated well, with many weaker candidates tending to focus incorrectly on rural to urban migration whilst those who understood what was required were able to score well by explaining the outward movement to suburban areas during the 20th Century as a result of issues relating to space, cost of land, developments of transport network and a variety of issues relating to the urban environment and quality of life. Candidates have been previously advised in these reports to elaborate on any reference to pollution and life quality there were still many candidates who did not do so, gaining no credit for unqualified references to 'pollution' for example.

(c) Atlanta, Harare, London and New York were popular, if not always entirely appropriate, case studies. Candidates that did refer to impacts on the natural environment (i.e. issues to do with deforestation, loss of habitats, air and water pollution) scored highly here but too many wrote about impacts on people rather than the natural environment or about the cause rather than the impacts. It was clear the expression 'urban sprawl' was not well known by many candidates as they wrote about all zones of the city rather than the outer areas. This tended to be especially true for answers relating to New York and London. Some excellent answers were seen about Harare with place specific detail on the urban fringes. Many of these answers illustrated the value of using a familiar local example rather than one from a textbook.

Question 3

(a) (i) Not all candidates who chose this question were able to use the simple scale to measure the width of the entrance.

(ii) Most candidates identified limestone and chalk though some reversed the answers.

(iii) Whilst there were a few very good responses referring to erosion of the limestone followed by the consequent erosion of the less resistant sand and clay behind it to form the cove, many responses did not refer to the process of breaking through a line of weakness in the limestone for this to happen.

(iv) This question differentiated well with weaker candidates referring to tourism whist others referred to a range of valid ideas, including fishing, harbours/trade and settlement for example.

(b) (i) Most candidates were able to identify at least one feature of the stack – references to the height, the narrow base and layers of rock were most common.

(ii) Whilst some candidates appeared to guess most were aware of the sequence of erosion resulting in the formation of a stack. There were some excellent explanations, using correct terminology and supported by labelled diagrams. Most gained their marks in the text though without recourse to the diagram.

(c) This was quite well answered by many candidates, though very few answers gave place-specific information about their chosen coral reef area. Areas chosen included the Seychelles, the Maldives and the Great Barrier Reef. Common correct responses were the need for warm water, shallow and clear water for sunlight/photosynthesis and calm waters. Valid statistics were used by some candidates, which is a good strategy to use to elaborate on simple points made. Some candidates described many human factors that would stop or destroy coral reefs, which was tangential to the question

Question 4

(a) (i)   Apart from those candidates who named St. Louis as a state, almost all got the correct answer.

(ii)   Most answers recognised the significance of the location of St Louis close to the river and to the confluence, using various terms for where rivers join/meet. Some confused tributaries and distributaries.

(iii)   The correct three methods were extracted for the article by the majority of candidates though a few suggested methods of their own or chose irrelevant items from the article. A few did not refer to the levees being made 'higher'.

(iv)   Whilst there were a few excellent answers referring to drainage basin processes generally this was poorly answered with many just describing the consequences of flooding. Few could describe a sequence of events that might increase the hazard due to settlement and economic activity as required.

(b) (i)   Although obvious features were correctly mentioned by many candidates, such as the rocks, rapids and plunge pool, a lot of answers listed peripheral items such as the vegetation which are not really part of the waterfall and generally the question was not high scoring with obvious features being missed by many.

(ii)   Futuristic ideas about the waterfall included its use for HEP, for tourists and indeed its complete disappearance from drying up however few described the more likely option of retreat and the differential effects of erosion on the different rock layers.

(c)   By far the majority of candidates chose exfoliation as the weathering process and most explained it well. Most were able to refer to expansion and contraction and developed the ideas, though some did not go on to refer to the stresses/pressures caused by expansion/contraction that result in peeling. A few mixed up expansion/contraction with hot/cold whilst others wrote about freeze-thaw weathering which is not exfoliation. The few candidates who attempted carbonation had little knowledge about that process, though a small number made some pertinent points. Most wrote about pollution and acid rain.

Question 5

(a) (i)   When defining a term it is important to define all words which are italicised in the question. Most candidates stated that 'international' meant another country but did not define 'tourist' i.e. someone who goes on holiday/vacation.

(ii)   The majority gave 60% for Europe and 10% for Asia and compared the data e.g. more than 50% from Europe/Europe has a higher percentage. A few just gave the data with no interpretation whilst a significant number gave 19% for Asia, a careless misreading of the key.

(iii)   There were many valid references to variable distance, affordability and level of development, though some struggled to clearly express their ideas here, whilst weak candidates simply suggested why tourist visit Kenya.

(iv)   This differentiated well with sound answers suggesting a variety of reasons for the increase (e.g. cheaper air travel, advertisements/Internet, longer holidays, and greater affluence) whilst others were brief and/or lacked clarity, sometimes simply listing reasons why people go on holiday rather than answering the question.

(b) (i)   This question was not well answered. Many candidates simplify listed three tourist locations from the map or the key (e.g. major beach area, Tsavo National Park, Mt Kenya, coral reefs) rather than addressing the question and suggesting types of tourism relating to the these features (e.g. wildlife safaris in game reserves, city breaks in Mombasa, climbing/hiking on Mount Kenya, diving on coral reefs etc.)

(ii)   Similarly this question was not answered well by many candidates, though some excellent perceptive answers were seen from a few. Apart from references to protecting the animals and bringing jobs for local people most candidates could say little about how sustainability would be helped by the creation of game reserves and national parks. It seemed that some were not familiar

with the concept of sustainability and simply described why National Parks and Game Reserves would attract tourists. Keeping future tourists coming was often implied but little more.

(c) This was generally well answered, although the named area given was often a large country such as Kenya or Zimbabwe rather than a more precise named area which limited the maximum mark awarded. Most candidates gave benefits and problems, though did not always focus on what these were for the local people as required in the question. Differentiation was achieved, with more developed balanced answers achieving high marks and place detail appearing in some answers.

Question 6

(a) (i) Well done by most though a few gave 10% instead of 12/13%.

(ii) Almost all candidates effectively compared the primary and tertiary sectors in Japan and China although some gave totally separate statements with no comparison or figures with no interpretation.

(iii) Two marks was common here. Most candidates correctly gave farming or mining for primary employment; many wrongly gave car assembly for the hi technology industrial park instead of computer- linked activities; and shops, banks, insurance companies, education and hospitals were all accepted as possible service industries in the CBD.

(iv) The responses to this question were in the main disappointing; apart from mechanisation and people moving for better paid jobs in secondary/tertiary industry, few other answers were seen. There was little reference to increasing food imports or physical activity being hard/undesirable or resources running out or people becoming educated/skilled so could be exploited outside the primary sector. The consequences for a changing employment structure as a country develops were not well understood.

(b) (i) Most candidates recognised that manufacturing had increased as well as rubber/tin had decreased and some, but by no means all, scored a third mark for accurately using statistics. Reading the percentages on a pie chart is an important skill for candidates to practise.

(ii) Many candidates wrote about newly industrialised countries but missed the point of the question which was to explain why they attracted high technology industry. The reasoning expected included low cost land and labour, skilled labour and government incentives plus a good transport infrastructure and all these ideas were seen, however only from a minority of candidates.

(c) The Amazon Basin was a popular choice here, though few developed references were seen to the immense impacts which commercial agriculture is having there on the natural environment. Rice farming was used as in example in various named areas, generally with more success. Valid responses concentrated on deforestation and loss of habitats, use of fertilisers and the death of aquatic life. Many candidates named entire countries, rather than more precise areas, such answers tended to be rather vague and/or simplistic. Although many candidates could describe various impacts fairly briefly they gave over much of their answers to describing the causes rather than developing the impacts. This question illustrates just how important it is to read the question and highlight key words. Not only did many of those who did not do so write about causes, but also many wrote about impacts for people rather than the natural environment.

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Key Messages:

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

*   ensure that examination rubric is followed correctly, answering 3 of the 6 questions only.

*   read the question carefully – it is important to spend time doing this. If it helps underline command words and words which indicate the context of the question.

*   know the meaning of, and respond correctly to command words – e.g. know the difference between describe and explain, be able to compare.

*   identify the correct focus specified in the question stem – e.g. causes or impacts, natural environment or people.

*   ensure candidates are aware of the scale of the question – city or country or area? Need to ready the question carefully.

*   use the mark allocations and answer space provided in the question and answer booklet as a guide to the length of answer required and the number of points to be made.

*   developing ideas in the correct way for example development of impact rather than cause underline key words and key command words in the question to help identify this.

*   perform basic skills such as interpreting graphs, photographs and maps of various types.

*   know how to approach a question which asks for comparison.

*   avoid direct lifts from diagrams when a question asks for interpretation of ideas.

*   not simply relying on statistics for development in earthquake or volcano case study as these are sometimes incorrectly remembered.

*   if the question asks for evidence or data from a source then candidates need to ensure they do this to get full marks. Data needs to be used to support statements being made rather than just being lifted and presented in isolation.

*   learn the meanings of key words in order to be able to define and accurately use geographical terminology. Key word glossaries for Centres to build up would be advantageous for candidates.

*   write as clearly and precisely as possible avoiding vague, general statements – e.g. 'it will improve standard of living', 'it will cause pollution/make a lot of noise'.

*   write developed ideas wherever possible, especially where extended writing is required in the final two parts of each question.

*   have a range of case studies so that appropriate ones can be chosen for the topics tested. Some seem to have too few case studies and try to apply them inappropriately.

*   include place specific information in case studies, however care needs to be taken that this is not done at the expense of answering the question. Place specific information was lacking this year.

- when using the extra space at the back of the question and answer booklet make it clear that the answer is continued and indicate the number of the question accurately, many candidates do not indicate that the question is continued.

  In general, topics to focus on that were not particularly well answered: population distribution; settlement hierarchies; using weather measuring equipment; infrastructure development; comparison of energy use between LEDCs and MEDCs and energy production in a country.

General Comments:

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

There seemed to be more candidates in this examination session that made rubric errors and answered more than 3 out of 6 questions and in many cases answered all 6 questions. There was little, if any, evidence of candidates being short of time. The handwriting of some candidates was difficult to read. Whilst it is accepted that candidates are writing under time pressure it is important that all answers are legible so that Examiners can mark them.

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

Comments on Specific Questions

Question 1

(a) (i) Candidates were required to define the term 'international migrant'. Most candidates were able to do this and gained credit. However, some candidates reworded the term to be defined e.g. 'a migrant who moves internationally' which was not credited.

(ii) Using Fig.1 candidates were required to identify the country where remittances form the largest percentage of the GDP and the country which receives the largest total amount of remittances. The vast majority of candidates got both answers correct – Lesotho and Nigeria respectively. However, a few put a figure in the 2nd space or Ethiopia. Some also got the answers the wrong way around.

(iii) This question asked candidates to explain how remittance money sent home by international migrants may benefit people in the country from which they have migrated. Despite a lot of irrelevant focus on the value of foreign earnings most candidates made at least one relevant point and many gained full credit by listing ideas like 'buying food, paying for health care and/or education, housing' etc. Quite a lot of irrelevant material was seen referring to improving GDP/tax revenues etc. which would be unlikely to be influenced by remittances.

(iv) Here candidates had to suggest what problems may be caused in countries from which large numbers of people migrate. Provided candidates wrote about the country 'from which large numbers migrated' they were successful and provided relevant references to 'loss of skilled workers, less workforce, ageing population, loss of males' etc. Many responses could not be credited as they focussed on the country to which people migrated.

(b) (i) Using Fig. 2 candidates were required to describe one possible route of a migrant from Cameroon to Spain. The vast majority of candidates scored full credit although some odd or impossible routes were seen by a minority of candidates.

(ii) Here candidates were required to suggest problems which may be faced by migrants who are living in MEDCs such as Spain. Generally this question was very well answered and all mark scheme ideas were seen with lots of good development. A few candidates focused on problems for the

country rather than those faced by the migrants themselves and a few on the problems of migrating that would be faced en route which did not gain any credit.

(c) For a named area candidates were asked to explain why it has a low population density. Despite a minority of very good answers the overall response to this case study was weak. Many wrote about migration or low rates of population growth, others wrote about under population, few actually focussed properly on population density. Whilst a few marks could sometimes be picked up from the type of answers mentioned in the previous sentence such candidates rarely progressed beyond level 1. Australia and China featured regularly (Max 5 as a country was named rather than an area), though in reality few got anywhere near that as one child policy was irrelevant and Australian answers tended to be about distribution, with some credit usually being given for desert references. Most high scoring answers chose a large area such as the Sahara Desert or Antarctica or a mountainous part of a country – usually Southern Alps in New Zealand. These choices enabled candidates to develop points about climate, relief, access, resources etc. And therefore gain higher marks.

Question 2

(a) (i) Candidates were asked to name the capital city of the Philippines. Almost all candidates answered 'Manila' correctly.

(ii) Using Fig. 3 candidates were required to give two pieces of evidence which suggest that the most densely populated area in Luzon has the most services. Many full mark answers were seen, usually for reference to railways and airports.

(iii) Here an explanation as to why large numbers of people live in squatter settlements in cities in LEDCs was required. Most candidates focused on people not being able to afford housing or the high cost of housing idea though better answers touched on other valid issues such as the lack of housing, the large numbers of migrants and/or the location close to workplaces or transport routes. The majority of candidates gained some credit here.

(iv) This question asked candidates to describe four ways to improve the housing in squatter settlements. The question differentiated well as good answers were precise and focused on specific ways in which housing could be improved such as 'self-help schemes, build with bricks, supply electricity' etc. The weakest answers made four very general points often referring to 'Better ...' or focused on issues other than housing e.g. 'build schools, roads' etc.

(b) (i) Using photograph A candidates had to give three pieces of evidence that the area is part of the CBD. This was generally well answered, with many scoring full marks. Most common responses included 'high buildings, busy roads, shops' etc. All mark scheme ideas were seen.

(ii) Using photograph B candidates were required to suggest reasons why the mall was located outside the CBD of Maseru rather than in it. Some excellent developed ideas were seen; this topic was obviously well understood by candidates and many made good use of the evidence in the photograph. Once again all mark scheme ideas were seen and all candidates were able to gain some marks.

(c) For a named example of a settlement studied candidates were asked to identify its main function and explain the reasons for its growth. This question was very poorly answered by many. The identification of the function was the key to achieving some marks here and many candidates did not seem familiar with the word, with lots of references to shanty towns and general reasoning for the growth of urban areas. The most common functions identified were capital city, ports and tourist resorts though most reasoning was simple and remained within Level 1. The few good answers seen with ideas fully developed related to case studies made within the region where the candidate lives, most commonly Auckland or Singapore.

Question 3

(a) (i) After studying photographs C, D, E and F which show coastal landforms candidates were asked which photograph shows a feature which is formed by wind deposition the vast majority of candidates correctly identified photograph C.

(ii) Candidates had to match the photographs with the correct landforms by using arrows. Usually all were linked correctly here but some errors were seen, the most common one linking Photo F to the stack.

(iii) Here candidates were required to describe the conditions required for the formation of coastal sand dunes. Most candidates were aware that dunes were formed by the wind though a few wrote about marine processes. Better candidates were able to identify that winds need to be onshore though many just wrote about winds being needed. Lots of good references were made to supply of sand, obstructions and plants to colonize. Most candidates gave one or two creditworthy points.

(iv) This question asked candidates to explain how a natural arch is formed. This differentiated well with some excellent full mark answers seen with the whole range from those who had absolutely no idea what an arch was, through to those who did little other than mention erosion by waves to those who could give the full sequence. Some missed out the cave formation sequence which is an essential stage in the development of an arch.

(b) (i) Using evidence from Fig.4 only, candidates were required to describe three effects of the storm. The resource was well used with most candidates listing two or more creditworthy points. Those who lost marks tended to focus entirely on the 'beach, sea or lighthouse' rather than making points about other things such as the decreasing slope of the cliff or its retreat.

(ii) This question asked candidates to explain how erosion by the sea may cause problems for people living in coastal areas. This was another good question for differentiation. Weaker candidates tended to just mention housing or make very vague points about threats to 'buildings' or 'land' or people's 'safety', whilst others suggested a range of problems, developing their ideas well. Most mark scheme ideas were seen.

(c) Here candidates were required to explain the formation of a sand spit and include a fully labelled diagram. Most candidates had some idea that a sand spit was the result of coastal deposition, specifically the process of longshore drift. There were some full mark answers with clear and detailed explanation and a fully labelled diagram. Many attempts achieved top Level 1 or just got into Level 2 as the precision and depth of knowledge shown for example 'swash and backwash' was inaccurate or superficial.

Question 4

(a) (i) Candidates were required to study the climate graphs in Fig.5 and select which area has the smallest annual temperature range. Most, but not all, candidates correctly chose Y to gain the mark.

(ii) Again using the graphs candidates had to identify the graph which shows the climate of an area of tropical rainforest and an area of tropical desert. The majority of candidates, but not all, correctly identified 'Y and X' respectively gaining maximum credit. Where errors were made it was usually the identification of tropical desert.

(iii) This question asked candidates to explain why tropical deserts have high daytime temperatures and low temperatures at night. Weaker candidates simply wrote about the sun shining in day but not at night, however there were lots of good answers seen providing candidates realised the significance of 'lack of clouds', they usually scored full marks.

(iv) Here the processes which result in heavy convectional rainfall in tropical rainforests had to be described. Most candidates knew at least some of the stages of convectional rain processes with good descriptions of the processes listed in the mark scheme. Most at least were aware of the significance of evaporation/transpiration even if they could not develop the sequence further. Most mark scheme ideas were seen.

(b) **(i)** After studying the graph in Fig.6 candidates were asked to describe the impacts of deforestation in Kalimantan, using evidence from Fig.6 only and to use statistics in their answer. Some just took each region and listed statistics for 1 mark max whilst others wrote about impacts of deforestation which were not shown in Fig. 6. Large numbers of candidates however scored well, noting the general overall reduction and the fact that south and/or east had a particularly large reduction. Statistics quoted were usually within tolerance for at least one of the provinces.

(ii) This question asked candidates to explain why deforestation has taken place in many areas of tropical rainforest. This question differentiated well as weaker candidates tended to focus on little more than 'using/selling wood' whilst others developed points well, noting not only the specific reasons for deforestation (e.g. road building, ranching etc.) but also the fact that in many LEDCs the forests were being cleared to pay off debts or raise funds to trigger development. All mark scheme ideas were seen here.

(c) For a named area candidates had studied they were required to describe the impacts of large scale deforestation of tropical rainforests on the local people and the local natural environment. The focus here was 'local' which was picked up by most but not all candidates. There were some excellent responses, and most did manage to enter Level 2 on the strength of a reference to destroying habitats and threatening species with extinction. Most answers were about the Amazon but a small number of excellent answers related to Indonesian rainforests, specifically to the impact on people of resettlement schemes. The precise and detailed knowledge shown in them illustrates the value of using 'local' case studies rather than textbook examples.

Question 5

(a) **(i)** Candidates were required to study the maps of Africa in Fig.7 and then select the country from a list which has the best access to both clean water and improved sanitation. The vast majority of candidates correctly identified Egypt and gained the mark.

(ii) This question required candidates to complete Fig.7 by shading the appropriate country with the correct shading for the percentage shown with access to clean water and access to improved sanitation. Most candidates shaded both countries correctly, those who did not gain full credit shaded Nigeria wrongly and sometimes put both lots of shading on the same map.

(iii) Candidates were asked to explain how sanitation can be improved in LEDCs. The most common response was 'education about......' which was valid but more was needed for the maximum credit. Better candidates referred to issues such as sewage pipes, treatment plants etc. though answers about water supply (which were then repeated in **(iv)**)and hospitals suggested that the word 'sanitation' was not well known by all candidates. However, all mark scheme ideas were seen.

(iv) This question asked candidates to describe four different ways in which water supplies can be increased in a country. Most candidates were able to gain some marks here and there were many scoring 3 or 4 marks. Some candidates lost marks through vague references to pipes and conservation strategies, which needed more precision and/or development for credit. Also there were many mentions of seawater. To use seawater for water supply it needs to have the salt removed not just be cleaned as some suggested. Most common responses were 'build dams or reservoirs, wells, collect rainwater in tanks' though all mark scheme ideas were seen.

(b) **(i)** After studying Fig.8 candidates were required to describe the changes which took place to Lake Chad between 1963 and 2001 using only evidence from the figure. Most candidates made very good use of the resource and scored 2 or 3 marks. Marks were mostly awarded for 'smaller size of lake, totally disappeared from Niger and Nigeria, vegetation where lake used to be'.

(ii) Candidates had to suggest the likely impacts of the changes to Lake Chad on local people. This question differentiated well, weak candidates simply mentioning lack of water or the need to travel further for it, whilst others looked at several issues, including the positives resulting from the creation of new land/vegetation, developing their ideas and showing good understanding. Again, all mark scheme ideas were seen.

(c) For a named country or area they have studied candidates were asked to identify a form of energy which is used and describe how its use threatens the natural environment. Most candidates could identify a form of energy used in their chosen country or area. Fuelwood/charcoal was often referred to if an LEDC was chosen and most candidates were able to achieve at least Level 2 for references to how its use threatens the natural environment as a result of deforestation. Some however made irrelevant references to impacts on people. Candidates who chose a variety of MEDCs referred typically to nuclear power or fossil fuels, the latter being more successful generally as it enabled development of ideas relating to acid rain and global warming. Surprisingly a significant number chose wind power, sometimes making the point that it has limited impact on the natural environment which then did not gain credit.

Question 6

(a) (i) Candidates were required to study the graph in Fig.9 and then mark and label a cross in the correct position to show the GDP per person and percentage of GDP from agriculture for India. Most candidates were able to correctly plot this information however some misread the scale for percentage of GDP from agriculture and were not credited.

(ii) Using Fig.9 only candidates were required to state the general relationship between GDP per person and the percentage of the GDP that comes from agriculture and support their answer with statistics. Almost all correctly stated the inverse relationship in some way, and most supported it with appropriate statistics thereby gaining the credit available.

(iii) This question asked candidates to explain why many people in LEDCs are subsistence farmers. Most candidates were able to gain some marks here. Answers commonly referred to one idea such as 'the need to feed the family or the lack of money to invest in fertilizers or machinery etc.' or 'the lack of land'. To score full marks several ideas were needed rather than such a narrow focus.

(iv) Candidates had to explain how commercial farmers in MEDCs are able to produce high yields per hectare. This was generally answered well with many candidates scoring 3 or 4 marks. References to ideas such as 'use of irrigation, fertilizers and pesticides' were very common. Although all mark scheme ideas were seen.

(b) (i) After studying the flow diagram in Fig.10 candidates were asked to explain how human actions can cause soil erosion using Fig.10 only. The flow diagram was well interpreted by most candidates and generally answers were clearly expressed with sufficient ideas for full marks. All mark scheme ideas were seen.

(ii) Here candidates were required to explain how farmers can prevent soil erosion and maintain soil quality. This question differentiated well with some excellent answers at the top end. Lots of developed references were seen to 'rotation of crops, fallowing and specific soil conservation techniques etc.' along with the more simplistic points which reversed the ideas from the previous question and suggested 'no deforestation, overgrazing or overcultivation'. Weaker candidates at least gained some marks but limited their marks by doing that.

(c) Here for a named area that candidates have studied they were asked to identify the type of farming which takes place and explain why the land is used in this way. This question was poorly answered by many candidates with many not being able to home in on an area and correctly identify a type of farming where the land use could be explained. Those who did so were able to then explain this by reference to 'climate, soil, relief, access etc.' However, this was typically only done by using simple statements. The best responses related to dairy farming in various parts of New Zealand or rice farming in various parts of Southern Asia. Some candidates developed points well for these examples referring in some detail to physical and human factors. The key to success here is to look at a small scale as many answers were just too broad and as a consequence vague and simplistic.

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 that for previous sessions, with a good balance of difficulty across the questions in *Section A*.

In *Section B*, **Question 8** was by far the most popular choice over **Question 7**.

Comments on Specific Questions

Section A

Question 1

(a) The 1:50 000 map was of Gwirawakanya, Zimbabwe. Candidates had to locate the grid square 7767 and then give two pieces of evidence for mining occurring in that square. There were in fact three possible answers: the mine name of Glandore, the quarry or excavation and the earthworks. These were all chosen with fairly equal frequency. A few candidates mentioned other features in that square and some were clearly looking at the wrong square or the area as a whole.

Similar earthworks were to be found at 773657. Candidates had to give the six figure grid reference of one of the other locations. They could have used the one at 771674, in the square that they had studied previously, but most opted for 781665 instead. As always with six figure grid references, there were a variety of common errors, particularly in the third and sixth figure.

The bearing of the dip tank at 787650 from the trigonometrical station at 785714 was 177°–180°. A few candidates missed out on a mark due to forgetting the degrees symbol.

(b) Fig. 1 drew attention to a particular area of the map. Feature A was a dam, the road at B was "road – other", while vegetation at C was seasonal marsh. Most candidates got at least two of these correct. Some candidates tried to come up with names for other types of road, but all that was needed was the word "other", which in the context of the key made sense on its own.

In part **(ii)**, candidates had to give the land use of the highest land in the same area (Fig. 1). Many incorrectly answered with cultivation, as they did not notice the highest land in the SW corner, where the height rises above 1300m, in an area of (very) dense bush.

(c) The distance by road from Harare to Bindura, via the road through Yarrowdale, was 84km, to the nearest kilometre. Candidates needed to measure across the map, the road being conveniently straight, turn the measurement into kilometres (5.6km–6km) and then add the 40km and 38km of the sections beyond either end of the section shown. Some candidates did this correctly, but a score of 1 mark was more common, as many did only part of the task, usually the measurement. 5.6km–6km was accepted since it was not necessary to round to the nearest kilometre until the final answer. Those who failed to score any marks often used only 40km and 38km, either adding

or subtracting. A couple of candidates saw the need to "show your working" and so explained exactly how they carried out the task, but this was not necessary.

(d) Most candidates successfully identified the human features of the Mazoe river valley. They pointed out the orchard/plantation, power line, huts, staff quarters, dam, furrow and track or cut line or game trail.

(e) Candidates found part **(e)** difficult, partly due to not understanding the term relief and partly due to the difficulty of describing the relief in this area, where the slopes were not particularly steep and the land not particularly high, compared to Gwirawakanya for example. The main land shape here was a ridge, running from north to south, rising to 1340 metres. The lowest point in the valley was 1240 metres. Any height between these two was good for 1 mark, though it was important to express the figure in metres. Misunderstanding of relief was common, with candidates instead commenting on various land uses.

(f) The cross-section in Fig. 3 was complete and candidates simply had to label various features. The wide tarred road was between 20mm and 23mm from the left vertical axis. Anywhere on the slope on the left was fine for the east facing slope of Gwirawakanya. Cultivation was assigned two marks and, to be awarded both, candidates had to show at least two distinct areas, including the western edge at 14mm to 16mm from the left, using the correct symbol, as given in the key to Fig. 3, placed on the section line. Some candidates missed the key in Fig. 3 and instead took the key from the map itself.

Question 2

(a) **Question 2** began with two simple map questions. Most candidates correctly identified Guangzhou as the city furthest south. The closest city to Beijing was Tianjin. There were a few mistakes with this, due to candidates looking at the position of the labels rather than the indicated locations of the cities.

(b) Chengdu and Hohhot both had showery weather. Most candidates had identified one of these and some had noted both. A few put Wuhan due to its similar symbol. Guangzhou had the highest maximum temperature at 29°C, while the lowest minimum was Hohhot at 2°C. Candidates had few problems with this.

Having familiarised themselves with Fig. 4 in the early parts of the question, candidates now had to calculate and compare temperature ranges for Lhasa and Chongqing and then give a reason for the difference. Lhasa had the bigger range (21°C – 4°C = 17°C); Chongqing's range was smaller (22°C – 20°C = 2°C). The weather symbol for the two cities showed Lhasa to have a clear sky, while Chongqing experienced cloud cover. It was possible to stop at this point and score 3 marks, provided the ranges were correctly calculated and compared. However, those who calculated without making the comparison, or compared without quoting the figures, could pick up their third mark for some further explanation, such as clouds trapping heat in the atmosphere at Chongqing or heat escaping at night at Lhasa.

The most common incorrect approach was to compare the maximum temperature at each place and then the minimum temperature at each place. Incorrect reasoning was often based on distance to the sea. Candidates had obviously not appreciated the scale of the map.

Question 3

(a) Fig. 5 showed monthly rainfall for southern England, over a period of three years. Rainfall was given, not in millimetres, but as an index figure which could be compared relative to the average of 100. In part **(i)**, candidates simply had to read off the rainfall index for November 2009. Answers of 196 to 199 were accepted. Many candidates added mm to their answer, which was still accepted, though a few put °C, which was not.

Ten months had above average rainfall. Candidates simply had to count the number of bars extending upward from the average line. Most had the correct answer. Those that did not often wrote "3" as they were only counting the three bars that fell into the zone shown by the "above average" label on Fig. 5.

To complete Fig. 5, the rainfall index of 75 for April 2009 had to be plotted. This was right next to the axis, so accuracy was not a problem, but some candidates had not understood the graph, so either plotted a bar down to 85 or a bar from 0 up to 75.

The lowest rainfall index was given by the longest bar extending downward – April 2011. Most had a correct answer for this.

(b) During the period shown on Fig. 5, the conditions were generally drier than average. This was shown by the fact that there were many bars indicating below average rainfall and many candidates were able to deduce this.

(c) Commercial farmers would be against a ban on irrigation system use for economic reasons, such as loss of income, reduced profit or just reduced output/yield. It was not enough to simply say that the crops would die, since this would apply to all farmers, rather than specifically those running a commercial farm.

Having stopped irrigation, water is saved and can be used for other purposes. Thus stocks are conserved and the remaining supply will last longer because the consumption rate is reduced. Some candidates had some good ideas here but there were also some weak answers such as "water is not wasted".

Question 4

(a) In Fig. 6 candidates had to complete the graph by drawing in the bars for bank in 2000 and in 2010, either side of the existing bar for 2006. One mark was given for the correct height of both bars and the second was for shading on the appropriate diagonal. Most candidates made a good job of this.

(b) Part **(b)** involved reading the graph. 41% of rural households were within 2km of a cashpoint in 2006. An increase in accessibility between 2000 and 2010 was found in the cashpoint, doctors' surgery and supermarket, while there was no change from 2000 to 2006 for bank, post office, primary school and secondary school. With plenty of options for right answers, most candidates were able to score all of the marks here.

(c) The percentage of households within 2km of a petrol station decreased from 2000 to 2010. Candidates were asked to suggest why this was the case. Changes to housing, such as new estates outside of 2km or loss of housing within 2km, could both cause this effect, or alternatively closure of some of the petrol stations would also result in reduced accessibility overall. Candidates found this difficult. Many hinted at reasons that might cause petrol stations to close, without actually suggesting that they had closed.

(d) By the time that they reached part **(d)**, many candidates had lost touch with what the data was actually showing. Although they wrote that 80% of rural households were within 2km of a primary school, which was higher than for the secondary school at 24/25%, when it came to giving a reason, their ideas were often more to do with numbers of people attending primary and secondary school and many wrote about reasons for secondary school dropout. Relatively few wrote valid answers such as "secondary schools are larger so there are less of them"; "older children can travel alone and travel further to a secondary school in town"; "younger children do shorter hours so parents prefer a school close to home".

Question 5

(a) Photographs A and B showed two different stages in the setting up of a new water supply system for a village in Pakistan. Most candidates realised that the large hole, along with the absence of visible surface water, indicated that the new supply was tapping into the groundwater.

In part **(ii)**, it did not matter which water sources were chosen as they all could potentially present disadvantages. The stream could easily get polluted or carry disease, depending on its use upstream. It could also be very dependent on rainfall to maintain flow. Groundwater could run out if the water table was to drop below the point at which the water was accessed. With a reservoir, silting would reduce storage capacity, water would be lost through evaporation and the water would need treating to make it safe to use. Candidates had a variety of good ideas, though there was no credit for disadvantages not related to relying on the water supply, such as relative costs.

(b)   The photographs indicated a low level of technology as the work was being done by hand and was rather labour intensive. The simple tripod and rope in Photograph A and the pipe roped to the wood, held by a rock in Photograph B, showed use of basic materials. The water pump was manual, not electric, and water containers were filled rather than piping to the point of use. Most candidates noted at least some of these ideas.

(c)   Drinking and watering crops were the correct answers to part **(c)**, there being no evidence in the photographs for an industrial machine. Most candidates had a correct answer, but they were instructed to tick two correct options and surprisingly few did this.

(d)   Most candidates appreciated the danger of needing to exert pressure on a pump, while leaning over a large hole, and suggested either filling or covering the hole, or building a wall or a rim around it to prevent accidents.

Question 6

(a)   Fig. 7 gave information about the reduction of air pollution in China. Almost all candidates had a correct answer for part **(i)**.

The options for part **(ii)** were all figures quoted in Fig. 7, so that candidates had to read carefully rather than just spotting the right number. Most candidates correctly identified 10% as being China's target for reduced nitrogen oxide emission.

Again in part **(iii)** candidates had to interpret the given information. From the sentence "nitrogen oxides are mainly released from coal-fired power stations and vehicles" they had to deduce the two fuels responsible. Coal was given but both were needed for 1 mark and many wrote "vehicles" as their second answer rather than oil or petrol or diesel.

They did identify these as fossil fuels in part **(iv)**.

(b)   The best responses in part **(b)** were those that had a combination of selected phrases from Fig. 7, along with the candidates own ideas to link it all together. China's economy is expanding, which means more industry. This industry needs power and power stations are coal-fired, meaning a dependence on fossil fuels for energy supply. Taking a different tack, the Chinese population is large so there are lots of vehicles and, as the country becomes more developed households consume more energy. Finally pollution control has already been implemented, so it is going to be hard to further reduce pollution, when much has been done already. Many candidates were able to gain 3 or 4 of the available marks here.

Section B

Question 7

(a)   It is important for candidates to realise that the question was about risk near the sea so they are unlikely to be awarded full credit for generic statements that could apply in any scenario e.g. *work in groups, take a mobile phone*, were both on the same mark scheme line for just 1 mark so that credit could be given to those who had thought about issues near the sea. *Do not go into the water*, and *wear protective clothing* were awarded marks in many answers but suggestions such as *avoid dangerous animals, only go into the water up to your knees* and *do not go near a cliff edge* (they were on the beach) showed little understanding of the context for the fieldwork.

(b)(i)   The technique is a well-used practical technique involving a tape measure, ruler and clinometer and a full description of how it works was given. Few advantages provided gained marks; most just said it was simple, easy or cheap with little elaboration. Good answers realised that a lot of information would be gained by measuring each metre and that it would be easy to draw a cross-profile with the data obtained. Most candidates gave the standard disadvantage that *human error could occur* but the best answers specified where e.g. *forgetting to add the height of their lowered tape* or *not holding the tape horizontal*. Some mentioned that the tape might not be long enough and that the metre interval could miss a slope. Overall this question was not well answered,

(ii)   Candidates stated that a single pebble would not be representative or that the chooser could apply bias by picking pebbles they liked; however not many offered viable or realistic improvements. Some suggested a large sample which would be correct but failed to add that it would only be of

use if an average size was calculated. Some thought the metre gap was too close and would mean pebbles would be of a similar size so suggested a much larger interval as an improvement. Other candidates suggested using a quadrat but went no further. Again overall this question was not well answered.

(c) (i) About 9% of candidates did not attempt plotting the two points on the graph yet almost all that did gained full credit. It is an important message to candidates that many are missing out on relatively straightforward marks where graphs require completion. It is difficult to explain why this is a common occurrence on this paper but it may be that candidates are looking for lines for responses and missing out questions where they are not present. Graph completion questions feature in every examination session so candidates must carefully read the question papers so as not to miss these. The 2nd plot was sometimes plotted at 0.9 instead of 1.1; some candidates had failed to spot the 'reverse' order of the left hand scale.

(ii) The object of this question was to look at the geographical differences between the textbook models of a beach and the one measured by fieldwork. Many candidates thought the question involved comparing the intricacies and draughtsmanship of the diagrams; not the geographical similarities and differences. Consequently many answers compared the labelling on each diagram, made erroneous judgements about distances (there was no scale on the textbook example) and stated that one diagram had a cliff but the other did not. What was required was a judgement of shapes and gradients e.g. both had three levels, both sloped, all sub-sections were concave; for differences the textbook version was steeper, the fieldwork version had flatter specified sections. Marks between 0 and 2 featured here but overall this question was the worst answered on the whole paper.

(iii) Most candidates provided the correct conclusion that the hypothesis was true or partly true. 4% of candidates did not attempt this question.

(iv) This required candidates to plot two points onto the almost complete scatter graph. This was attempted well by almost all candidates who did it; a few plotted the 2nd point at two squares up on the right hand side instead of 4 but, overall, it was done well. However it was disappointing to see that 9% did not attempt the two plots; maybe they thought that the graph looked complete and missed the question at the top of the page just above the graph.

(v) Most candidates drew the best-fit line on sensibly and gained full credit providing they had at least 4 plots on each side of the line and that their straight line touched two axes with the higher side on the left. Some candidates joined the plots up showing a lack of understanding of the idea of 'best-fit'.

(vi) It was pleasing to see that the majority of candidates supported the hypothesis and could quote at least one set of paired data close to the cliff and away from it that showed the pebble size was larger at the top. Not many gave a second set of data to further confirm the hypothesis. A few did spot anomalies with data; 1 mark was reserved for that.

(vii) The processes of swash and backwash, and destructive and constructive waves, on the distribution of pebbles across a beach was not well understood by this cohort of candidates. A few candidates realised that the large pebbles at the back could be related to strong storm waves/tides or even from the weathering of cliff debris; they also realised that subsequent sorting by a weaker backwash would only bring back the smaller pebbles towards the waves where longer contact with water might make them even smaller. Many answers referred to the impact of people walking on the beach and moving pebbles around.

(d) (i) Candidates who had knowledge of longshore drift did well on this question. They could describe the impact of prevailing winds, the oblique angle of approach of waves with material and the 90 degree return down the beach giving a zig-zag pattern that moved material along the coast. These candidates gained good credit. Some other candidates referred to or drew a zig-zag pattern for credit but did not make the link to longshore drift. Again almost 10% of candidates omitted this question or described processes of swash and backwash with no reference to the movement of material along the beach. The teaching of wave processes in transporting and depositing, and the formation of a spit are required in the syllabus; they cannot be taught effectively without referring to longshore drift.

(ii) Clearly candidates without knowledge of longshore drift were at a disadvantage in suggesting how it could be investigated in the field. This question was poorly answered by those that attempted it (14% did not attempt it). Those that did well suggested using painted pebbles at as fixed point near the water's edge then coming back after a period to measure how far they have moved. A few suggested a floating object be thrown into the sea and then to observe where it moved to. Some candidates suggested building their own groynes – not credited – but the idea of then measuring the heights of material accumulated on each side for comparison was a valid idea.

Question 8

(a) (i) The definitions of 'immigration' and 'emigration' should have been quite straightforward; most candidates could compare them by using terms such as *into/out of* however they sometimes referred to a place or area when they needed to specifically refer to entering or leaving another country – a point missed by several candidates. Emigration was often defined as migration within a country.

(ii) Push/pull factors were quite well understood by candidates. Many gave examples of each to support their dentitions but these were not necessary.

(b) (i) Most candidates understood that secondary data was data that had been produced by somebody else and most could give an example of such e.g. newspaper, census data.

(ii) There were two straightforward marks here; one for plotting the 79% just before the numbered 80% mark and one for using the correct shading from the key. The vast majority did this well for both marks however many had plotted the 21% clockwise from 12 'o' clock instead of 79% - the first figure in the table and key. These candidates could still have gained the shading mark.

(c) (i) The answer 31-50 was given by the vast majority of candidates. Most candidates were aware that the groups have to be mutually exclusive to avoid double counting and did this well.

(ii) The key to this question was to realise that it was about the inappropriateness of using any questionnaire with their families; this was not about the relevance of the questionnaire's questions. Consequently ideas that the sample would be limited, that candidates would know the answers before answering them, that the structure of the family might cause bias in the data were all valid. Reference to the family having jobs if they were migrants was more relevant to **(iv)** to follow. It was not thought that issues of privacy, embarrassment or giving untruths were valid reasons why they should not use the questionnaire with families.

(iii) Although 5% of candidates did not attempt this question where naming a sampling technique would have gained credit – those that did seemed to be aware of one of the three sampling techniques this syllabus tests i.e. Systematic, Stratified and Random. The latter one was quite popular but is the one candidates find hardest to describe e.g. they write *to go and choose a person randomly,* but they cannot use the technique's name – the answer must describe how they choose people randomly. Systematic was the most popular method and was described well.

(iv) This question was quite well done. Candidates stated that the hypotheses were about jobs and migration into Saudi Arabia so it would be pointless and a waste of time to continue with the questionnaire if they found out that they had moved for other reasons or that they had been born there.

(d) (i) What was required here was a straightforward plot at 7 of a bar to complete the graph and those that did this did it correctly to a great degree. Again a significant percentage missed this question out. Those that did complete the graph did so very well..

(ii) This was done well. Most candidates did disagree with the hypothesis and gave relevant data to support the new hypothesis that most people who migrated to Saudi Arabia did not get highly paid, skilled jobs. It was important for candidates to link their data to the hypothesis e.g. it was not enough to identify 10 maids which is the highest number of migrants – it had to be stated that this is a low paid, skilled job. The same applied to some of the low numbers e.g. 1 finance manager must be linked to the high paid, skilled job. Without that the data is being lifted off the graph without any context to the hypothesis that is being rejected.

(e) (i) Although some leeway was given in the mark scheme, the candidates needed to do three things here for each plot. They needed to use the scale to work out the width of the arrow base, it needed to start in the country and it needed to point in a direction towards Saudi Arabia. This was quite well done but 13% of candidates did not attempt the map at all. The most common problem here wasst error was to misread the scale or to have the arrow pointing in a direction away from Saudi Arabia. One clue was that the USA and Egypt had arrow widths at the same scale needed for the adjacent countries of Canada and Pakistan so candidates could have used them as a guide if they had spotted this.

(ii) Quite well done. Most candidates thought the technique was easy to read, showed the number of migrants from different countries and also helpfully indicated if the countries of origin were LEDCs or MEDCs. Some candidates read 'appropriate' as 'inappropriate' though.

(iii) Again, this hypothesis judgement was done quite well. Candidates disagreed and stated that most migrants came from LEDCS not MEDCs. Data was provided e.g. India had 10- migrants and Australia only had 1 but it was important to state whether each was an LEDC or MEDC to make sure that it did support the decision. Listing data on its own does not do this; it must be within the context of the question.

(f) Many candidates did this final question well. Those that did clearly recognised the link between pay/skills and whether the country was an LEDC or MEDC to gain full credit.

GEOGRAPHY

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Paper 2217/23

Investigation and Skills

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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 overall comparable with previous sessions. In *Section A*, candidates found **Question 3** to be the most accessible, along with **Question 1(c)**, and **Question 5(b)**. Candidates found some of the descriptive sections to be difficult, particularly when asked to describe a distribution, as in **Question 2(a)(iii)** and **Question 5(a)(ii)**. **Question 1(f)** and **Question 6(c)** were also difficult.

In *Section B*, most candidates opted for **Question 8**. Of those who had tried **Question 7**, a number had filled in answers to **Question 8** too, which obviously means that they had less time per question than if they had kept to the rubric. Answers to **Question 7** were often weak, for this reason, though candidates understood the methods required in **Question 7(a)** and usually responded correctly to the hypothesis in **Question 7(b)(iii)**. **Question 8(b)(v)** was the easiest part of this question, while **Question 8(b)(vi)** and **Question 8(d)** proved to be difficult.

When attempting the mapwork question, candidates should be reminded that the map extracts are not required by the examiner and they should be encouraged to mark on the maps as necessary to help them with the question. Thus a heavy pencil line round the edge of the areas shown in Fig. 1 and Fig. 3, and the grid squares identified in **Question 1(d)**, would help them to focus on the correct part of the map.

Comments on Specific Questions

Section A

Question 1

(a) In part **(i)**, candidates were directed to look at the Rutherdale Aerodrome Landing Area, and give the six figure grid reference of the building located there. With the grid line running through the building symbol, 460825 was the most likely correct answer, but 459825 was also acceptable. Some of the candidates had all of the right digits but had written them in the wrong order. A couple had written six grid references.

Part **(ii)** also related to the Aerodrome Landing Area, which is a distinctly linear feature, allowing aeroplanes to take off and land in a westerly or an easterly direction. WNW paired with ESE was also acceptable. Most candidates had a correct answer, but a few had a direction pair that did not match across 180°, typically east or west paired with north.

In part **(iii)**, candidates had to consider the location of the aerodrome. Most noted the flat land, giving a clear line of approach for the planes and plenty of space. Others pointed out the road access, with the proximity of populated areas, though with sufficient distance to avoid safety and noise issues.

(b) For the distance along the railway line, from the western edge of the map to the end of the line near Shamva Station, answers of between 7.0km and 7.6km were accepted. The route is quite twisty and many candidates had under measured

(c) Candidates were then directed to the area of the map shown in Fig. 1. Most correctly identified the dip tank (feature B) and the track, cut line or game trail (feature C), though some had put the adjacent boundary line for feature C as they had not taken note of the type of line on Fig. 1. Mistakes were more common for the spot height at A (1086m), with some missing metres and others using the contour lines to determine the height, resulting in an inaccurate figure.

Candidates then had to complete Fig. 1 by inserting the 1100m contour line, on the eastern side of the valley. This was checked for accuracy at the crossing of the grid lines and, for the second mark, it was necessary to indicate the tributary valleys, rather than continuing in a straight line. Almost all candidates, who attempted this, produced an accurate response. However, a very high proportion omitted the question, probably due to rushing on and not seeing the instruction, due to the lack of an accompanying answer line.

(d) In part **(d)** candidates were looking at land use in two grid squares to complete the table. Bush was found in both squares, cultivation in 4779 only, mining in 4279 only and urban in neither square. Most candidates had some of this correct but few were totally correct. This could perhaps be due to losing the correct square on the map when looking from map to question paper and back, as is necessary for a multi-part question. Candidates should be encouraged to outline the areas in pencil, when they first locate them, so that they can look away from the map, but still quickly relocate the correct area.

(e) The line X–Y was printed onto the map and three alternative cross sections were provided. The easiest approach here was to look at the three choices, and consider how they differed, and then check the differing part of the cross section with the map. The correct answer was B and most selected this. Incorrect answers usually went for C with its lower hill top.

Candidates then had to indicate the position of three features on the cross section that they had chosen. These were marked no matter which cross section was used. The wide tarred road needed to be between 50mm and 55mm from the left, the hut was 82mm to 86mm from the left and the west end of the cultivation was 17mm to 20mm from the left. The river had been labelled on each section so that the candidates had an example of how to use a labelled arrow correctly. Ideally arrows should be vertical and end on the section line. There were very few neat examples of this, though candidates were given the marks if the intended location was clear. A few candidates had not attempted part **(i)** and thus did not know where to put their answer to part **(ii)**. They should be encouraged to attempt every question, especially if optional answers are given.

(f) Candidates then had to locate the area of the map shown in Fig. 3 and describe the drainage in the area. This could best be described as radial, with the streams flowing on the medium bush land and disappearing near the edge of the cultivated land. Candidates found this quite difficult. Many were not sure which way the streams were flowing. They needed to look at the contour lines in order to work this out.

Question 2

(a) Fig. 4 showed plate boundaries, and highlighted those subject to sea floor spreading, by indicating the spreading rate. The fastest recorded rate was 185mm/yr, seen on the Nazca/Pacific boundary in the Pacific Ocean. Candidates generally found the figure but lots missed off the units of mm/yr making the figure meaningless. Most knew that sea floor spreading was a feature of a constructive boundary but they struggled to describe the distribution of the boundaries effectively. This could be done either by referring to the specific boundaries, such as west of Nazca plate/east of Pacific plate, etc., or by giving the general locations of the Indian, Atlantic and Pacific Oceans. What candidates tended to do was name the plates concerned, without indicating which boundary was subject to spreading.

(b) Location X showed converging plates, while at Y they were moving in the same direction. Most did this correctly but a small minority appeared to have X and Y the wrong way round, when it came to indicating their answer on the question paper.

Earthquakes occurred at both X and Y. Many candidates knew this and responded accordingly.

Question 3

(a) Candidates had to complete Fig. 5 to show wind from the NE on 3 days, and then state the number of days that wind was from the NW. The scale on a wind rose usually starts from the centre as zero, however a number of candidates had assumed it to begin at the first mark, and since there were no directions recording zero, with which to make comparison, and allowance was made for the alternative interpretation. Thus 5 days of wind came from the NW, but 4 was also accepted if the completion of the NE direction showed the same assumption.

The prevailing wind was from the west, and candidates generally answered this correctly.

(b) The wind rose data would be collected by a wind vane and again this was well known. In Fig. 6, location A was the best site, since B was too close to the hut, too low to the ground and sheltered by the hut and D was too close to/sheltered by the tree. A wind vane on top of the Stevenson Screen would not have suffered the same problems as at locations B and D, but most candidates assumed, as intended, that the site C was inside the screen, which would of course impede air flow. Most candidates realised that A was the best site but some struggled to effectively express their reasons in part **(iii)**.

Question 4

(a) Photograph A was of a resort in Australia. Candidates had to first write about the physical environment's attractions, such as the beach, with its calm, shallow water, the sunny weather, and the area of grass with scattered trees. Most did this quite well. Many added in a few human features too, but this did not spoil their answer.

(b) The question then moved on to consider human features, such as the hotel/apartments, the landscaping with walkways/paved paths, benches and lighting, the safe swimming area and, further away, the jetty/breakwater, pier and boats. Most candidates mentioned at least some of these, but many got distracted into writing about the activities to occupy tourists.

(c) There were lots of acceptable answers for part **(c)**, such as increased noise, increased litter, increased prices in local shops, water shortage. "More pollution" alone was too vague, as was "overpopulated" or "overcrowded". These needed clarification such as "overcrowding in restaurants". Candidates had some ideas but many were rather vague.

Question 5

(a) Most candidates correctly completed Fig. 7, with # shading in Guanajuato state. However, many found it quite difficult to describe the distribution of areas with 41–100 people per square kilometre, probably since they were quite scattered. However, this in itself was a descriptive point valid for 1 mark. "Mainly in the south" was also good for a general point. As the areas touch either a border or a coastline, description could be made in relation to those, such as "4 areas on the Pacific coast" or "one area borders Guatemala".

(b) Most candidates correctly completed the graph in Fig. 8 and many also wrote a valid description for part **(ii)**. They pointed out the slight increase to 1965 or 1970 and the decrease from 1970 to 1990. Some noted that the most rapid decrease was from 1975 to 1980. Thus the total population of Mexico was increasing slowly, and again many candidates realised this.

Question 6

(a) On Fig. 9, the data point for 1990 had been plotted from manufacturing at 43%, services at 51% and construction at 6%. This was done fairly well, with more candidates scoring full marks than is usually the case when they have to plot the data point themselves. A few only got 2 out of the 3 numbers. A quick check that the total was 100% would have avoided a mistake here.

(b) From 1990 to 2010 manufacturing decreased and services increased. Change in construction was negligible so any comments on this were not valid. Many candidates noted the obvious changes.

(c) Candidates were asked to describe a CBD in an MEDC. Good responses included mention of tall buildings, modern buildings with a high proportion of glass, lots of shops, especially high order shops, offices, government buildings and lots of traffic, pedestrians and tourists. The most common

error here was to miss the MEDC emphasis and include mention of things more relevant to an LEDC.

Redevelopment is likely to see the expansion of CBD functions into the surrounding area, as factories are replaced with commercial land use. Old housing will probably be replaced, perhaps with flats or luxury developments. The road network could also be restructured to improve traffic flow and better serve the new buildings. Candidates found this last section difficult.

Section B

Question 7

(a)   The first question produced a range in quality of response. The answers were differentiated through the amount of detail given in the description. High scoring answers showed good understanding of both methods of measuring velocity, although weaker candidates only referred to 'floating an object' and 'putting the velocity meter in the water'. Generally candidates showed better understanding of the floating objects methodology. Two common errors which were made by candidates were to write in theoretical terms about how each method works rather than describing the fieldwork methodology, and suggesting advantages and disadvantages of each method.

(b)(i)   Most candidates included at least one valid idea, most commonly human error in methodology or calculation and the float getting stuck in the channel. Few candidates suggested that method 1 only measures surface velocity, although the impact of the wind was often mentioned. An error made by a minority of candidates was to suggest advantages of using a velocity meter.

(ii)   Most candidates correctly plotted both points on the graph and joined them with a continuous line. However, a small percentage of candidates did not attempt the question.

(iii)   Most candidates correctly made a judgement that the hypothesis was correct and usually supported their conclusion with data from sites 1 and 4. Weaker answers failed to include reference to both site numbers and velocity.

(c)(i)   Answers varied in accuracy and detail. Candidates did not always include reference to measuring the length of the pebble but merely stated 'use a ruler'. Some candidates appeared to ignore Figure 3 which showed the ruler and roundness score chart, because they referred to measuring circumference with string or a tape measure and measuring weight or volume.

(ii)   Many candidates answered the question poorly. Often candidates did not recognise the possible weakness of random sampling in this situation. Candidates gained credit for understanding that random sampling may result in the selection of untypical rocks and the sample would be unreliable possibly because of bias in rock selection.

(iii)   Most candidates drew both bars correctly. The main error was using the wrong scale when plotting the roundness score. Again some candidates did not attempt to draw the bars.

(iv)   Many candidates had difficulty in providing supporting evidence. Instead they wrote general statements about the relationship instead of using data from the graphs, or referred to trends rather than individual sites. Some candidates incorrectly referred to statistics from group B in their answer rather than group A.

(d)(i)   Most candidates showed some understanding of the erosion process. The most popular reason given was attrition, but other reasons were poorly explained. Weaker candidates only explained that 'rocks are in the water longer' or 'rocks travel further' without elaborating to show any understanding of the process.

(ii)   Most candidates gave at least one valid suggestion for improving the methodology. Three popular suggestions were to repeat the measurements to check accuracy, to collect more rock samples and to test at more sites along the river. Weaker candidates gave vague answers such as 'use more accurate equipment' and 'take more measurements' without specifying what these would be.

(e)   The extension task differentiated well between candidates. Better candidates showed a clear understanding of how both width and depth could be measured at sites downstream. In contrast weaker candidates did not describe the simple measuring methodologies clearly but gave vague

responses such as 'put a ruler in the river to measure the depth' and 'use a tape to measure the width of the river' with no explanation of how the measurements would be made. Some candidates introduced irrelevant ideas such as using chains to measure the wetted perimeter and a clinometer to measure gradient.

Question 8

(a)   Most candidates could name a sampling method but many had difficulty in describing their chosen method. The most successful descriptions were usually of systematic sampling. Candidates who named random sampling found it difficult to describe it in words other than 'select at random'. Weaker candidates did not match their named method with an appropriate description.

(b) (i)   Most candidates completed the pie chart correctly. Plotting the line at 90% had to be accurate with no tolerance being given. Some candidates lost credit for incorrect shading because they did not use the key or reversing the order of the sectors.

(ii)   The question differentiated between candidates well. Most candidates chose the correct option but both distractors were chosen by significant numbers of candidates.

(iii)   Many candidates successfully completed the divided bar graph by plotting the dividing lines accurately and shading appropriately.

(iv)   Most candidates recognised that the hypothesis was false and supported their decision with appropriate data. Weaker candidates seemed to be confused between percentages living in villages and towns.

(v)   Most candidates identified three correct reasons for living in the village. A small number of candidates made the error of devising their own reasons rather than using the ones in the table.

(vi)   Candidates usually recognised that the hypothesis was true and supported their decision with data. Better answers sub-divided the percentages living in the town and living in the village to gain maximum marks.

(c) (i)   Whilst most candidates could explain 'secondary data' weaker candidates confused it with primary data or described it as data which was not used very much.

(ii)   Again most candidates gave an appropriate example of secondary data. However, a significant percentage of candidates omitted the question even though they had explained what it was in their previous answer.

(iii)   Most candidates correctly suggested a line graph or bar graph to show the population data. Incorrect answers included a histogram and pictogram.

(iv)   Candidates generally plotted the bars accurately on the appropriate axis. A small minority did not begin the bars at 0 to show the correct percentage change.

(v)   The question discriminated well and many candidates gave excellent responses. Common problems suggested related to increase in traffic, crime and noise, rise in house prices, pressure on Schools, loss of vegetation and habitats, and specific types of pollution. Weaker answers were typified by vague ideas such as 'pollution', 'land is cleared' or 'the environment is damaged', Some candidates did not understand that the village being studied is located in the UK (MEDC) and therefore suggestions such as food or water shortages were not relevant.

(d)   This question also proved to be a good discriminator between candidates of different ability. Most candidates made an appropriate suggestion of comparing the land use in 1970 with the present day. However, only better candidates then suggested the need to acquire or produce a map of present-day land use. The better candidates then went on to suggest appropriate fieldwork which could be carried out to plot and classify land use in the modern village. Weaker candidates suggested 'making a note of the changes' which is a less robust version of fieldwork. Candidates also suggested carrying out questionnaires and interviewing residents which would not be appropriate in this task. Such answers seemed pre-prepared rather than giving the actual task the thought which is required to produce a more relevant answer.