

GEOGRAPHY

Paper 9696/11
Core Geography

Key messages

- Candidates should be encouraged to use examples in all **Sections B** and **C** ten mark answers even if the question does not specifically ask for them.
- When a question requires candidates to draw and label a diagram from a photograph provided, it is essential that they draw what they see in the photograph rather than an idealised or theoretical version they remember from their course.

General Comments

Strengths in the approach to the examination continue to be found in the general descriptions of data, the understanding of the nature and impacts of migration and population development, the understanding of mechanical weathering processes (e.g. freeze/thaw) and the hydrological cycle. Much improved in this examination was the explanation of urban heat islands and of the processes of plate tectonics, although the production of landforms at different types of plate boundary remains problematic for many candidates. In human geography the causes and effects of migration were often well illustrated and the impact of changes in vital rates was often well described.

Significant weaknesses in this examination were seen in the interpretation of the photograph. Often the photograph was completely ignored in favour of a “textbook” type of interpretation coupled with a failure to recognise significant landform features. Urban processes were poorly understood as was the application of the demographic transition model to population development. The model itself was usually adequately described but its application to the demographic structures of individual countries was frequently misinterpreted.

Most candidates allocated their time between the three sections of the paper in an appropriate manner. Particularly noticeable in this examination was a lack of consistency in the quality of answers between the three sections. This had the effect of restricting the numbers of candidates who performed at the highest levels. Similarly there is often remarked distinction between candidates’ performance on physical and human geography questions. Generally, human geography questions were more successfully answered.

Comments on specific questions.

Section A

Question 1

This was by far the poorest answered question in Section A.

- (a) The better answers were those that drew the sinuous channel shown in the photograph, with narrow meander necks crossing a flat flood plain. Depositional channel features such as point bars were identified along with river cliffs. Most candidates ignored the photograph and reproduced idealised diagrams of a meandering river. On this diagram attempts were made to identify features such as riffles and pools, thalwegs and a multiplicity of oxbow lakes. None of these were evident from the photograph.
- (b) Few answers successfully explained meandering or the development of point bars and river cliffs. The nature of helicoidal flow was poorly expressed and its role in the production of channel features little understood. Development of channel features was largely seen in terms of ox bow lakes, but these features were frequently erroneously explained as the product of deposition that inhibited channel flow.

Question 2

Quite popular and generally competently answered.

- (a) The description of graphical data has improved in recent years. Most candidates accurately traced the rise and decline across the urban area on Fig. 1. It was often the simplest of points that was overlooked, such as that the overall trend of higher peak temperatures in the CBD compared with the lower temperatures in the urban periphery.
- (b) The nature of the urban heat island is now better understood than in the past, although there is still some confusion over the relative albedo of urban structures as compared to suburban/rural vegetation. Better answers additionally dealt with anthropogenic sources of heat in the industrial parks as well as the possible roles of pollution and wind.

Question 3

Popular and generally well answered.

- (a) The majority successfully identified chemical and physical weathering from Fig. 2 as well as frost weathering. Fewer candidates identified insolation weathering in C. Some candidates needed to be able to distinguish between a type of weathering and a weathering process.
- (b) By far the most successful answers were those that selected freeze-thaw and carbonation. Not only were these processes well known but also most candidates demonstrated the role of both temperature and precipitation. Those selecting hydration, insolation weathering, hydrolysis or oxidation often struggled to describe the process or to indicate the effects of temperature and precipitation.

Question 4

Popular but often indifferently answered.

- (a) & (b) Most candidates gained good credit here giving comparisons rather than writing about each table separately. A significant misread the question. These candidates either discussed both tables in their entirety or limited themselves only to Italy and China in both parts (b) and (c).
- (c) Many answers gained limited credit through a comparison of a proportion of population aged over 65 with the level of economic development of the countries. Better answers invoked the demographic transition model to explain the percentage of elderly population, but often limited the discussion to death rates. Few answers demonstrated how birth rates, levels of natural increase and the relative proportion of youthful and middle aged population could affect the percentage of population aged over 65 years.

Question 5

- (a) Better answers contrasted such areas with the “lows” such as the USA, Australia and Brazil. Some noticed that LEDCs were more common amongst the “highs”, but the “lows” included a wide range of levels of development. Some candidates struggled to find effective ways of describing the global distribution. Some simple points could have improved the quality of answers, namely that the distribution was characterised by considerable variation, even in areas of apparent concentration. Most accounts concentrated on the “highs” (20-30% size) such as in the Caribbean, Eastern Europe and the Middle East.
- (b) This was answered with some success by most candidates. Many made interesting varieties of suggestions as to why remittance money is of significance to families. Mostly these involved the relief of poverty and the provision of food and services. Many candidates made good use of examples drawn from personal observation. The best answers were those that commented on the nature of the migrant and hence the significance of remittances to both the country and the family from which they had migrated.

Question 6

- (a) & (b) Good marks were obtained by many candidates who used and manipulated the data effectively to support the trends they had identified. Some marks were lost through misreading of the figures or by starting the account in 1950 rather than 1975 as required.
- (c) Many candidates saw this as an opportunity to rehearse the push-pull aspects of rural to urban migration and thus delivered only a limited response. Better answers accepted the importance of continued migration into urban areas but set this in the context of economic development and government and international policies. Few answers, however, developed the significance of the population structure of urban areas and urban migrants that gives rise to high levels of natural increase.

Section B

Question 7

This was a popular question which was generally well answered.

- (a) (i) Most candidates gained some credit from the definitions of interception and throughflow. Some candidates needed more precision or elaboration.
- (ii) Many gained full marks by explaining the reduction in lag time and the steepened rising limb of hydrographs of circular basins as opposed to that of an elongated basin. Some candidates gave over lengthy answers containing several diagrams of basin shapes and hydrographs which was far more than was required for the three marks.
- (b) Hydrological systems in catchment areas are now well known and most candidates accurately reproduced diagrams of them. Marks could have been improved by distinguishing between inputs, outputs, stores and flows. Explanation often merely repeated the diagram in descriptive terms heavily weighted to flows above the ground surface. The nature of infiltration, percolation, stores and flows below the surface was overlooked by some and should have been included.
- (c) Answers gained credit for describing how human activities affect surface and channel flows. Subsurface flows were only mentioned in better answers which also explained the possible impacts of human activities upon stores.

Question 8

Not popular but often answered well.

- (a) (i) Condensation and convection were generally correctly defined, although some would have gained more marks by including cooling from condensation and the ascent and expansion of air from convection.
- (ii) Much difficulty is still experienced in the explanation of lapse rates and confusion was evident in the explanation of stability. Better answers employed a simple diagram showing the relationship between environmental and dry adiabatic lapse rates.
- (b) Diagrams of day and night-time energy budgets are much improved. The explanations, however, often reveal confusion as to how the atmosphere gains heat during the day and loses it at night.
- (c) There remains some uncertainty as to the nature of the greenhouse effect. Most are aware of the importance of greenhouse gases such as carbon dioxide, methane and water vapour in “trapping” heat. There is less certainty on how this process operates by allowing the ingress of shortwave radiation but absorbing significant amounts of outgoing longwave radiation. Most candidates were far happier describing the human activities that contribute to the greenhouse effect.

Question 9

This was reasonably popular but was generally the poorest in terms of quality of answers to Section B.

- (a) (i) Ocean ridges were generally accurately defined but island arcs were poorly understood. Most realised that island arcs are volcanic but do not describe them as a chain of island volcanoes produced where two oceanic plates meet.
- (ii) The process of subduction was generally well described although some candidates could have gained an extra mark by including crustal melting.
- (b) Most candidates described the convergent boundaries (continental-continental, oceanic-continental) at which fold mountains are produced. The weakness in most answers was the lack of reference to the folding of sediments that become trapped between the plates. Many wrote only about volcanic activity at the plate margins.
- (c) Questions on mass movement seem to prove difficult to candidates. Types of mass movement – falls, slides, flows and creeps were described in good answers but candidates need to explain the processes. They also would have done better if they related mass movement to the development of slopes. Candidates should be encouraged to see mass movements as an adjustment from unstable to more stable slopes that usually involves a reduction in slope angle. Much could be achieved by the use of diagrams displaying such slope features as scars, rectilinear slopes, extended slope toes and scree.

Section C

Question 10

- (a) (i) The definition of fertility rates often led to confusion between two different definitions, but most managed to gain at least two of the three marks.
- (ii) Despite some confusion between fertility and birth rates most candidates produced two adequate factors.
- (b) This was not answered very well. Better answers developed both net migration and explained how natural increase was affected by the balance between birth and death rates. Few candidates identified both factors namely natural increase and net migration. Weaker answers dealt only with birth and death rates as separate components and developed no further than stating that high birth rates give rise to large populations.
- (c) A wide range of responses were seen. Better answers were well balanced, discussing how population change can be predicted, often employing a critical assessment of the demographic transition model. They identified unpredictable events such as natural disasters or large scale migration and used example effectively. Weaker answers tended to take the view that population change was always unpredictable due to the impact of natural and human disasters.

Question 11

- (a) (i) Most candidates obtained two marks for the definition but needed to mention the “period of one year or more” for the third mark.
- (ii) There were a lot of vague answers concerning the need to develop rural areas by the provision of schools and industry. Many of the suggestions were unrealistic or repetitive. Better answers concentrated on agricultural improvement schemes, guaranteed crop prices or rural growth poles as found in Zimbabwe. This was a case where actual examples would have helped.
- (b) Many candidates received good marks by using relevant examples drawn from their own countries. Weaker answers referred only to intra-urban movements or described general push-pull factors that could apply to any type of migration.

- (c) Candidates found this an accessible and popular question producing a wide range of responses. The best answers developed push and pull factors as contributors to the decision to migrate. This was supported by good exemplification. The weakest answers gave long descriptions of push and pull factors, but made only very simple assessment. Push factors were seen as only active in forced migrations and comparison was made between voluntary migration (pull factors) and forced migration (push). Candidates should be encouraged to use examples in all **Section B** and **C** ten mark answers.

Question 12

This question was answered by comparatively so few candidates as to make any general comments invalid. The following comments are on the sort of response that might have been expected.

- (a) (i) Spatial competition can be seen as the competition between rival land users to bid for land and buildings and is usually most prominent in desirable areas in cities.
- (ii) The relatively small extent of urban areas and their high desirability and profitability. This may also be affected by planning decisions.
- (b) This was an opportunity to explore changes over time in the location of manufacturing industries in a chosen example. In most cases this will have involved decentralisation from a port, riverside or central location to more peripheral, nodal or planned location such as industrial estates or EPZs. Explanation would be largely economic but there are some social environmental or political influences.
- (c) Problems often exist with the definition of infrastructure as many candidates in the past have mistakenly seen it as general urban regeneration (e.g. London Docklands). Infrastructure means the “hard skeleton” of a city that is its transport systems and utilities such as water and power supplies. Examples from cities in the candidates’ home country can frequently be used.

GEOGRAPHY

Paper 9696/12
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GEOGRAPHY

Paper 9696/13
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Key Messages

- Candidates need to be able to give precise and detailed definitions and, where required, explanations of technical terms.
- The use of examples is an important part of this assessment. It is better to base the answer on a specific example or examples and use them to illustrate and explain. Simply writing a general answer and then putting 'e.g. Singapore' or 'e.g. Thailand' is not making use of examples and will not achieve the highest marks.

General comments

The paper proved to be accessible with a reasonable spread of outcomes. Excellent marks were achieved by a significant number of candidates from across the geographical range of Centres. The improvement in answers to the Physical Geography questions has continued, but there is still a discrepancy in calibre of answers between Physical and Human Geography. It was quite rare for all three Physical Geography questions in **Section A** to be answered. The imprecise use of technical terms continues. A good example of this is the confusion between abrasion and attrition and the complete inability to describe the nature of helicoidal flow. Also, the level of detail needed in the description of processes is often underestimated. Atmosphere and weather is still the least popular of the Physical Geography topics and continues to cause problems. The accurate use of local examples continues to impress, especially in answers to the Human Geography questions, although there was a tendency to include examples that were either not relevant or too vague. Thus, reference to Africa, without qualification, adds little to an answer.

Many candidates need to improve their understanding of command words such as 'compare', 'overall', 'relationships', 'trend' and many more. Candidates are still explaining when all that is required is description. Also, somewhat perversely, there were instances of pure description when explanation was required. This was especially true of answers to part **(b)** of **Question 1**.

Previous reports have stressed the need for all the information in the resources to be used. Although there were still many cases of limited analysis, there are signs that candidates are making better use of the resources. Some candidates need to read the question more carefully and so would avoid discussing the wrong table or the wrong data. Comments in previous reports have stressed the importance of being able to evaluate issues with convincing arguments when answering questions in **Sections B** and **C**. There were again encouraging signs of an improvement in this respect. It is worth repeating that it is very difficult to obtain a mark in Level 3 without some form of evaluation or assessment.

Overall the paper was completed by most candidates and time did not seem to be an issue. Although the planning and organisation of the questions and adherence to the rubric was somewhat better than in previous years, there is still a minority of candidates who answer all the questions in **Section A**.

Comments on specific questions

Section A

Question 1

This was the most popular of the **Section A** questions

- (a)** This proved to be a very accessible question and most candidates managed to score some marks, with a sizeable number getting all four components correct. There was some confusion over interception with vegetation being given as the answer in some cases, and throughflow was sometimes expressed as soil flow or groundflow.

- (b) This was also a very accessible question and most candidates gained some marks but others needed to provide more detail when discussing the processes. Most candidates discussed the factors one by one without realising that one factor would affect another. Percolation downward was discussed without a realisation that the amount of water reaching the groundwater store was also influenced by the amount of water moving laterally as throughflow. Thus, there were often contradictory statements. Most candidates wrote about rainfall type, vegetation cover and infiltration. It was rare to find any discussion of water movement through the soil and bedrock. Many discussions finished at the point of infiltration. There was some confusion over the terms porosity and permeability especially when referring to clay soils and rock. There was also the general impression that when soils are saturated then no water was infiltrating and percolating to the groundwater store. Water in saturated soils will continue to percolate often with greater speed. It is just the relative amounts between infiltration and rainfall that are affected. If intense rainfall closes surface pores than that is different. The failure to differentiate saturated overland flow and infiltration excess overland flow adds to the confusion. However, in general there was a good appreciation of the basin hydrological cycle.

Question 2

This was the least popular of the questions in **Section A** and was not answered well.

- (a) The two key command words in this question were 'compare' and 'trend'. The best answers were those that made a direct comparison of the trends using data and mentioning fluctuations. Many answers simply described the two graphs with no direct comparison. Data were often absent from the trend analysis and few mentioned scale and dates. Fluctuations were often described in a general way with no date information.
- (b) There were some candidates who failed to see the implications of the question with very little mention of the enhanced greenhouse effect. Some briefly mentioned the greenhouse effect but failed to explain it and relate it to the graph of temperature. Many concentrated on pollution in a very general way. If the greenhouse effect was discussed it was done so in a very simplistic way. Carbon dioxide was often the only gas mentioned and most still wrote about a 'blanket of pollution'. Some used the urban heat island as an explanation which clearly does not account for global temperature changes. Unfortunately, quite a few candidates still confuse the damage to the ozone layer with the greenhouse effect, which is very disappointing.

Question 3

- (a) This caused a few problems but was answered reasonably well. Trenches and ridges were often confused and margins were often given rather than processes or types of crust.
- (b) There were some very good answers using the correct technical terms and examples. Volcanoes being formed at converging plates and subduction zones were explained better than volcanic formation at diverging plate margins. Quite often there was just a simple statement of plates moving apart and volcanic magma suddenly appearing through the gap. The significance of convection currents was often overlooked. There was some confusion between convergent, constructive and conservative margins. A sizeable minority still believe that volcanoes occur as a result of the collision of two continental plates. Diagrams were of a mixed standard with labelling often omitted. Also, the volcanoes were often shown in the wrong place when an oceanic plate subducts under a continental plate.

Question 4

- (a) Sub-Saharan Africa was invariably chosen correctly for Part (i) but Western Asia was often suggested for Part (ii) rather than Europe.
- (b) Most candidates noted that Europe's population had a larger proportion of over 70 year olds although some disregarded the age limits set by the question and talked about all the age ranges. Often there was good use of data with specific points about the differences in female numbers and life expectancy. Some answers progressed unfortunately into explanation which was not asked for in the question.

- (c) Most answers concentrated on Europe or Sub-Saharan Africa. If Europe was chosen, most candidates noted that an ageing population was the major demographic issue. Issues of ageing were explored but the further effects of dependency in terms of long-term policies and damage to the economies of the countries concerned were not explored. In contrast, the main issue for Sub-Saharan Africa was identified as a high birth rate and a high number of young dependents. The discussion of Sub-Saharan Africa tended to move into non-demographic issues and was less structured than the answers that chose to discuss Europe. Some candidates tried to explain the reasons for the population structure which was not required.

Question 5

- (a) Invariably answered correctly.
- (b) Most answers did attempt to describe the distribution, noting two main clusters in the Middle East and South East Asia. The term 'distribution' seemed to confuse some candidates, with many simply repeating the numbers without any combination or manipulation. Many answers could have been improved by mentioning distance. A sizeable minority explained the reasons for the refugees leaving the countries which the question did not require and for which the candidates could not gain credit.
- (c) This part generally did not get answered well as too many candidates opted for the 'holiday brochure' explanation with Australia possessing lovely beaches, great nightlife, interesting wildlife, surfing, etc., reasons not likely to be a consideration for refugees fleeing from their countries. However, many did dwell on the advantages of jobs and services and a democratic political regime. Many thought that refugees would be welcomed with open arms by the Australian authorities. However, a recent report suggests that refugees may spend up to five years on offshore islands awaiting entry.

Question 6

This was a reasonably popular question that was generally answered well.

- (a) Nearly all the candidates gave the correct answer.
- (b) Most candidates identified the requirements of the question although there was confusion when quoting the data between millions and percentage figures. Absolute and relative increases were well dealt with but levels and ten year differences less so. A sizeable number of responses went on to comment on the proportions of shanty accommodation though this was not included in the question.
- (c) The reasons for the decrease in the percentage of people living in slums were often focused on the facts that death rates were high or that people did not like living in them anymore and migrated to other areas. Migration to MEDCs was often mentioned, even though it was highly unlikely that many slum dwellers would have been able to manage this. However, there were some very good responses when candidates discussed self-help schemes and redevelopment of city slums. Where specific schemes or examples of cities were included, answers showed confidence and scored highly. There seemed some confusion about what a slum dwelling might be, with some candidates suggesting that it was a rural rather than an urban problem.

Section B

Question 7

- (a) (i) Some candidates gave concise but accurate definitions of both terms. For others, abrasion was often confused with attrition. Some candidates who clearly understood what abrasion was, needed to define it in more precisely, being very vague as to how the process operated. The most common omission was to forget that the flow of water was important: abrasion will not occur without water flow. Hydraulic action was often confused with cavitation with explanations emphasising the trapping of air in cracks and joints, rather than the action of the water itself.
- (ii) Very few candidates were able to describe and explain helicoidal flow. It was most often confused with eddies and described. Some candidates realised that it was somehow related to meanders

and meander development but were not able to describe the cross-channel and downstream components of the movement.

- (b) Leveés were recognised as being depositional features found on the banks of rivers following overbank flow but detail was often lacking. Diagrams were very simplistic and unrealistic with very little accurate labelling. The reason for deposition, such as drop in velocity and competence, was often lacking and the repeated process leading to layering of sediments was only described by a few. The gradation of sediment size away from the bank was often omitted. But there were a few excellent responses enabling top marks to be awarded.

Deltas were less well understood and described. They were often described as vague features found at the mouth of a river. The process of flocculation was often missing as was any mention of the role of the sea other than being there to impede water flow. Diagrams were generally poor with limited labelling.

- (c) This question provided scope for a broad approach covering many aspects. Many candidates limited their response to a list of hard engineering techniques with afforestation being the most common soft engineering element. Reference to cases studies often helped to clarify and amplify detail and the best answers incorporated the planning, monitoring and logistical approach to the problem looking at the likely effects of responses such as rezoning settlements or allowing marshy areas to be buffer zones and flood plains to act as expansion belts for the rivers. Some candidates read the question as human activity increasing the impacts of floods.

Question 8

Although not very popular, there were some good responses.

- (a) (i) Most candidates were able to offer some relevant points about temperature inversion. Sometimes the indication that this was not a normal feature was omitted. Environmental lapse rate was generally understood.
- (ii) Most candidates knew what radiation cooling was and that it occurred at night, but the significance of clear skies in aiding the process should have been mentioned.
- (b) There was a sound grasp of the ideas that air cools as it is forced to rise over mountains leading to the associated changes of state of water vapour to water droplets. The best candidates developed this initial uplift into conditional instability possibly occurring to increase uplift looking at the differences between the respective lapse rates. Diagrams often indicated cloud formation at the wrong heights.
- (c) Many described and drew the tri-cellular model well, but then referred to pressure and the movement of the cells rather than concentrating on the wind patterns brought about by these changes in pressure. Few specific winds were mentioned and the differences in the thermal characteristics of the northern and southern hemispheres due to land/sea ratios was rarely mentioned. Better answers drew a map of the globe showing the main wind patterns and the influence of the coriolis force, but even in these answers the names of the wind systems were usually omitted.

Question 9

- (a) (i) Heave was frequently misunderstood although there was often the mention of soil creep without recognising the heave component of the process. Most candidates recognised that flows involved a more fluid movement but were unable to describe the process except in the most general terms.
- (ii) Most candidates knew what a rockfall was and were able to offer some explanation. Good marks were often awarded.
- (b) Answers to this question were polarised. Candidates either knew about granite and the way it is weathered or they did not. Thus, there were some very good answers and some very poor ones. Often there was a bias towards chemical weathering of the rock by hydrolysis with some impressive accounts. There was often little reference to the heavy jointing that might increase the surface area exposed to weathering and it was only when freeze/thaw weathering was discussed did the influence of joints become apparent. There were a few very general accounts of

weathering with only a marginal reference to granite. Candidates needed to apply their understanding of weathering to granite.

- (c) Some candidates were confused over the term 'development' of slopes. Few recognised that any slope changes could be construed as development. Many answers concentrated on afforestation and deforestation, and the building of roads and houses on slopes. Few commented about form and there was little discussion of slope faces or gradients. Answers mainly dwelt on the failure of slopes and the type of mass movement but with little explanation. Aberfan was frequently given as an example as were slope failures in Hong Kong and Rio de Janeiro

Section C

Question 10

- (a) (i) Overpopulation was described in a number of ways but the basics of too many people for the resources were well understood. Unfortunately, the mention of technology was usually absent.
- (ii) There tended to be a good focus on the need to control population numbers with family planning and the China 'one child' policy was very popular. There was occasional mention of transmigration but the ideas that resources could be increased or the role that technological changes might make, were frequently omitted.
- (b) This proved very accessible and was answered quite well. Many concentrated on the overpopulation element and the famine and deaths that would follow. The better candidates were able to add detail in terms of the types of illnesses that might be created and the longer term effect on the economy. The role of natural disasters and wars was less frequently mentioned as was discussion of mismanagement, food distribution problems and poor decision making on the part of authorities. The better candidates were able to develop their answers with excellent and sometimes detailed specific examples.
- (c) This part proved to be a challenge for many candidates. Most had some idea what optimum population was. There was a tendency to become engrossed in discussing conceptual matters in a rather nebulous way rather than making specific points. Many candidates seemed to believe that optimum population meant maximising the amount of resources rather than optimising them. The idea that it was difficult to keep the population at the optimum level with countries oscillating from over to underpopulation was discussed by many. Many candidates spent too long discussing the relative merits of the ideas of Malthus and Boserup: they needed to make the discussion relevant to optimum population. Answers that contained specific case studies, as might be expected, did best in providing some degree of clarity and focus to the points being made.

Question 11

This was a popular question with some excellent answers. Most candidates managed to score reasonable marks.

- (a) Many candidates wrote one paragraph on rural-urban migration and one paragraph on urban-rural migration when the question required a comparison. Pull factors tended to be dominant in the discussion of rural-urban migration and push factors when discussing urban-rural migration. Where a life cycle, age or wealth approach was adopted differences were more obvious and points could be more clearly expressed. A few answers concentrated on effects rather than causes. Perhaps not surprisingly, the answers tended to concentrate on LEDCs. The possible differences between LEDCs and MEDCs were rarely mentioned.
- (b) Discussion of rural-urban migration tended to be more popular than urban-rural migration. The former was usually discussed in the context of LEDCS and the latter in terms of MEDCs. There were some very good answers often with excellent case studies.
- (c) There was a marked difference in responses to this question. Candidates who had studied a specific rural settlement were able to score highly because of the detail they were able to provide. Many candidates did not possess information about a specific area and had to answer very generically. Such answers could have applied to any rural area. Thus few marks could be awarded for such an answer. There also seemed to be some confusion concerning what was a rural settlement. Some sizeable towns were chosen by some candidates believing that they were

rural settlements. Many candidates embarked on lengthy discussion about the nature of the rural settlement and not about its development issues. It needs to be stressed, that in order to get a Level 3 mark, there had to be some assessment or value judgement of the success or failure of the responses. Such assessment was often cursory with little relation to the discussion in the body of the answer. The better candidates were able to produce thoughtful balanced arguments and write evaluations based on the evidence they presented.

Question 12

This was not a popular question.

- (a) (i) Most candidates were able to produce a reasonable definition of *urban renewal*.
- (ii) This was not answered quite so well. The answers were sometimes nebulous and most concentrated on the high value notion of the central areas or outdated, inefficient land use. Specific examples might have helped improve the quality of the responses.
- (b) There were some excellent answers to this part with good, specific examples. Wealth and ethnicity tended to dominate the discussion as well as cultural aspects.
- (c) Most candidates agreed with the proposition and where case studies were used, the points could be made clearly and amplified. Most stressed the lack of space in central areas, the change in the nature of economic activities and the growth of suburbs and out of town shopping and distribution centres. There was a clear difference between candidates who only possessed limited knowledge and those with a detailed knowledge, examples and understanding of settlement dynamics.

GEOGRAPHY

Paper 9696/21

Advanced Physical Options

Key messages

- It is important that candidates are able to use detailed examples to support their answers rather than rely on generalised or theoretical responses. There has been some improvement in the use of examples, but Examiners still see general accounts with an example such as 'e.g. west coast of USA' or 'e.g. the Sahel'. It is much better to integrate the example, with specific details, into the answer.
- Most candidates apportioned their time well between the two questions chosen and between part (a) and part (b) of each question. Some, though, spent too much time on the 9 mark part (a) questions leaving insufficient time for the 16 mark part (b) questions to be answered thoroughly. Good exam technique includes apportioning time sensibly and ensuring that the answer covers all the demands of the question.

General Comments

The majority of scripts were well written and diagrams and maps generally well presented. There were very few infringements of the rubric.

The overall standard was much in line with that of recent past examinations but as usual there was a wide range and variability in quality between scripts and often within scripts. A recurring comment from Examiners was the need for candidates to consider carefully the full demand and implication of a question before putting pen to paper. 'Describe' and 'explain' should be recognised as being different commands. Too often the need to 'assess' or 'evaluate' or to consider 'to what extent' in questions was not fully addressed and in some cases ignored. Added to the importance of following the specific demands in questions was the need to achieve a proper balance between the two elements which commonly occurred within most part (b) questions. This was well illustrated in **Question 5**, the most popular question on the paper. However in part (b) there was considerable imbalance in many answers where the need to meet the demands of the two distinct sentences (as well as separate elements within each) was not met.

A frequent comment made by Examiners on individual questions was the value of well documented and detailed examples used to demonstrate appropriate knowledge and clear understanding. The candidates were reminded of this on the cover of the examination paper, as was the need to draw sketch maps and diagrams whenever they served to illustrate an answer. Attention to those aspects was reflected in the work of the better candidates. It was encouraging that this was an area where there had been some overall improvement.

Comments on specific questions

Tropical environments

Question 1

- (a) Many candidates devoted too much of their answers to defining air masses, often including those of both polar and temperate maritime and continental origins. What was little understood was that with the seasonal movement of the overhead sun, there will be a shift of the whole tricellular system of atmospheric circulation. The ITCZ is the frontal zone between tropical air masses and, for example, the tropical continental air mass, spreading out from the descending limb of the Hadley cell, will shift polewards as the ITCZ moves polewards. Examiners felt that there was a limited understanding of this element of the system, i.e. the 'C' in ITCZ being Convergence at the band of low pressure generated by the overhead sun. With this convergence there will be uplift and heavy convective rainfall. Thus as the ITCZ shifts with the movement of the thermal equator,

so too does the pattern of intermittent (afternoon) rain showers. When the ITCZ moves across the geographic equator, the tropical high pressure air mass will follow bringing a dry season. Candidates who gained good credit demonstrated clearly how movement affected climate, i.e. the seasonal pattern of areas above 5°N and 5°S of the equator, while around the equator there would be year round rainfall but with slight maxima at the equinoxes. The best answers included some appropriate and accurate climatic data.

- (b) Answers ranged from ones which repeated virtually all the information provided to others which made little reference to it. Good answers highlighted the largest clearance as 'smallholder farming' and that 'commercial logging', often thought the major destroyer of rainforests, was a third of that. Good candidates made reference to the nutrient cycle with most nutrients being in the biomass and that clearance would remove this source and that sustained cultivation of crops would require vast inputs of artificial fertilisers. Weaker answers gave soil erosion as the main impact in all types of clearance and exploitation. What was lacking in many answers was evidence of both knowledge and understanding of the ecosystem, the delicate balance between climatic input, biomass and nutrient cycling with soils inherently infertile, i.e. the fragility of what might appear a stable and luxuriant biome. The responses to the second demand to 'suggest ways that the ecosystem might be more sustainably managed', ranged from a list of actions such as; control logging by licensing, selective felling by helicopters, developing ecotourism, practising crop rotation and so on. However in better answers, candidates drew upon a well understood and documented case study, or studies, as advised in the syllabus. Some of these included selective low intensity logging where enough trees were left to maintain nutrient levels. Others explained how agroforestry, where trees and crops were grown together, could aid cultivation and with low levels of mechanisation would help preserve soil structures. Such good answers emphasised the need for sustainability.

Question 2

- (a) Good candidates recognised that chemical weathering dominated in the humid tropics to the virtual exclusion of physical types. This was because of the low range of constantly high temperatures, dense vegetation cover and deep soils protecting the underlying bedrock from physical weathering processes. However, limited physical weathering was accepted with reference to biological weathering and possible dilatation when surface cover was removed. There were good answers with candidates able to explain the role of chelation as well as the effectiveness of other chemical processes due to high temperatures and abundant water and operating below a thick regolith cover at the basal surface of weathering. Many weaker candidates produced an initial catalogue of weathering types with no restriction to the 'humid tropical environments'. Thus freeze thaw fracturing was irrelevant as were many other types of physical weathering described.
- (b) Although in past years there have been many good answers to questions on granite landforms in the tropics, the same cannot be said for limestone, i.e. tropical karst. In fact many candidates described in detail granite landforms such as bornhardts, not recognising the distinctive nature of both limestone and its associated specific landforms; either tower or cockpit karst. In other cases candidates only wrote in any detail of caverns with their stalactites and stalagmites. Such minor features hardly counted as landforms. There were some good attempts, although often drawing on temperate climate examples rather than tropical ones. However limestone pavements and well developed karren do occur in some tropical areas and credit was given for such features. Few candidates developed answers describing the distinctive character of tropical limestone areas; either tower karst scenery with its tall pinnacle like features or cockpit karst with its ranges of rounded hills and intervening soil filled basins. Explanation was required in terms of 'climate, vegetation and rock structure'. The initial vital process in the development of limestone scenery is the chemical weathering process of carbonation and most candidates recognised this. However the role of climate with its abundant rainfall and high temperatures was rarely developed, nor was the role of vegetation in providing humic acids. The significance of these factors was only recognised by a few candidates. On the positive side, most did appreciate the role of structure, notably joints in allowing the initial ingress of solutions and their subsequent widening by carbonation allowing further ingress and so on. Other structural elements included the massiveness of some limestone strata and the role of impermeable rock layers defining water tables within the limestone blocks.

Coastal environments

Question 3

- (a) There were some good responses where candidates explained that sediment was derived from rivers discharging into the coastal system, in fact the principal source, as well as from coastal erosion of cliffs. In the best answers, the transport of sediment was explained by long shore drift leading to deposition where transport is interrupted. Such answers were often supported by relevant and clearly executed diagrams showing deposition to form spits or bay head beaches and in some cases at deltas. Coastal dune systems were also explained relevantly by other candidates. Weaker candidates did not recognise the range of factors demanded by the question, i.e. that the deposition of sediment in coastal locations requires sources, transportation and deposition. Many answers focused on the role of constructive and destructive waves in building up and removing sediment from beaches, but little else. For such approaches, credit was necessarily limited.
- (b) In the better answers, candidates did focus on the conditions as demanded by the question and how far these were being threatened. They were able to present accurate detail of the limits to coral growth and survival such as temperature range, sea water depth and clarity, etc. Weaker answers had either generalised conditions or inaccurate detail. After setting out the conditions, candidates at all levels considered a range of threats, both natural and those resulting from human activities. It was the degree of realism and accuracy that differentiated. At the lower levels there was an exaggerated assessment of the impact of global warming with suggestions of rapid rises of both temperature and sea level wiping out coral colonies world wide. At the higher levels there was a considered and more accurate evaluation of how global warming is, and may, be threatening coral with evidence presented where coral bleaching was occurring. There was a wide range of human impacts given such as pollution from sewage, farm fertilisers, construction and all types of land uses leading to both chemical changes to conditions and sediment clouding water and affecting inhalation of oxygen. Again it was the degree of realistic and accurate understanding and evaluation which differentiated the quality of answers. The knock on effect on the whole coral ecosystem was considered by the better candidates supported by well chosen examples such as studies from the Great Barrier Reef. There was no specific demand in the question to consider how the threats might be managed but many candidates did extend their answers to consider this. These were relevant where they addressed 'how far the conditions were under threat' e.g. where there was attempted or effective control of threats or potential threats.

Question 4

- (a) This question required knowledge of constructive and destructive waves. This is fundamental to an understanding of how beaches develop and constantly change in both profile and form. Many candidates, although displaying a good knowledge of the nature of the different wave types with swash being stronger than backwash for constructive and vice versa for destructive waves, needed to apply this accurately to the form of beaches. There were good answers but well rehearsed statements in the texts were all too often contradicted by the diagrams that many candidates drew. Although statements that 'constructive waves build up beaches' were given, they were frequently followed by 'leading to a gentle profile and a wider beach'. Constructive waves develop on gently shelving beaches but constant pushing up of sediment steepens the profile with ridges (berms) being developed whereas the reverse is the case for destructive waves; these changes often relate to the seasonal changes of winter storms and calmer summers. Apart from the action of such waves, better candidates added that longshore drift could lead up to accumulation of beach material, that storms could throw up shingle storm beaches and some demonstrated the effect of refracted waves in bays and the different forms of bay head, pocket, beaches.
- (b) This question provided an opportunity for candidates to develop their own approach within the constraints of different rocky coastlines and how they produce different landforms. The best answers drew on specific examples to demonstrate the effect of erosional processes on stretches of coastline with contrasting rock types and structures. On a larger scale, concordant and discordant structures were shown to lead to different forms of headlands and bays with reference to actual types of rock gaining credit over those who merely recited 'hard and soft'. On a smaller scale minor structures of joints, faults and inclination of strata became important in explaining landforms such as the form of cliffs and wave cut platforms as well as more localised minor features such as caves and stacks, etc. In weaker answers there was no such organisation of material and the responses were generally in terms of listing the cave, arch, stack and stump

sequence, usually with a lack of detail of structure, rock type and processes to provide effective explanations.

Hazardous environments

Question 5

This was by far the more popular of the two questions on hazardous environments.

- (a) It seemed that, in many cases, candidates had chosen to answer this question because of the subject matter of part (b) as they had limited knowledge of the methods employed to predict earthquakes.

Characteristically, the various techniques provided in the data were described as could be deduced from the block diagram rather than from knowledge of the methods. There was very little understanding of what precisely was being measured as well as of their limitations to predict effectively. Candidates knew that seismometers measured earthquakes but few referred to minor tremors or fore shocks that might signal an impending earthquake. Nearly all candidates stated that a rise in water table would signal an earthquake whereas it might be a fall or it might be due to other factors which a few good answers mentioned. Some candidates thought a 'radon gas sensor' was a device which measured gases such as sulphur dioxide, i.e. radon gas was not itself known or its significance. There were exceptions where candidates did reveal some sound knowledge and understood the limitations of all the methods and that rarely, if ever, could an actual location or time of an event be predicted.

- (b) Answers to this second part were much better as the majority of candidates did have fundamental knowledge of the subject matter appropriate at 'A' level and some provided well balanced accurate accounts backed up with appropriately used examples. However, balance was what was lacking in many other answers as there were often protracted accounts of hazardous effects and too little attention to 'how and where earthquakes occur'. Even in the description of hazardous effects many candidates ignored, or gave little attention to, the physical hazardous effects such as ground shaking or dislocation, possible liquefaction or landslides or tsunamis. In the best answers, candidates explained that earthquakes were due to the sudden release of accumulated tension along faults associated with plate boundaries and gave relevant examples both of type and location. Similarly their approach to hazardous effects drew on examples with appropriate detail such as 'how buildings might be constructed to resist collapse' rather than just 'buildings should be constructed to resist collapse'. In the weaker answers the hazardous effects were a catalogue which could have applied to other types of hazardous environments and were not earthquake specific.

Question 6

- (a) Weaker candidates needed to 'explain the causes' rather than merely describing the nature of mass movement. Quite common were statements such as 'rainfall leads to landslides' without an explanation of how it might lubricate slip planes or increase soil mass to an extent where, with gravity and slope angle, a critical state of balance is overcome. Similarly earthquakes were often cited as causing mass movements, but again with no reference to an inherent slope condition such as an accumulated mass of rock debris. Good answers made use of examples including the common occurrence of lahars on volcanic slopes and these gained good credit when a complete explanation was provided. However many examples were only partially understood including the oft quoted Vaiont dam and Aberfan disasters.

- (b) A comprehensive range of measures were presented, with the weaker answers being mainly listings whereas in good responses there was detail, often with reference to specific examples. Weaker ones included prediction and evacuation, hardly likely or feasible in most cases but it was justified in some better answers where detailed for snow avalanche prone areas. Similarly the range of measures often brought out by candidates for other types of hazardous environments were suggested; hazard resistant buildings, prepared rescue teams, provision of shelters and so on. More sensible were measures such as landuse restriction, afforestation of slopes, effective slope drainage, bolting or netting of rock faces, fences and tree belts to deflect or hinder avalanches and slope re-grading. However it was not the number of measures which gained credit but how accurately selected ones had been described and particularly how well they had been evaluated.

Arid and semi-arid environments

Question 7

- (a) The best answers had a clear understanding of the importance of the descending limb of the Hadley cell at around 30° N and S, with its associated high pressure and temperature from descending air being adiabatically warmed. Weaker answers merely mentioned the occurrence of high pressure. Similarly the effect of cold ocean currents was only accurately explained by a few candidates although often cited as being a factor by a majority. There were some excellent answers which provided accurate description as well as showing sound explanation. Weaker answers were characterised by incomplete or inaccurate descriptions of hot arid climates with limited climatic data to support them. Even standard limits were absent from many answers, such as less than 250 mm of annual rainfall and a wide diurnal temperature range such as over 30° C daytime to less than say 5° C nocturnally. Good candidates did include these and were able to explain diurnal differences due to high daytime insolation and free nocturnal radiation due to a lack of cloud cover and surface vegetation. Similarly a significant number of candidates were able to give accurate explanations for the general characteristics of hot arid environments.
- (b) The diagram provided gave some detail of the landforms and many of the descriptions got no further than what was provided. Even though 'narrow canyon' was given in parenthesis on the diagram, very few candidates could give a valid description of wadis as steep sided and flat floored with accumulated debris which were only occasionally occupied by running water. There were generally better descriptions and explanations of alluvial fans but little detail of pediments and only an acceptable account of playas in a few answers. Flash floods were offered as the explanation for all these features by many of the candidates. Most were more comfortable writing about dunes and these dominated the content of some answers. The extent to which the landforms were a product of present day processes was poorly addressed by the majority of candidates; some recognised that dunes were still being formed, developed and moved by wind but comparatively few understood the role of an earlier pluvial period to explain the fluvial landforms. As ever, there were some very good answers where candidates did understand that much of the desert landscape can only be interpreted with reference to a much wetter past. Evidence of the well integrated dry valley systems and deep wadis, the vast sand seas derived from the regolith of earlier intense weathering under humid tropical conditions were provided in some of the best answers.

Question 8

This was the more popular than **Question 7**. Many answers to this question did not address the physical elements in both of its parts, instead concentrating on the human aspects.

- (a) Following on from the statement above, many candidates answered this question solely, or almost solely, in terms of the human impact of overgrazing, overcultivation and deforestation. Very few referred in any detail to the semi-arid climate with the unreliability of its low rainfall, its extended periods of drought and that when rain did occur it could be torrential and lead to rapid run off over baked soils. In fact in many answers there was no mention of 'semi-arid' at all. Vegetation is naturally sparse and soils are lacking in humus and both are easily degraded by both natural and human factors. Most candidates wrote well on the human causes, detailing the need for fuel and building materials from tree felling and, with rising population, the need to increase grazing and cultivation. Candidates wrote mainly about soil erosion rather than the wider aspects of environmental degradation.
- (b) There was a mixed response to this part. Many candidates did show a good knowledge of some cases of sustainable development and management. These were based on specific examples, i.e. case studies which had been well researched and learnt. As in part (a), the best of these took account of the physical constraints and difficulties posed by either the hot arid or semi-arid environment selected. In other answers it was often unclear which environment was under discussion and in many cases it was clear that examples were drawn from both. Candidates should have clearly set out the nature of the environment as sustainable management had to be within the limitations posed by it. The weak answers were written in general terms of, for example; 'irrigation', 'afforestation', 'eco-tourism', 'crop rotation', 'crop selection', i.e. appropriate headings and without a consideration of feasibility or cost or the training and administrative framework to implement them.

GEOGRAPHY

Paper 9696/22

Advanced Physical Options

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Comments on specific questions

Tropical environments

Question 1

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Question 2

- (a) Good candidates recognised that chemical weathering dominated in the humid tropics to the virtual exclusion of physical types. This was because of the low range of constantly high temperatures, dense vegetation cover and deep soils protecting the underlying bedrock from physical weathering processes. However, limited physical weathering was accepted with reference to biological weathering and possible dilatation when surface cover was removed. There were good answers with candidates able to explain the role of chelation as well as the effectiveness of other chemical processes due to high temperatures and abundant water and operating below a thick regolith cover at the basal surface of weathering. Many weaker candidates produced an initial catalogue of weathering types with no restriction to the 'humid tropical environments'. Thus freeze thaw fracturing was irrelevant as were many other types of physical weathering described.
- (b) Although in past years there have been many good answers to questions on granite landforms in the tropics, the same cannot be said for limestone, i.e. tropical karst. In fact many candidates described in detail granite landforms such as bornhardts, not recognising the distinctive nature of both limestone and its associated specific landforms; either tower or cockpit karst. In other cases candidates only wrote in any detail of caverns with their stalactites and stalagmites. Such minor features hardly counted as landforms. There were some good attempts, although often drawing on temperate climate examples rather than tropical ones. However limestone pavements and well developed karren do occur in some tropical areas and credit was given for such features. Few candidates developed answers describing the distinctive character of tropical limestone areas; either tower karst scenery with its tall pinnacle like features or cockpit karst with its ranges of rounded hills and intervening soil filled basins. Explanation was required in terms of 'climate, vegetation and rock structure'. The initial vital process in the development of limestone scenery is the chemical weathering process of carbonation and most candidates recognised this. However the role of climate with its abundant rainfall and high temperatures was rarely developed, nor was the role of vegetation in providing humic acids. The significance of these factors was only recognised by a few candidates. On the positive side, most did appreciate the role of structure, notably joints in allowing the initial ingress of solutions and their subsequent widening by carbonation allowing further ingress and so on. Other structural elements included the massiveness of some limestone strata and the role of impermeable rock layers defining water tables within the limestone blocks.

Coastal environments

Question 3

- (a) There were some good responses where candidates explained that sediment was derived from rivers discharging into the coastal system, in fact the principal source, as well as from coastal

erosion of cliffs. In the best answers, the transport of sediment was explained by long shore drift leading to deposition where transport is interrupted. Such answers were often supported by relevant and clearly executed diagrams showing deposition to form spits or bay head beaches and in some cases at deltas. Coastal dune systems were also explained relevantly by other candidates. Weaker candidates did not recognise the range of factors demanded by the question, i.e. that the deposition of sediment in coastal locations requires sources, transportation and deposition. Many answers focused on the role of constructive and destructive waves in building up and removing sediment from beaches, but little else. For such approaches, credit was necessarily limited.

- (b) In the better answers, candidates did focus on the conditions as demanded by the question and how far these were being threatened. They were able to present accurate detail of the limits to coral growth and survival such as temperature range, sea water depth and clarity, etc. Weaker answers had either generalised conditions or inaccurate detail. After setting out the conditions, candidates at all levels considered a range of threats, both natural and those resulting from human activities. It was the degree of realism and accuracy that differentiated. At the lower levels there was an exaggerated assessment of the impact of global warming with suggestions of rapid rises of both temperature and sea level wiping out coral colonies world wide. At the higher levels there was a considered and more accurate evaluation of how global warming is, and may, be threatening coral with evidence presented where coral bleaching was occurring. There was a wide range of human impacts given such as pollution from sewage, farm fertilisers, construction and all types of land uses leading to both chemical changes to conditions and sediment clouding water and affecting inhalation of oxygen. Again it was the degree of realistic and accurate understanding and evaluation which differentiated the quality of answers. The knock on effect on the whole coral ecosystem was considered by the better candidates supported by well chosen examples such as studies from the Great Barrier Reef. There was no specific demand in the question to consider how the threats might be managed but many candidates did extend their answers to consider this. These were relevant where they addressed 'how far the conditions were under threat' e.g. where there was attempted or effective control of threats or potential threats.

Question 4

- (a) This question required knowledge of constructive and destructive waves. This is fundamental to an understanding of how beaches develop and constantly change in both profile and form. Many candidates, although displaying a good knowledge of the nature of the different wave types with swash being stronger than backwash for constructive and vice versa for destructive waves, needed to apply this accurately to the form of beaches. There were good answers but well rehearsed statements in the texts were all too often contradicted by the diagrams that many candidates drew. Although statements that 'constructive waves build up beaches' were given, they were frequently followed by 'leading to a gentle profile and a wider beach'. Constructive waves develop on gently shelving beaches but constant pushing up of sediment steepens the profile with ridges (berms) being developed whereas the reverse is the case for destructive waves; these changes often relate to the seasonal changes of winter storms and calmer summers. Apart from the action of such waves, better candidates added that longshore drift could lead up to accumulation of beach material, that storms could throw up shingle storm beaches and some demonstrated the effect of refracted waves in bays and the different forms of bay head, pocket, beaches.
- (b) This question provided an opportunity for candidates to develop their own approach within the constraints of different rocky coastlines and how they produce different landforms. The best answers drew on specific examples to demonstrate the effect of erosional processes on stretches of coastline with contrasting rock types and structures. On a larger scale, concordant and discordant structures were shown to lead to different forms of headlands and bays with reference to actual types of rock gaining credit over those who merely recited 'hard and soft'. On a smaller scale minor structures of joints, faults and inclination of strata became important in explaining landforms such as the form of cliffs and wave cut platforms as well as more localised minor features such as caves and stacks, etc. In weaker answers there was no such organisation of material and the responses were generally in terms of listing the cave, arch, stack and stump sequence, usually with a lack of detail of structure, rock type and processes to provide effective explanations.

Hazardous environments

Question 5

This was by far the more popular of the two questions on hazardous environments.

- (a) It seemed that, in many cases, candidates had chosen to answer this question because of the subject matter of part (b) as they had limited knowledge of the methods employed to predict earthquakes.

Characteristically, the various techniques provided in the data were described as could be deduced from the block diagram rather than from knowledge of the methods. There was very little understanding of what precisely was being measured as well as of their limitations to predict effectively. Candidates knew that seismometers measured earthquakes but few referred to minor tremors or fore shocks that might signal an impending earthquake. Nearly all candidates stated that a rise in water table would signal an earthquake whereas it might be a fall or it might be due to other factors which a few good answers mentioned. Some candidates thought a 'radon gas sensor' was a device which measured gases such as sulphur dioxide, i.e. radon gas was not itself known or its significance. There were exceptions where candidates did reveal some sound knowledge and understood the limitations of all the methods and that rarely, if ever, could an actual location or time of an event be predicted.

- (b) Answers to this second part were much better as the majority of candidates did have fundamental knowledge of the subject matter appropriate at 'A' level and some provided well balanced accurate accounts backed up with appropriately used examples. However, balance was what was lacking in many other answers as there were often protracted accounts of hazardous effects and too little attention to 'how and where earthquakes occur'. Even in the description of hazardous effects many candidates ignored, or gave little attention to, the physical hazardous effects such as ground shaking or dislocation, possible liquefaction or landslides or tsunamis. In the best answers, candidates explained that earthquakes were due to the sudden release of accumulated tension along faults associated with plate boundaries and gave relevant examples both of type and location. Similarly their approach to hazardous effects drew on examples with appropriate detail such as 'how buildings might be constructed to resist collapse' rather than just 'buildings should be constructed to resist collapse'. In the weaker answers the hazardous effects were a catalogue which could have applied to other types of hazardous environments and were not earthquake specific.

Question 6

- (a) Weaker candidates needed to 'explain the causes' rather than merely describing the nature of mass movement. Quite common were statements such as 'rainfall leads to landslides' without an explanation of how it might lubricate slip planes or increase soil mass to an extent where, with gravity and slope angle, a critical state of balance is overcome. Similarly earthquakes were often cited as causing mass movements, but again with no reference to an inherent slope condition such as an accumulated mass of rock debris. Good answers made use of examples including the common occurrence of lahars on volcanic slopes and these gained good credit when a complete explanation was provided. However many examples were only partially understood including the oft quoted Vaiont dam and Aberfan disasters.

- (b) A comprehensive range of measures were presented, with the weaker answers being mainly listings whereas in good responses there was detail, often with reference to specific examples. Weaker ones included prediction and evacuation, hardly likely or feasible in most cases but it was justified in some better answers where detailed for snow avalanche prone areas. Similarly the range of measures often brought out by candidates for other types of hazardous environments were suggested; hazard resistant buildings, prepared rescue teams, provision of shelters and so on. More sensible were measures such as landuse restriction, afforestation of slopes, effective slope drainage, bolting or netting of rock faces, fences and tree belts to deflect or hinder avalanches and slope re-grading. However it was not the number of measures which gained credit but how accurately selected ones had been described and particularly how well they had been evaluated.

Arid and semi-arid environments

Question 7

- (a) The best answers had a clear understanding of the importance of the descending limb of the Hadley cell at around 30° N and S, with its associated high pressure and temperature from descending air being adiabatically warmed. Weaker answers merely mentioned the occurrence of high pressure. Similarly the effect of cold ocean currents was only accurately explained by a few candidates although often cited as being a factor by a majority. There were some excellent answers which provided accurate description as well as showing sound explanation. Weaker answers were characterised by incomplete or inaccurate descriptions of hot arid climates with limited climatic data to support them. Even standard limits were absent from many answers, such as less than 250 mm of annual rainfall and a wide diurnal temperature range such as over 30° C daytime to less than say 5° C nocturnally. Good candidates did include these and were able to explain diurnal differences due to high daytime insolation and free nocturnal radiation due to a lack of cloud cover and surface vegetation. Similarly a significant number of candidates were able to give accurate explanations for the general characteristics of hot arid environments.
- (b) The diagram provided gave some detail of the landforms and many of the descriptions got no further than what was provided. Even though 'narrow canyon' was given in parenthesis on the diagram, very few candidates could give a valid description of wadis as steep sided and flat floored with accumulated debris which were only occasionally occupied by running water. There were generally better descriptions and explanations of alluvial fans but little detail of pediments and only an acceptable account of playas in a few answers. Flash floods were offered as the explanation for all these features by many of the candidates. Most were more comfortable writing about dunes and these dominated the content of some answers. The extent to which the landforms were a product of present day processes was poorly addressed by the majority of candidates; some recognised that dunes were still being formed, developed and moved by wind but comparatively few understood the role of an earlier pluvial period to explain the fluvial landforms. As ever, there were some very good answers where candidates did understand that much of the desert landscape can only be interpreted with reference to a much wetter past. Evidence of the well integrated dry valley systems and deep wadis, the vast sand seas derived from the regolith of earlier intense weathering under humid tropical conditions were provided in some of the best answers.

Question 8

This was the more popular than **Question 7**. Many answers to this question did not address the physical elements in both of its parts, instead concentrating on the human aspects.

- (a) Following on from the statement above, many candidates answered this question solely, or almost solely, in terms of the human impact of overgrazing, overcultivation and deforestation. Very few referred in any detail to the semi-arid climate with the unreliability of its low rainfall, its extended periods of drought and that when rain did occur it could be torrential and lead to rapid run off over baked soils. In fact in many answers there was no mention of 'semi-arid' at all. Vegetation is naturally sparse and soils are lacking in humus and both are easily degraded by both natural and human factors. Most candidates wrote well on the human causes, detailing the need for fuel and building materials from tree felling and, with rising population, the need to increase grazing and cultivation. Candidates wrote mainly about soil erosion rather than the wider aspects of environmental degradation.
- (b) There was a mixed response to this part. Many candidates did show a good knowledge of some cases of sustainable development and management. These were based on specific examples, i.e. case studies which had been well researched and learnt. As in part (a), the best of these took account of the physical constraints and difficulties posed by either the hot arid or semi-arid environment selected. In other answers it was often unclear which environment was under discussion and in many cases it was clear that examples were drawn from both. Candidates should have clearly set out the nature of the environment as sustainable management had to be within the limitations posed by it. The weak answers were written in general terms of, for example; 'irrigation', 'afforestation', 'eco-tourism', 'crop rotation', 'crop selection', i.e. appropriate headings and without a consideration of feasibility or cost or the training and administrative framework to implement them.

GEOGRAPHY

Paper 9696/23

Advanced Physical Options

Key messages

- It is important that candidates are able to use detailed examples to support their answers rather than rely on generalised or theoretical responses. There has been some improvement in the use of examples, but Examiners still see general accounts with an example such as 'e.g. west coast of USA' or 'e.g. the Sahel'. It is much better to integrate the example, with specific details, into the answer.
- Most candidates apportioned their time well between the two questions chosen and between part **(a)** and part **(b)** of each question. Some, though, spent too much time on the 9 mark part **(a)** questions leaving insufficient time for the 16 mark part **(b)** questions to be answered thoroughly. Good exam technique includes apportioning time sensibly and ensuring that the answer covers all the demands of the question.

General Comments

The majority of scripts were well written and diagrams and maps generally well presented. There were very few infringements of the rubric. The vast majority of candidates answered questions on coastal and hazardous environments. Tropical environments might be more suitable for those Centres situated in such places, but this was still a more popular option than arid and semi-arid environments.

The overall standard was much in line with that of recent past examinations but as usual there was a wide range and variability in quality between scripts and often within scripts. A recurring comment from Examiners was the need for candidates to consider carefully the full demand and implication of a question before putting pen to paper. 'Describe' and 'explain' should be recognised as being different commands. Too often the need to 'assess' or 'evaluate' or to consider 'to what extent' in questions was not fully addressed and in some cases ignored. Added to the importance of following the specific demands in questions was the need to achieve a proper balance between the two elements which commonly occurred within most part **(b)** questions. This was well illustrated in **Question 5**, the most popular question on the paper. However in part **(b)** there was considerable imbalance in many answers where the need to meet the demands of the two distinct sentences (as well as separate elements within each) was not met.

A frequent comment made by Examiners on individual questions was the value of well documented and detailed examples used to demonstrate appropriate knowledge and clear understanding. The candidates were reminded of this on the cover of the examination paper, as was the need to draw sketch maps and diagrams whenever they served to illustrate an answer. Attention to those aspects was reflected in the work of the better candidates. It was encouraging that this was an area where there had been some overall improvement.

Comments on specific questions

Tropical environments.

This option was chosen by a very small proportion of the entry and the range of quality was limited.

Question 1

- (a)** There were a limited number of answers to this question and the level of knowledge and understanding was frequently low. The fundamental difference that 'humid tropical' climates are non seasonal whereas 'monsoon climates' are totally seasonal was not understood by the majority of candidates. Further, the basic mechanism of the monsoon system was never explained

satisfactorily; there was confusion between high and low pressure areas linked to temperature and very few references to the ITCZ were made. Basic descriptions of the climate were short on detail with no, or very limited, data.

- (b) As with part (a), Examiners found a lack of knowledge and understanding appropriate to the level required in an 'A' level examination. Of the few candidates who answered the question, the majority tended to repeat the statements given in the table. There was a lack of understanding of the significance of nutrient cycling and therefore little, if any, valid explanation of 'the extent to which the factors given might affect management'. The question required evaluation based on explanation of how the factors listed would impact on managing areas of cleared forest.

Question 2

There was a higher, though still limited, number opting for this question and the responses were somewhat better.

- (a) There were few good answers to this, most candidates were aware that soils were basically infertile and that leaching occurred but, with rare exceptions, there was a lack of knowledge of a soil profile and its characteristics. Terms such as 'oxisol', 'Al and Fe sesquioxides' and even 'red or yellow horizons' were absent from all but a few answers. In terms of explanation, there was a lack of appropriate knowledge and understanding; some mentioned leaching and there were a few cases where candidates showed some understanding of nutrient cycling and the rapid take up of nutrients from the upper soil layers to the biomass.
- (b) Most candidates appreciated that chemical weathering was dominant in humid tropical areas and some made reference to hydrolysis but without detailing its effectiveness in relation to granite. Similarly there was some understanding that landforms; such as ruwares, bornhardts and tors developed from granite but detail of deep weathering, the significance of joint patterns and the processes of stripping were required for high marks. Some valid diagrams of landforms were drawn but accompanying text was often superficial and did little to go beyond what was shown in the diagrams.

Coastal environments.

Question 3

- (a) There were many good answers where there was clear understanding of processes and of how structure and rock type influenced landforms. The best of these made use of well chosen examples with named rock types and specific types of major and minor structures. For example; differences in cliff profiles related to the dip of strata and the role of faults and joints in the development of minor landforms. In these better answers the balance between wave processes eroding and removing material and sub-aerial ones acting on cliff faces was often well demonstrated.
- A large proportion of weaker candidates felt it necessary to define all types of weathering before embarking on the question proper, where in fact there was often little reference to their influence on landforms. All candidates should know the differences between weathering and erosion and should be aware of the different processes operating on rock type and structures. The common approach in weaker answers was to describe headlands and bays from, in some cases the 'weathering' of, bands of 'hard' and 'soft' rocks followed by an account of the development of caves, arches, stacks and stumps; and that was all. Much better to use actual rock types and if that is beyond the candidate resistant and less-resistant rock are much more accurate terms than hard and soft.
- (b) It was clear that many candidates did not understand 'managed retreat' as a means of coastal management. A common approach was to describe the sequence given in the set of diagrams with little or no comment on the 'the operation of this type of management' as demanded in the question. Most candidates were keen to present 'other forms of coastal management' with which they were more comfortable rather than 'assess its effectiveness' as the question required. This usually meant hard engineering and considerable space was given to describing this with a wide range of accuracy and understanding. Some gave protracted and very detailed examples from specific stretches of coastline. Such knowledge and understanding was duly rewarded but too rarely did candidates address the demand to 'assess its effectiveness compared to other forms of coastal management'.

Question 4

- (a) There were many competent contrasts between constructive and destructive waves, many giving accurate detail of wave length, height, periodicity and the nature of swash and backwash. Many candidates, although displaying a good knowledge of the nature of the different wave types with swash being stronger than backwash for constructive and vice versa for destructive waves, needed to go on to apply this accurately to the form of beaches. There were good answers but well rehearsed statements were often contradicted by the diagrams that most candidates drew. Although statements that 'constructive waves build up beaches' were given, they were frequently followed by 'leading to a gentle profile and a wider beach'. Constructive waves develop on gently shelving beaches but constant pushing up of sediment steepens the profile with ridges (berms) being developed whereas the reverse is the case for destructive waves; these changes often relate to the seasonal changes of winter storms and calmer summer conditions.
- (b) 'Tomboles' and 'coastal dunes' were the two features with the best explanation and understanding of how they were formed. Even with tomboles, their common origin was from the extension of a spit to some offshore island which happened to be there. Although accepted, better explanations were those where an offshore feature, islet or reef, interrupted the approach of waves which were refracted leading to deposition and the build up of sediment, or, interrupted the process on longshore drift with a similar outcome. Well drawn and annotated diagrams were often helpful and well credited. Although coastal dunes were well understood, they were often treated superficially, perhaps because they were the last of the four features to be addressed? Weaker explanations were generally offered for the development of offshore bars and barrier beaches which were not infrequently confused. However there were good responses where candidates recognised the need for a gentle offshore gradient for offshore bar development coupled with breaking waves and specific examples given such as off the South Carolina coast. Only in a limited number of answers was the demand; 'To what extent can these coastal landforms be changed by physical processes and human activities' treated in any depth. Very few referred to fragility of the features and how they may change over time by the impact on them of episodic storm events. There was more detail of human activities such as the starving of sediment supply by groynes and offshore dredging. The impact of trampling affecting dunes was probably the most common impact detailed.

Hazardous environments.

Question 5

This was by far the more popular question.

- (a) Many candidates devoted too much time repeating material from the data provided at the expense of giving due consideration to addressing the question as such. Appropriate methods using different instruments or indicators were quite well known but precisely what was being measured or indicated often lacked detail. Examples to this effect were that 'tilt metres or lasers detect bulges' but that the bulge was an indication of rising magma was omitted. Similarly 'seismometers measure minor earthquakes/tremors' but many candidates went on to suggest that the earthquakes caused an eruption rather than the earthquakes being caused by rising magma. Measurements of temperature changes in ground water and gas emissions were other appropriate measurements included in the better answers. Animal behaviour was also an oft quoted indicator but without any detail of what might provoke it or. Good credit was earned not from the length of the listings but from the degree of accurate understanding. The best answers made use of examples of successful predictions other than those in the provided data. Those included successful predictions of the Mt St Helens and Pinatubo eruptions.
- (b) The best answers were those that were well balanced between the first demand to 'Describe and explain where and how volcanic eruptions occur' and the second to 'Explain why materials ejected by volcanoes are hazardous'. The first was generally competently tackled with some very good answers covering both plate boundaries and hot spots as well as explaining the mechanism of eruptions. Weaker answers were those with inaccurate detail of plate boundaries and diagrams which revealed little understanding of the processes. As ever, relevant and accurate exemplification was well rewarded. Responses to the second demand were much wider ranging in quality. Many candidates showed only a basic understanding of both the nature of the hazards as

well as how hazardous they might be. Good answers distinguished between types of lava and explained that neither posed a great threat to human life. Many knew that pyroclastic flows were extremely hazardous, but often with a poor understanding of their exact nature. Similarly there was a range of understanding as to the nature and/or hazardous impact of ash and lahars. As in answers to the first demand, good responses gained from the use of relevant examples such as the lahars from Nevado del Ruiz and ash from Pinatubo, etc.

Question 6

- (a) The 'where' in the question was much better described than the 'how' was explained. The majority of candidates provided conditions of necessary sea temperature and minimum depth as well as latitudinal limits, i.e. outside the 5° N and S belt around the equator to achieve the necessary Coriolis effect. Most answers also included an acceptable diagram. Fewer candidates were able to explain how the systems developed from tropical disturbances at low pressure centres and that, with uplift, the release of latent heat lowers the air density decreasing further the pressure which accelerates the drawing in of winds. The incoming winds, being subjected to the Coriolis force cause the system to rotate and bring in moisture which is heated and condensed to create towering clouds and releasing more latent heat to fuel the system. The hazardous nature of tropical storms was not required in this part but many candidates included it and repeated it in part (b) where only there could it be credited.
- (b) Many candidates focused immediately on an example, the most widely used being Katrina and its impact on New Orleans. Such use of an example is excellent, but the specific demand of the question needed to be addressed in a large number of the answers. Too often there were protracted accounts detailing the statistics of death and destruction without mention of the hazards causing them. In the case of New Orleans, many knew that levées were breached but not in any detail the causes. The question asked for the 'hazards associated with tropical storms' so it was necessary to provide these; high torrential rainfall, strong winds and storm surges. There was a wide range in both coverage and understanding of the methods used to prevent damage and loss of life. The best answers not only gave appropriate and relevant examples but included well balanced evaluations. Prediction and tracking of tropical storms was sensibly seen as important by many candidates and there was some good understanding of the process and problems especially of predicting which precise coastal areas might be affected. A range of other measures were covered, some appropriate to tropical storms and others falling into the 'catchall' category often provided no matter what type of hazard was the subject. Appropriate ones included provision of warning and evacuation plans as well as shelters and coastal protection against storm surges.

Arid and semi-arid environments.

There were few attempts at the questions in this environment so that generalisation can only be tentative.

Question 7

- (a) There were a few reasonable attempts at describing the climate characteristics with relevant data such as rainfall between 250 and 600 mm and a lower diurnal temperature range than hot arid regions. Explanation was weak and more suited to hot deserts. There needed to be references to seasonality related to the outer fringes of the movement of the ITCZ bringing low pressure and variable rainfall when the sun is close to overhead. As the thermal equator moves towards the equator it allows high pressure to dominate once again for the dry season. In general rainfall decreases with distance from the equator.
- (b) This was poorly attempted with little explanation of the effects of overgrazing with just one or two exceptions. The question required candidates to discuss other causes of desertification and the balance between the various factors. There was a lack of exemplification apart from a mention of deforestation in China.

Question 8

- (a) Almost all of the few responses were limited to a basic description of thermal fracturing. Even those tended to refer only to alternate expansion and contraction causing rock to break up rather than exfoliation of outer layers. There should have been mention made of granular disintegration from heterogeneous rocks and of the role of chemical weathering. Freeze thaw was erroneously included by some candidates.
- (b) Candidates were expected to have knowledge of the evidence of past pluvial periods such as the wadi systems, alluvial fans, etc. The few who answered this question knew a number of desert landforms but largely attributed their formation to the action of the wind and weathering and occasional flash floods. Consequently relevant evaluation was limited or absent.

GEOGRAPHY

Paper 9696/31
Advanced Human Options

Key Messages

- Application of knowledge of examples and /or case studies is fundamental to success.
- Skills in selecting, directing and applying learned material to the actual question set are important in answering part **(b)** of the questions effectively.

General Comments

The entry was characterised by diversity of approaches, outcomes, chosen examples and combination of Options, more so than in previous sessions. **Questions 1**, on agricultural systems, **3** on energy and **6** on tourism, were particularly popular choices. The Options *Environmental management* and *Global interdependence* continue to dominate the entry.

The Insert contained four resources of different styles, needing to be interpreted and used in different ways. Fig. 1, a systems diagram was understood well, although many candidates omitted agricultural processes (the central box) from their comparisons. Fig. 2 was treated more variably; some candidates focusing carefully on 'pattern' and offering elements of analytical description, others tending to list values, to over-generalise. It was important to pay careful attention to the different shades of grey used in order to read the tonnes oil equivalent (toe) values correctly. The pie charts in Fig. 3 were interpreted well. Some responses would have been enhanced by the inclusion of units (US\$ million) and by a technical understanding of the balance of trade. The content of Table 1 was probably unfamiliar to most candidates, yet clear in relation to key aspects of the operation of TNCs. Most found describing the characteristics shown challenging.

To enhance candidate performance in future, amongst the eight questions, there are two things to bring to attention. One is the importance of answering the actual question set, rather than one known to candidates from the course or from past papers. For example, **Question 4(b)** was about 'improving the quality of degraded environments'. Many candidates wrote about the causes of the environments' initial degradation, which was not creditable in this case. A second example is in response to **Question 6(a)**, about 'recent growth in international tourism' where candidates needed to select material that was relevant to recent years (syllabus dateline 1970 or more recently, if they chose) and which related to 'growth'. So whereas the development of attractions such as enclave resorts or ecotourism initiatives was relevant, the existence of features such as "sun, sand and sea" or "amazing wildlife" was not unless linked to growth explicitly.

The second thing to emphasise is the need for examples and/or case studies. General responses are credited but the paper's marking conventions limit the performance of generalised responses in most circumstances to a maximum of 6/10 for part **(a)** and to Level 1, 0–6/15 marks, for part **(b)**. Place is fundamental to geography and specific named locations or locational contexts are needed to do well. Examples can be used in different ways, from a simple mention; through a thumbnail of one or two sentences; to a fully developed case study. Detail, where relevant, or made relevant, is highly creditable; this might be place detail, dates, events, named initiatives, quotations e.g. from media or key stakeholders, data, etc. Examples may be used weakly in a number of ways, such as in name only "e.g. USA", or where a locational context remains implicit, often when candidates write in general terms about their own home country without saying so.

Comments on Specific Questions

Production, location and change

Question 1 was very popular with fewer responses to **Question 2** being seen.

Question 1

- (a) (i) Fig. 1 was interpreted effectively; it was skills in comparison which differentiated the quality of responses. Most candidates compared inputs best; some observed that intensive commercial farming requires energy (input) and produces waste (output), whereas extensive subsistence does not; the considerable difference in size of agricultural processes could be overlooked.
- (ii) Basic knowledge of extensive subsistence farming was rewarded. To do well, elements of analysis and critical appreciation were needed to provide the necessary explanation beyond what could be seen in Fig. 1. One advantage, for example, is that the system does little damage to the environment; one disadvantage that it needs a lot of land, when, in many contexts, there is population pressure and/or competing demands for land.
- (b) Candidates responded well and provided varying assessments of the stated view. Examiners did not expect any particular opinion and credited evidence-based argument. At best 'agricultural technology' was interpreted broadly to cover any technology from glasshouses and modern irrigation schemes to inorganic fertilisers and the genetic engineering of crops. Some responses were narrower when technology was seen only as farm machines (e.g. tractors). Some included agricultural techniques such as paddocking or crop rotation, which could not be credited. The concept of constraints was understood well. Many candidates considered infertile soils or drought conditions. Some high quality answers were seen comparing the extent to which technology frees farmers in MEDCs and LEDCs, or between different locations and/or groups of farmers within one country, usually an LEDC. Some pointed out that agricultural technology can do little to help in some contexts, such as when the land is barren, very steep, very stony, etc. One Examiner wrote of good evaluation "describing the continuing influence of natural hazards, such as drought and storm, neither of which agricultural technology can fully alleviate".

Question 2

- (a) This classic question on the influence of transport on the location of manufacturing was interpreted appropriately. There was satisfactory knowledge of the ideas of perishability, bulk, value and weight-losing and weigh-gaining materials and products. The quality of responses could often have been enhanced by the use of specific examples or by considering what are sometimes termed 'transport locations', such as ports or by railway lines and major road junctions.
- (b) Export processing zones (EPZs) are a particular type of specialist industrial location and are not simply industrial areas in general or any manufacturing industry that produces goods for export. One definition is as follows, "Type of free trade zone (FTZ), set up generally in developing countries by their governments to promote industrial and commercial exports. In addition to providing the benefits of a FTZ, these zones offer other incentives such as exemptions from certain taxes and business regulations. Also called special economic zone (SEZ)." Technical understanding of the key term was needed for an effective response. Many treated the whole country as the EPZ, which was incorrect. Some candidates took *maquiladoras* on the Mexico/USA border as an example. The best responses considered EPZ's 'success' in different ways and for different groups of people, such as the TNC, the environment, the trade bloc, workers and consumers.

Environmental management

Responses to **Question 3** dominated this Option.

Question 3

- (a) (i)** High-scoring responses made 'pattern' the focus of the description given; for example, taking MEDC/NIC/LEDC or global North and global South. A full response required some accurate data support from the key to Fig. 2 and recognition of some variation or anomalies in the pattern identified, such as Saudi Arabia in the Middle East, or South Africa within Africa. Care was needed when interpreting the map to differentiate the four shades of grey correctly.
- (ii)** Surprisingly few candidates made explicit the fundamental reason that the pattern in Fig. 2 relates to the level of economic development. Some recognised this through reference to the presence or relative absence of sectors such as manufacturing or transport. There were two misconceptions about the nature of the data in Fig. 2 which limited the reasoning here. One was that because it was 'per person' that it only showed energy for personal use by individuals (e.g. at home or running a car) whereas it was total national energy consumption divided by population. The second misconception was about 'tonnes oil equivalent' (toe) which is commonly used in the energy sector. Many candidates viewed this as meaning oil, and only oil, whereas it is a global measure of all fuels. Seeing toe as oil constrained the reasons offered.
- (b)** Successful responses explored both the changing nature of demands for energy and the success of the attempts to meet that in a full country context. Responses on one energy scheme, such as the Three Gorges Dam in China, or Kariba in Zimbabwe, whilst of some relevance, could not offer scope for a full answer. Some candidates took change over time and demonstrated what was and was not achieved at different times, or how success became failure as demands increased or as previous initiatives failed in some way, such as through poor management, governance issues or a lack of engineering know-how and maintenance. Learned material, usually about a scheme such as the Three Gorges Dam, or a source of energy production, such as wind, needed to be selected, directed and applied to the question set to be creditable. Examiners reward material which is pertinent, not simply that which is true.

Question 4

- (a)** One good approach to the issue of the supply of water was by considering factors in different dimensions: physical, e.g. rainfall patterns; social, e.g. ownership of water sources; economic, e.g. finance; and political, e.g. government schemes and policy. Other approaches were valid, for example based on recent experience of water supply in a candidate's home country, considering issues such as poor governance, outdated and broken water infrastructure, e.g. pipes, and the role of catastrophes, from drought to conflict. Much of the reasoning was firm for both these approaches. Links made to demand were more variable in relevance.
- (b)** Responses benefited from the careful consideration of the key words and key ideas in the question. These were 'a shortage of money', 'the main constraint' and 'improving the quality of degraded environments'. The 'shortage of money' could be interpreted at any scale from the individual, such as a farmer, to governments, NGOs, and supranational bodies or partnerships. In considering 'the main constraint', credit was given to evaluating other constraints, such as attitudes, literacy or education and there being other priorities from basic survival to fighting a war. Lastly, 'improving the quality of degraded environments' assumed that the chosen environments were already degraded. This did not require explanation unless the causes of the degradation could be made relevant to the issue of improving the same environment. Candidates who focused on improvement, as in the question, saved valuable time and some of them were able to go on and develop their writing as a consequence. At this level and in relation to this issue, Examiners did not expect any particular view to be taken and evaluations varied with the evidence offered and the arguments and analysis made.

Global interdependence

Any question on tourism continues to be popular in both time zones and responses to **Question 6** dominated the entry.

Question 5

- (a) (i) Candidates interpreted the two proportional divided circles effectively in terms of reading the data. Some descriptions were better focused on 'changes' than others and some benefited from a technical understanding of the term *the balance of trade* as the difference between the value of imports and the value of exports, either positive or negative. The unit used (US\$ millions) was derived from below the circles.
- (ii) A full response addressed both the change in imports and the change in exports. Some candidates only wrote about exports which was awarded a maximum of 3 marks. As the data was for an LEDC, suggested reasons for the growth of exports included the consequences of industrialisation and globalisation, such as foreign direct investment (FDI) from a transnational corporation (TNC); joining a trade bloc; discovering and exploiting a new resource, e.g. mineral or tourism destination; and other changes in the global market, such as in response to changes in demand or loss of supply from other producers. Suggested reasons for increases in imports included rising income per person, rising standard of living leading to improvement in diet and living conditions and government policy on import trade, such as the removal or lowering of tariffs. Comprehensive answers were not required and there were no marks reserved for particular reasons, allowing candidates to develop their own ideas.
- (b) The issue of why countries find it hard to get out of debt was understood satisfactorily to very well. One Examiner reported that he saw some of the best answers this session here; "many offered astute and wide-ranging reasons why countries were failing to emerge from debt, usually citing their own". Good quality responses developed two or more circumstances in some detail with a clear explanation of the financial mechanism or mechanisms involved, such as how interest rates work. Contrasts between the current debt situation of Greece, and MEDC within the Eurozone in Europe, with an LEDC, such as Haiti, one of the world's poorest countries could be very effective. Response of more moderate quality tended either to be about one set of circumstances or to produce a number of reasons without exemplification or development. out of debt were not creditable.

Question 6

- (a) Knowledge and understanding of growth in international tourism was satisfactory to good and the majority of candidates produced middle-scoring responses of 5–7 marks/10. Demand factors, such as time and affluence, and facilitating factors such as modern transport and the potential of the Internet in terms of browsing, researching and booking holidays, were known. Many candidates omitted supply factors from their answers, such as government investment in tourism as a sector or the development of resorts and attractions. High quality responses integrated examples with the description and explanation and directed their writing carefully to 'recent growth', rather than being generally about international tourism. Some linked this recent growth to factors such as the rise of the middle classes with more time and more money in China and other NICs, to the greater density of airline networks and lowering cost of flights, or to the emergence of new niche sectors such as ecotourism, adventure tourism and business tourism.
- (b) Candidates who structured their responses in the way that the question suggested, tended to do better than those who used a different framework, such as the advantages and disadvantages of tourism first for the environment and then for society. Sometimes this did not lead to the necessary overall judgement, or lack of time limited the assessment made. Examiners saw examples of all the possible angles about the stated view and marked each according to the evidence given and argument made. For example, impacts on the environment could be seen as greater in cases where degradation had occurred or habitat, flora and fauna been lost, but not so in the case of ecotourism, or some national parks if well-managed. Others put forward the opinion that social impacts are real but that society can recover and that good tourism management, from visitor education to entry restrictions so that psychological carrying capacity is not breached, makes their impacts lesser, even if felt keenly by some local people. Many candidates recognised valid positive impacts of tourism on both the environment and on society. As elsewhere on the paper, the use of

specific located examples, or a named context, such as the Costa del Sol in Spain, or Goa in India, enhanced response quality and was rewarded.

Economic transition

The two questions were chosen in approximately equal proportion.

Question 7

- (a) (i) Reading the table was within the skills of all candidates. Some found it a challenge to analyse and interpret its contents in such a way as to be able to describe 'the characteristics of the TNCs shown'. One effective approach was to summarise, for example that all are based in MEDCs, and that the number of countries they operate in vary from 15 to 77, but not in a clear order or logical way. Some candidates tried to write out the table in words, which did not identify 'characteristics'. A few confused country with TNC, so writing "Japan operates in 15 countries". Good practice in terms of data skills was to include the units (US\$ billions) when writing about total assets.
- (ii) Response quality was good in relation to the question of why TNCs operate in a wide variety of countries. The best responses were based on the twin ideas of profit-maximisation and cost reduction (labour, transport, raw materials, etc.). Strong understanding was shown of market penetration, economies of scale and competition and how these influence operating strategies. Some good use was made of examples in support of the points made, from Coca Cola to the electronic gadgetry of Nokia and Apple.
- (b) As in other places, responses which addressed the question of development directly and explicitly performed best. Many candidates' responses seemed to assume a context of development without it ever being explicit. A simple structure performed well; considering first how development is helped by TNCs and then how it is hindered. Indications of high quality were the recognition that different TNCs and/or places have different impacts and experiences; and that timescale is important, for example, when a TNC withdraws without warning, jobs are lost and the multiplier effect is suddenly reduced. The use of named examples of TNCs enhanced response quality. Examples and case studies of TNCs' operation could be deployed effectively not only to support the general line of argument but also to advance it.

Question 8

- (a) (i) Some candidates had knowledge of the two terms. Many found their meaning hard to express accurately and fully in order to gain both marks. Spread effects are the movement of economic growth or initiative out from the core into the periphery. Backwash effects are the negative impacts in the periphery of the tendency for resources, investment, labour, etc. to be drawn into the core.
- (ii) Credit was given to specific initiatives, such as rural electrification in Zimbabwe, and to generic ones, such as government investment in school-building and secondary education in peripheral areas. Better responses developed an explanation of each way, rather than just identifying a number of them.
- (b) This classic question was handled satisfactorily by some candidates. In other cases the focus of the response did not match the focus of the question and the recall of learned material, usually a case study, took over. Candidates used home country or a published example such as Italy, with its Mezzogiorno, North and 'third Italy', although some material was rather dated. It was not necessary to explain how the regional disparities had been caused or what they were, only to answer the question and assess their reduction. One, rare, indicator of quality was the use of evidence or data as part of this, such as of income per person or life expectancy.

GEOGRAPHY

Paper 9696/32
Advanced Human Options

Key Messages

- Application of knowledge of examples and /or case studies is fundamental to success.
- Skills in selecting, directing and applying learned material to the actual question set are important in answering part **(b)** of the questions effectively.

General Comments

The entry was characterised by diversity of approaches, outcomes, chosen examples and combination of Options, more so than in previous sessions. **Questions 1**, on agricultural systems, **3** on energy and **6** on tourism, were particularly popular choices. The Options *Environmental management* and *Global interdependence* continue to dominate the entry.

The Insert contained four resources of different styles, needing to be interpreted and used in different ways. Fig. 1, a systems diagram was understood well, although many candidates omitted agricultural processes (the central box) from their comparisons. Fig. 2 was treated more variably; some candidates focusing carefully on 'pattern' and offering elements of analytical description, others tending to list values, to over-generalise. It was important to pay careful attention to the different shades of grey used in order to read the tonnes oil equivalent (toe) values correctly. The pie charts in Fig. 3 were interpreted well. Some responses would have been enhanced by the inclusion of units (US\$ million) and by a technical understanding of the balance of trade. The content of Table 1 was probably unfamiliar to most candidates, yet clear in relation to key aspects of the operation of TNCs. Most found describing the characteristics shown challenging.

To enhance candidate performance in future, amongst the eight questions, there are two things to bring to attention. One is the importance of answering the actual question set, rather than one known to candidates from the course or from past papers. For example, **Question 4(b)** was about 'improving the quality of degraded environments'. Many candidates wrote about the causes of the environments' initial degradation, which was not creditable in this case. A second example is in response to **Question 6(a)**, about 'recent growth in international tourism' where candidates needed to select material that was relevant to recent years (syllabus dateline 1970 or more recently, if they chose) and which related to 'growth'. So whereas the development of attractions such as enclave resorts or ecotourism initiatives was relevant, the existence of features such as "sun, sand and sea" or "amazing wildlife" was not unless linked to growth explicitly.

The second thing to emphasise is the need for examples and/or case studies. General responses are credited but the paper's marking conventions limit the performance of generalised responses in most circumstances to a maximum of 6/10 for part **(a)** and to Level 1, 0–6/15 marks, for part **(b)**. Place is fundamental to geography and specific named locations or locational contexts are needed to do well. Examples can be used in different ways, from a simple mention; through a thumbnail of one or two sentences; to a fully developed case study. Detail, where relevant, or made relevant, is highly creditable; this might be place detail, dates, events, named initiatives, quotations e.g. from media or key stakeholders, data, etc. Examples may be used weakly in a number of ways, such as in name only "e.g. USA", or where a locational context remains implicit, often when candidates write in general terms about their own home country without saying so.

Comments on Specific Questions

Production, location and change

Question 1 was very popular with fewer responses to **Question 2** being seen.

Question 1

- (a) (i) Fig. 1 was interpreted effectively; it was skills in comparison which differentiated the quality of responses. Most candidates compared inputs best; some observed that intensive commercial farming requires energy (input) and produces waste (output), whereas extensive subsistence does not; the considerable difference in size of agricultural processes could be overlooked.
- (ii) Basic knowledge of extensive subsistence farming was rewarded. To do well, elements of analysis and critical appreciation were needed to provide the necessary explanation beyond what could be seen in Fig. 1. One advantage, for example, is that the system does little damage to the environment; one disadvantage that it needs a lot of land, when, in many contexts, there is population pressure and/or competing demands for land.
- (b) Candidates responded well and provided varying assessments of the stated view. Examiners did not expect any particular opinion and credited evidence-based argument. At best 'agricultural technology' was interpreted broadly to cover any technology from glasshouses and modern irrigation schemes to inorganic fertilisers and the genetic engineering of crops. Some responses were narrower when technology was seen only as farm machines (e.g. tractors). Some included agricultural techniques such as paddocking or crop rotation, which could not be credited. The concept of constraints was understood well. Many candidates considered infertile soils or drought conditions. Some high quality answers were seen comparing the extent to which technology frees farmers in MEDCs and LEDCs, or between different locations and/or groups of farmers within one country, usually an LEDC. Some pointed out that agricultural technology can do little to help in some contexts, such as when the land is barren, very steep, very stony, etc. One Examiner wrote of good evaluation "describing the continuing influence of natural hazards, such as drought and storm, neither of which agricultural technology can fully alleviate".

Question 2

- (a) This classic question on the influence of transport on the location of manufacturing was interpreted appropriately. There was satisfactory knowledge of the ideas of perishability, bulk, value and weight-losing and weigh-gaining materials and products. The quality of responses could often have been enhanced by the use of specific examples or by considering what are sometimes termed 'transport locations', such as ports or by railway lines and major road junctions.
- (b) Export processing zones (EPZs) are a particular type of specialist industrial location and are not simply industrial areas in general or any manufacturing industry that produces goods for export. One definition is as follows, "Type of free trade zone (FTZ), set up generally in developing countries by their governments to promote industrial and commercial exports. In addition to providing the benefits of a FTZ, these zones offer other incentives such as exemptions from certain taxes and business regulations. Also called special economic zone (SEZ)." Technical understanding of the key term was needed for an effective response. Many treated the whole country as the EPZ, which was incorrect. Some candidates took *maquiladoras* on the Mexico/USA border as an example. The best responses considered EPZ's 'success' in different ways and for different groups of people, such as the TNC, the environment, the trade bloc, workers and consumers.

Environmental management

Responses to **Question 3** dominated this Option.

Question 3

- (a) (i) High-scoring responses made 'pattern' the focus of the description given; for example, taking MEDC/NIC/LEDC or global North and global South. A full response required some accurate data support from the key to Fig. 2 and recognition of some variation or anomalies in the pattern identified, such as Saudi Arabia in the Middle East, or South Africa within Africa. Care was needed when interpreting the map to differentiate the four shades of grey correctly.
- (ii) Surprisingly few candidates made explicit the fundamental reason that the pattern in Fig. 2 relates to the level of economic development. Some recognised this through reference to the presence or relative absence of sectors such as manufacturing or transport. There were two misconceptions about the nature of the data in Fig. 2 which limited the reasoning here. One was that because it was 'per person' that it only showed energy for personal use by individuals (e.g. at home or running a car) whereas it was total national energy consumption divided by population. The second misconception was about 'tonnes oil equivalent' (toe) which is commonly used in the energy sector. Many candidates viewed this as meaning oil, and only oil, whereas it is a global measure of all fuels. Seeing toe as oil constrained the reasons offered.
- (b) Successful responses explored both the changing nature of demands for energy and the success of the attempts to meet that in a full country context. Responses on one energy scheme, such as the Three Gorges Dam in China, or Kariba in Zimbabwe, whilst of some relevance, could not offer scope for a full answer. Some candidates took change over time and demonstrated what was and was not achieved at different times, or how success became failure as demands increased or as previous initiatives failed in some way, such as through poor management, governance issues or a lack of engineering know-how and maintenance. Learned material, usually about a scheme such as the Three Gorges Dam, or a source of energy production, such as wind, needed to be selected, directed and applied to the question set to be creditable. Examiners reward material which is pertinent, not simply that which is true.

Question 4

- (a) One good approach to the issue of the supply of water was by considering factors in different dimensions: physical, e.g. rainfall patterns; social, e.g. ownership of water sources; economic, e.g. finance; and political, e.g. government schemes and policy. Other approaches were valid, for example based on recent experience of water supply in a candidate's home country, considering issues such as poor governance, outdated and broken water infrastructure, e.g. pipes, and the role of catastrophes, from drought to conflict. Much of the reasoning was firm for both these approaches. Links made to demand were more variable in relevance.
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The two questions were chosen in approximately equal proportion.

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- (a) (i) Some candidates had knowledge of the two terms. Many found their meaning hard to express accurately and fully in order to gain both marks. Spread effects are the movement of economic growth or initiative out from the core into the periphery. Backwash effects are the negative impacts in the periphery of the tendency for resources, investment, labour, etc. to be drawn into the core.
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- (b) This classic question was handled satisfactorily by some candidates. In other cases the focus of the response did not match the focus of the question and the recall of learned material, usually a case study, took over. Candidates used home country or a published example such as Italy, with its Mezzogiorno, North and 'third Italy', although some material was rather dated. It was not necessary to explain how the regional disparities had been caused or what they were, only to answer the question and assess their reduction. One, rare, indicator of quality was the use of evidence or data as part of this, such as of income per person or life expectancy.

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Advanced Human Options

Key Messages

- Application of knowledge of examples and /or case studies is fundamental to success.
- Skills in selecting, directing and applying learned material to the actual question set are important in answering part **(b)** of the questions effectively.
- Careful reading of the question and doing as it says, matters, for example where a direction is given about spatial scale, e.g. '**one** country', or time scale, e.g. 'over the next 20 years'.

General Comments

Responses to **Question 3** on energy and **Question 6** on tourism dominated the entry. There were small numbers of responses to all other questions, including **Questions 4** and **5**, the alternative questions in the two most popular Options, *Environmental management* and *Global interdependence*.

The resources contained in the Insert were, as usual, varied in style and familiarity. There was little evidence of candidates having difficulty interpreting them. Both models (Figs. 1A and 1B and Fig. 3) required careful close reading and application to a known context. The pie chart in Fig. 2 was interpreted well and some candidates provided analytical description involving simple calculation, for example that 66.6% electricity was generated from non-renewable sources (totalling coal, gas and oil). Fig. 4 was interpreted effectively using the key common to the two maps, perhaps in part because the patterns of foreign direct investment (FDI) into China was dramatically different visually in 2006 from that in 1992.

Time spent during the course in developing skills of resource reading and interpretation is fundamental to success as a geographer in 9696 examinations. A hierarchy of skills is needed. It starts with the ability to describe, as in **Question 3(a)(i)**, literally to find the words to "say what you see". It continues with the ability to compare, as in **Question 8(a)**, where 'changes' had to be identified; and with the ability to explain or suggest reasons for what is observed. At the upper end of the hierarchy of skills is the ability to apply and assess the application of the resource to a context, especially when a model is involved, as in **Question 6(b)**. For this, candidates need the vocabulary with which to express assessment and the ability to come to an overall judgement based on the evidence they have given.

Candidates were well-prepared for this examination and there was little evidence of rubric errors or of the serious mismanagement of time. One Examiner commented that a good use of a little time would be for more candidates to plan their responses before starting to write.

Comments on Specific Questions

Production, location and change

Question 1

Few responses were seen to this question.

- (a)** Distance from markets for agricultural production has decreased in significance over time. One approach to making an effective answer was to combine some of the classic considerations, such as perishability, bulkiness, or the value of products, with one or more contemporary observations relating to the global market for many agricultural products. Better responses integrated examples with the description and explanation. Some simple examples such as comparing production and marketing of fresh vegetables with rice in a named country in Asia, performed well.

- (b) The concept of an agricultural system (inputs, throughputs, subsystems and outputs) is a key part of the syllabus, along with the study of one arable system and one pastoral system. Most candidates approached this part-question at the level of knowledge of one or more agricultural systems, rather than at the higher level of conceptual understanding of agricultural systems in general. This rather limited the ability to provide an effective assessment and produced some responses where factual knowledge was displayed rather than skills in assessment and providing evidence-based arguments. Assessments that are largely unsupported, where an opinion is given to respond to the question, but without the necessary evidence and arguments, are usually rewarded in the upper range of Level 1 (0–6/15 marks).

Question 2

Very few responses were seen. Most candidates who chose this question appeared to depend heavily on the resources to gain marks in part (a) and provided recall knowledge in (b) which was not always relevant to the actual question set.

- (a) The description, in which candidates said what they could see in Figs. 1A and 1B, was of higher quality than the explanation. The products mentioned tended to be those given in the stem of the question ‘a new design of car or the latest personal computer (PC)’. There was some mention of Apple. Fig. 1B was interpreted better than Fig. 1A. Some candidates confused the visual scale of Fig. 1B, in which the size of the boxes indicated the scale of the inputs, with 1 being the greatest and 3 the least. Some sensible comments were made, for example contrasting inputs of management and of capital over time.
- (b) The issue of changing location is fundamental to this Option. Credit was given for relevant factors, even when simply expressed, such as “they have to move near to the customer” or “(car) manufacturers start to make their industries in LEDCs to save cost of production”. Responses need exemplar detail and developed explanations to achieve Level 2 marks and higher.

Environmental management

Question 3

The majority of candidates answered this question.

- (a) (i) Fig. 2, a pie chart, was interpreted well by almost all candidates; it was the quality of the description which varied. The best responses ‘stood back’ from the diagram to provide one or more elements of analytical description with data support, such as “coal, at 40.8%, which is 2 fifths, dominated electricity generation in 2006”, or “the only significant non-renewable was hydro (HEP) producing 16.4%”. At the lower end, candidates did say what they could see, in simple terms, sometimes providing a list or writing out the data in words. One creditable point was to suggest what sources ‘other’ might have covered, such as geothermal, wind, tidal, solar, etc.
- (ii) After the straightforward demand of (i), this was more challenging in requiring candidates to draw on their knowledge and understanding of global trends in electricity generation and to make reasoned suggestions predicting change in the sources of energy shown in Fig. 1A over the next 20 years. All candidates had something sensible to say and this was answered satisfactorily to superbly with many candidates achieving 6 or 7 marks of the total 7. The best responses showed some appreciation that expectations vary, for example pointing out that attitudes to nuclear power differ, some hailing it and its potential as the way forward, others more cautious than ever after the Fukushima disaster in 2011. One other indicator of quality was to integrate detail, for example data or named schemes and initiatives, into the response. Responses across the spectrum of quality agreed that the overall proportion of electricity generated from non-renewable sources will decrease, because of issues including resource depletion and concerns over global warming; and that the proportion generated by renewables will increase.

- (b) This part-question integrated the element of sustainable energy supplies from Syllabus 2.1 with the case study from Syllabus 2.2. Response quality was differentiated on the basis of four things: the level of detail and accuracy of knowledge of the chosen country's energy strategy; conceptual understanding of sustainability; the scope and development of the evaluation offered; and the ability to structure the piece of extended writing. The full range of answer quality was seen and some candidates produced exceptional work rewarded with full marks. For others response quality would have been enhanced by approaching the question at the appropriate scale. Some took a single named located scheme, such as the Three Gorges Dam in China, or one source of energy such as wind in a particular country. Both of these approaches were inadequate given that the wording of the question was 'the overall energy strategy of **one** country'. Further credit could also have been derived by developing the evaluation offered. For example, some candidates provided a single basic evaluative comment such as 'to a certain extent'. One Examiner reported that some candidates tended "to concentrate upon the maintenance of supply at the expense of environmental sustainability" that the question required.

Question 4

Few responses were seen. Responses to (b) tended to be of equal or higher quality than to (a).

- (a) One effective approach was to explain a few 'issues' in LEDCs before explaining one or more issues in MEDCs, integrating exemplar support in the writing. For example, in LEDCs there are health issues relating to the quality of water supply, with contaminated water being unsafe to drink for millions of people worldwide. In MEDCs, pollution of water supplies by manufacturing industry, the overuse of chemical fertilisers in agriculture or from leaks, accidents and the failure of aged water infrastructure, is an issue. Some good use was made of local examples, for example relating to Kampong Ayer in Brunei or water services in cities such as Delhi and Lahore.
- (b) Candidates were rewarded for their knowledge of examples of pollution, land, air and water, or any combination of these. Responses in which the focus of the question, on trends over time, was the focus of the writing, and in which knowledge recall did not take over, performed better. Some candidates made the point, creditably, that it is hard to judge trends over time when a situation is large-scale and complex, such as in a major city or river system. The quality of the explanation(s) offered helped to differentiate response quality. Better responses tended to be multi-dimensional (physical, social, economic and political factors) and to recognise that on-going and systemic reasons for pollution are more important in most cases than one-off events and accidents however significant these are at the time. Some good use was made of recent events such as the clean-up operation after the Exxon Valdez disaster in 1989 (marine water pollution) and the preparations for the Olympic Games in Beijing in 2008 (air pollution).

Global interdependence

Question 5

There were few responses on which to base these comments.

- (a) An effective response addressed both elements of the question, although not necessarily in a balanced manner. As a general response could perform well, the usual maximum of 6 did not apply. Many candidates integrated examples into their response to good effect and provided sound reasons why trade works to advantage some more than others. Knowledge and understanding of Fair Trade could be enhanced through accessing websites such as <http://www.fairtrade.org.uk/>. Learners could be encouraged to make a study of one product which is traded fairly, such as tea or cotton, or one Fair Trade initiative by an NGO (non-governmental organisation).

- (b) Some knowledge was shown of trade in relation to globalisation. Only a few candidates had sufficient knowledge and understanding of the concept of the global market to provide a satisfactory response. Some good work was seen on favoured nation status in relation to trade with China and on the impact of trade blocs, for example how New Zealand's trade with Britain was changed by Britain's entry to the EEC, now European Union (EU). The best demonstrated an element of global interdependence, as expressed by one candidate in the following way:

"Changes in the global market are severe and far-reaching. If one country receives a positive/negative economic boost then the effect is felt by their trading partners as well."

Question 6

The majority of candidates answered this question. Questions on tourism are very popular and some excellent responses were seen.

- (a) Demand factors, supply factors and facilitating factors are well-known and well-understood by many candidates. Of these three, it was supply factors, such as investment by governments in tourism development, or the action of international hotel chains in developing resorts and attractions, which were most often omitted. One inadequate interpretation of 'factors' as they relate to tourism was as 'attractions'. Comprehensive responses were not required for high marks and nor were examples, although many candidates integrated examples in to their writing naturally and creditably. The best responses demonstrated some linking together of factors; offered an overall global perspective on growth in the sector specifically, rather than international tourism in general; and provided some data to support the description, for example of change in the value of tourism earnings or number of tourists.
- (b) This part-question required the application of a model not specified in the syllabus, which was likely to be unfamiliar to many candidates, to one chosen tourist area or resort of which a detailed study had been made. Skills in the selection, application and direction of learned material to the actual question set were key to success. From the manner in which some responses were constructed, it was clear that some lower-skilled candidates were prepared to answer a question on a different model, that of the tourism life cycle, and had only partial success in addressing this allied, but different, theoretical context. In successful responses the focus was on 'local people's attitudes' and how they change. Many candidates did well to structure the whole response as an assessment and the very best identified aspects of the model in Fig. 3 which did apply and which did not apply in the chosen context. For example, in some tourist destinations impacts and behaviours identified under Euphoria, Apathy and Annoyance were explained, whilst intervention and good management, maybe involving visitor education, had averted the full conflict scenario envisaged in the fourth stage, Antagonism. One concise and explicit summary of an assessment which was awarded full marks, concluded a response on a tourist resort on North Island, New Zealand, in the following way:

"Overall the model matches the reality of Rotorua's tourism loosely with the first two stages corresponding to parts of Rotorua's development, the third matching only a few aspects and the fourth not at all."

Economic transition

Question 7

Few responses were seen on which to base these comments.

- (a) This question was answered satisfactorily using a core and periphery approach in a modest way. The dynamic was known and understood. Answer quality could have been enhanced by the use of technical terms such as *initial advantages*, *cumulative causation* and *spread effects*.

- (b) Knowledge of measures, both of single criterion measures and multiple criteria measures such as the human development index (HDI) itself, was satisfactory to inaccurate. Answer quality would have been enhanced by making the treatment a true examination, the command word being 'Examine', rather than a description of a number of measures; and by the use of examples to help show which measures were more or less effective and why. For example, income per person may appear to be high in an oil-rich country in the Middle East where economic inequality is high because of the existence of a small elite wealthy ruling class, and where social inequality is high.

Question 8

Few answers were seen to this question. Candidates who chose this question appeared to depend on Fig. 4 to achieve some marks in part (a) and to have little knowledge and understanding with which to answer part (b).

- (a) Description was in greater detail than the reasons suggested. A good description covered three types of changes: increase in number of flows/sources of FDI; increase in scale; increase in the spatial spread of sources of FDI; with some data support from the maps for each element. Reasoning stemmed from an understanding of globalisation and changes in the global economy. Some only got that far in the reasons offered. A few made comments on the significance of the emergence and growth of China as an NIC, China being the focus of Fig. 4.
- (b) This broad question proved to be both permissive, in allowing candidates to develop their own explanation and assessment, and challenging in terms of the analytical thought it required to provide an effective response. Key ideas included profit-maximisation, cost-reduction, competition and markets, market penetration and finding new markets. Responses tended to interpret 'activity' only as manufacturing production. A fuller response would have been to consider different functions such as the HQ, R&D, manufacturing/assembly, distribution and marketing, etc. Some made the good point that some countries, such as Bhutan and North Korea, are almost separate from the global economy as a matter of government policy, whilst in other countries, for example in ASEAN, governments offer financial incentives to attract TNC activity. .