Cambridge International Advanced Subsidiary Level and Advanced Level
9696 Geography June 2013
Principal Examiner Report for Teachers

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GEOGRAPHY

> **Paper 9696/11**
> **Core Geography**

General comments

The paper was a good and fair test of candidates' knowledge and understanding at this level and across the range of geographical concepts. It proved to be an accessible paper which resulted in a very satisfactory outcome with a good spread of marks. Excellent marks were achieved by a significant number of candidates from across the geographical range of centres. As noted last year, there has been a continued improvement in answers to the Physical Geography questions but the discrepancy in calibre of answers between Physical and Human Geography still exists. Atmosphere and Weather continues to be the least popular option in both *Section A* and *Section B*, thus it was uncommon 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 incorrect interchange of the concepts of weathering and erosion. As noted later, the misunderstanding of the various plate boundaries and the processes involved is rife. 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.

Many candidates still do not appreciate command words such as 'compare', 'overall', 'relationships', 'trend' and many more. Description of patterns appears to cause difficulties. Many candidates simply list everything without providing a general synthesis. Candidates are still explaining when all that is required is description. Also, there were many 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. However, some candidates do not read the question carefully enough and discuss the wrong table or the wrong data. Comments in previous reports have stressed the importance of being able to evaluate issues with cogent 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 a major issue. 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)   The response to this question was very mixed. There were many excellent labelled hydrographs showing the main differences between drainage basin X and Y. Thus, many candidates received full marks for their efforts. However, the accuracy and detail of many of the hydrographs was disappointing. The most common error was to make the rising and falling limbs of basin X too steep. Quite a few candidates forgot to demonstrate that there would be a major difference in the peak discharges. Lag times were often ignored, sometimes labelled incorrectly and the difference in the lag times was not emphasised enough.

(b)   Answers to this part of the question were a prime example where explanation was often sacrificed to description. Many candidates simply described the features they had shown on the hydrographs with no explanation. Explanations for the characteristics of the hydrograph for basin X were mainly in terms of interception reducing the amount of water reaching the river. Increased infiltration was

sometimes mentioned but not always. Explanations for the characteristics of the hydrograph of basin Y were often missing or couched as the simple reversal of the reasons for basin X. Potential increased runoff was sometimes mentioned but with little explanation as to why it might occur. Occasionally increased compaction of soils was offered as an explanation which was perfectly acceptable. The unbalanced nature of the answers meant that most candidates only received half marks for this section

Question 2

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

(a)   Most candidates were able to identify the continental interiors of Africa and Asia but many ignored the fact that the area straddled the latitude 30 degrees north line.

(b)   This part of the question caused problems for many candidates. Those that recognised that the thermal equator had moved north because of the earth's tilt and its rotation around the sun attempted to explain the increased temperatures with reference to the sun being closer to the earth here rather than at the equator. This, of course, is not the real explanation. Few candidates recognised the role of increased cloud cover at the equator. The role of continentality in raising the temperature was mentioned by some candidates. Overall, this question demonstrated a general inability to transfer basic understanding to a different concept.

(c)   The majority of candidates recognised that it was the different specific heat capacities of land and sea that caused temperatures recorded over land to differ from those recorded over sea at the same latitude. However, few candidates then went on to provide the detail needed for full marks. Some candidates did not mention the specific temperature differences that the specific heat capacities produced and that the differences varied depending on the season of the year. Many answered with respect to day and night time contrasts with land and sea breezes.

Question 3

(a) (i)   Most candidates identified the boundary correctly as being divergent or constructive.

(ii)   Although the majority of candidates recognised the plates as being oceanic, a sizeable minority thought the plates were continental.

(b)   Many of the diagrams produced were simplistic and lacking some key elements. The direction of plate movement was usually shown correctly but convection currents were often missed as well as rising magma. Somewhat surprisingly, volcanoes were omitted from the diagrams even though the question asked for the associated landforms.

(c)   The same issues noted in the diagram were present in the explanation. Quite often there was a simple statement of plates moving apart and volcanic magma suddenly appearing through the gap. The significance of convection currents was often overlooked. However, there were some quite sophisticated explanations based on ridge push and slab pull with a detailed knowledge of the nature of the magma and the type of volcanoes produced.

Question 4

(a)   Very few candidates answered incorrectly.

(b)   Most candidates produced a good description of the data but many simply went through the data for each age group without producing a general trend. The logarithmic nature of the scale was often ignored. Some produced a description of death rate without the use of data thus limiting the marks that could be awarded.

(c)   Whilst many candidates were able to write with some authority about high death rates amongst the very young, few were able to argue convincingly about death rates amongst the elderly. The less well-developed immune system in the young received careful analysis and many candidates compared LEDCs and MEDCs in this respect. Only a very few realised the fact that many 'die of old age, in old age'. A minority of candidates did not differentiate between the very young and the very old in their analysis

Question 5

(a) As the mark scheme stressed, a full description comprised observations on scale, location and net gain/net loss. Many candidates seemed to ignore the fact that the data represented net gain and loss and assumed that the data represented the actual numbers of migrants entering and leaving the respective countries. Also, only a very few recognised that migrants could be entering from countries not shown on the map or leaving countries, such as Argentina, for European destinations. There were many country-by-country listings of figures without any general synthesis. However, there were a number of good descriptions identifying broad patterns as well as anomalies and exceptions and with a mention of the complexity of the apparent patterns.

(b) Many candidates produced very generic answers with little reference to the data on the map. Such answers only received a minimal number of marks. However, there were some very thorough answers covering a wide range of issues, including the complexity of push/pull factors with an attempt to explain some of the apparent anomalies.

Question 6

(a) There were very few wrong answers to this question but a few candidates simply listed all the data without specifying the range precisely.

(b) Most candidates identified the requirements of the question and provided a detailed analysis of the different components that contributed to the City Development Index for cities in Latin America and the Caribbean. However, some candidates simply listed the data without any comparison or analysis.

(c) There was a good response to this question with most candidates being able to produce three sensible suggestions for the difficulties being faced by city authorities. An LEDC perspective was the most common response. Most of the possible reasons listed in the Mark Scheme appeared in answers.

Section B

Question 7

(a) (i) The basic description of *pool* and *riffle* caused few problems but many candidates did not stress that the deposition in riffles was essentially of coarse sediment. Also, many candidates did not appreciate that the velocity of water flowing over riffles is higher than that in pools.

  (ii) Very few candidates were able to describe and explain helicoidal flow. It was most often confused with eddies and described as a corkscrew movement. 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) The landforms of meandering channels, if not their formation, are usually clearly understood. Knowledge of braided landforms and an understanding of the processes involved are more unclear. There was often confusion between braided channels and alluvial fans and deltas. Emphasis was usually on the velocity of the river flow, ignoring the major contribution of fluctuating discharge. Although competence of the river flow was stressed, a lack of recognition of the role of discharge meant that flow capacity was rarely discussed. The nature of the landforms was understood only in a very general way and diagrams were often inaccurate and inappropriate.

(c) There were two parts to this question. The first part required a description of the ways in which rivers erode their channels. This was often well done with all the major processes described although the role of chemical erosion was often overstressed. In some answers there was the usual confusion between attrition and abrasion and some candidates described the processes of transportation rather than erosion. The second part of the question required candidates to use the information provided in describing the processes of erosion to explain the formation and evolution of waterfalls and rapids. Most candidates recognised the role of rock types of differing resistance in the formation of waterfalls but very few were able to describe how the features developed from the beginning. Waterfalls were taken as read and their subsequent evolution described and not their initiation. There was a tendency to ignore the specific role of the individual erosion processes. Although cavitation was often described fully in the first part of the answer, its role in undercutting

the waterfall in the plunge pool was not covered. Rapids were often ignored completely and the influence of bands of different rock forgotten.

Question 8

Although not very popular, there were some good answers but there still continues to be great confusion concerning many of the concepts surrounding atmosphere and weather.

(a) (i) Most candidates were able to offer the basic description of both evaporation and condensation, but many omitted the heating and cooling aspects involved.

(ii) Most candidates knew that high temperatures led to an increase in evaporation. The significance of relative humidity and wind speed was less well appreciated.

(b) There was some confusion over the idea of convectional and orographic rainfall, especially orographic rainfall. Lapse rates were often ignored in the analysis of both types of rainfall. Many candidates assumed that evaporation from a body of water was required for convectional rainfall to occur. The idea that air when heated by radiation from a ground surface could lead that air to expand and then rise, was realised by only a few. The fact that stable air could be forced to rise and then achieve instability also escaped the attention of many candidates. There was a sound grasp of the ideas that air cools as it is forced to rise over mountains and the associated changes of state to water vapour but weaker responses did not connect the idea of instability with the differences between the respective lapse rates. Diagrams often indicated cloud formation at the wrong heights and in the wrong position. Diagrams were also very simplistic, especially that for orographic rainfall. But there were better responses which produced temperature-height graphs with the appropriate lapse rates. Such answers achieved very high marks.

(c) There was the usual confusion over the nature of greenhouse gases and the greenhouse effect. Although most candidates understood the concepts involved in very general terms, detailed knowledge and understanding were often lacking. Answers still describe a 'blanket' effect of greenhouse gases and the reflection of long wave radiation back to earth. The absorption of the heat within the atmosphere is largely ignored. The specific wave lengths involved are also commonly confused. The fact that water vapour is a greenhouse gas is usually forgotten. The second part of the question required the candidates to assess the extent to which an increase in greenhouse gases could lead to climate change. There were some excellent attempts at this component of the question but, in most cases, there was little mention of possible climate affects apart from very general statements concerning global warming. Few candidates were able to manage the evaluation need to examine the 'extent' component of the question. Without this it was not possible to award marks at Level 3.

Question 9

This was not a popular question.

(a) (i) Answers to this question showed a clear contrast between those candidates that were able to define the terms and those candidates who possessed less knowledge. Many candidates recognised that humic acids were related in some way to vegetation, but few were able to provide a precise definition based on the decay of organic materials. A few candidates thought humic acids and acid rain were the same. More candidates were able to define chelation than were able to define humic acid, although precision was often lacking in the definitions.

(ii) There is much confusion over the nature and operation of hydration. Many candidates confused hydration with hydrolysis. Many answers lacked the precision necessary for higher marks. The essential aspect of hydration is that it is rock minerals that absorb the water not the rock in a general sense. Thus, answers that simply referred to rock absorbing water were not strictly accurate. Answers referring to joints in the rock absorbing water and then expanding received very few marks. Many candidates did not describe how hydration works by breaking down the rock by granular disintegration.

(b) Answers were either good or poor. Many diagrams of rock slides illustrating rock fall and mud flows were often confused with slope wash and overland flow. Many diagrams were inaccurate and lacking in information especially concerning the slope changes as a result of the processes. Most candidates realised that slides moved *en masse* and that water was a crucial element in

initiating mud flows. However, the detailed mechanisms involved in failure and the relationship between shear strength and shear stress received little attention. But, there were a few excellent responses with accurate and detailed diagrams showing both the nature of the failures and the effects on the shape of the slopes.

(c) This question had three components, although it was not necessary for all three components to receive the same level of treatment. However, it was expected that all three should receive some analysis. The influence of relief sometimes received little or no treatment. Most candidates were aware that water, especially with dissolved carbon dioxide was involved in the chemical weathering of limestone through the operation of carbonation. But, many did not explain the process of carbonation or to describe it correctly. The role of temperature received less attention, although the better candidates did realise the conflict between carbon dioxide being more soluble in water at lower temperatures and chemical reactions being generally increased by higher temperatures. Vegetation received a less thorough analysis. Physical weathering by root penetration was the typical response but many also suggested the role of humic acids from decaying vegetation. Better candidates offered insight into the role of vegetation either protecting limestone from physical weathering or encouraging chemical weathering by water being intercepted and transferred to the soil. As noted earlier, the influence of relief received less detailed attention. The main effect of relief was either to increase rainfall amounts or by steep slopes influencing runoff and residence time of infiltrating waters. The question asked for the extent to which these factors influence the weathering of limestone. There were few attempts to assess this and so few answers received a Level 3 answer

Section C

Question 10

(a) (i) Most candidates were able to state the definition although many forgot the per 1000.

(ii) The response was generally sound, although the level of detail was sometimes limited. Many candidates referred to in-migration and not net migration. The fact that migrant groups might have higher fertility rates than the population of the receiving area was often omitted.

(b) There were excellent responses to this question. Most candidates were very familiar with the demographic transition model and were able to produce accurate diagrams of the model. There was occasional confusion over which countries were at particular stages but, in general, the responses were accurate. However, there was a tendency among some candidates to ignore the main element in the question, namely population growth, and to focus on the trends of birth and death rates

(c) There were some excellent answers to this question with good examples. Many discussed the relative merits of the ideas of Malthus and Boserup with some conviction. The Green Revolution was the most quoted example of the way food production can increase in response to population growth. Most candidates also attempted to assess the statement, many quite impressively.

Question 11

(a) (i) Candidates often repeated the term 'forced' in their definition and did not use an appropriate alternative. Many candidates also forgot the 'for a period of one year.'

(ii) Most candidates were able to produce two generic examples of forced migration but many were lacking in detail and specific examples.

(b) Most candidates were able to score quite good marks on this question. Also, there were some excellent examples used in the explanation of push and pull factors. Some candidates did not concentrate on economic migration and dwelt on other types of migration. The marks awarded would have been higher if the way the push and pull factors worked together had been analysed. Some answers tended to be in list form with push and pull factors simply reversed. Some candidates still confuse push and pull factors.

(c) This question caused problems for many candidates. Some candidates concentrated on immigration, thus the emphasis in the answers was on the country receiving immigrants not on the country losing them. The 'modern world' was considered in its broadest sense, which was perfectly

acceptable. The migration from LEDCs to MEDCs featured prominently in the answers. The modern world for many equalled MEDCs. There was less certainty over the 'close the door' issue. Many candidates wrote about immigration controls and visa restrictions with little reference to the countries losing the population.

Question 12

This was the least popular question in **Section C** and many candidates struggled to answer the question in a meaningful way.

(a)   There were some excellent answers to this question with all the elements in the Mark Scheme being covered. The better candidates were able to discuss range and threshold with respect to the retail outlets. However, many candidates simply described retailing in the urban centres and in the suburbs or out of town shopping centres. Also, the nature of the specific retailing outlets was usually ignored.

(b)   The general response to this question was less good. Few candidates possessed a detailed knowledge of specific examples or an understanding of the nature and reasons for change in the Central Business District (CBD) of cities. A minority of candidates described general change without reference to the CBD or were very uncertain what the CBD was. Emphasis was usually on very general economic factors

(c)   Candidates found this question more accessible and many were able to write from first-hand experience. Thus, there were some excellent accounts of urban areas with succinct reasons offered for the analysis. The degree of assessment was higher than for most other questions of comparable status. Descriptions and analysis of the two locations were thorough and underpinned the assessment quite efficiently. This question was also a good discriminator. It separated candidates, who only possessed limited knowledge of specific areas, from those with a detailed knowledge and understanding.

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GENERAL COMMENTS

This examination produced a wide range in the quality of the responses. Many candidates tackled the paper with enthusiasm, knowledge and good understanding of the processes of both physical and human geography. At the other end of the spectrum were candidates who appeared to have less acquaintance with the geographical processes and gained most of their marks from the descriptions of resource materials. In some Centres, candidates only answered 4 questions from *Section A*, which clearly affected the total marks obtained. In other instances candidates infringed the rubric by answering all 6 of the questions in *Section A*. Generally, however, candidates answered the correct number of questions and divided their time appropriately between the three sections of the paper.

There were questions where many candidates could have significantly enhanced the marks received by more attention to detail. This was most noticeable in the human geography questions of *Section A* and *C*. When asked to compare data or to describe trends (**Questions 4** and **5**) many merely repeated the data, neglecting to either compare or describe a trend. Similarly, in *Section C* in **Question 11** many omitted to include the requirement for all migration to extend for at least one year.

Physical geography questions routinely required the production of labelled diagrams. Whilst the quality of the diagrams produced by candidates has improved in recent years, the amount and quality of the labelling has often lagged behind. Marks are often lost by simple omissions, such as in **Question 1** where some candidates failed to indicate which was X and Y on the cross section. Similarly, in **Question 8**, the basic pattern of incoming and outgoing radiation was known but candidates often did not label short wave and long wave radiation, albedo, scattering and absorption by green house gases.

The clarity of handwriting and the general standard of the use of English remain exvellent and is particularly impressive when derived from entries where English is not the candidates first language.

COMMENTS ON SPECIFIC QUESTIONS

SECTION A

Question 1

A surprising number failed to gain all three marks from the identifications required in **(a)**. Most commonly the thalweg or line of fastest flow was not correctly identified. Most candidates correctly drew the assymetrical shape of the channel although a significant minority, did not understand the term cross section and merely redrew the diagram given in Fig. 1. In **(c)**, many candidates knew that meandering was a product of pool and riffle sequences, the sinuosity of the thalweg and helicoidal flow. They were far less successful in pulling these elements together in a coherent explanation. The nature of helicoidal flow is still widely misinterpreted.

Question 2

The least popular of *section A* questions, although one that was often successfully answered. In **(a)** most correctly identified the pressures. The Hadley cell is now reasonably well known by candidates although some still struggle to explain its operation. Marks were often lost by failing to identify the operation of the trade winds. Most correctly identified ocean currents but did not describe the movements of hot and cold currents. Although not required for some marks, few candidates appear to realise that it is the passage of winds across ocean currents that enhance their climatic effects.

Question 3

Popular, but not always well answered. The identifications in **(a)** were mostly correct. In **(b)** collision zones were widely recognised but the diagram usually failed to show the limited amount of subduction or the squeezing of the sediments to produce fold mountains. This was reflected in **(c)** as the production of fold mountains remain amongst the least understood of tectonic landforms.

Question 4

(a) Some candidates did not express the difference as a rate that is per 1000. **(b)** As already indicated, marks were lost by not comparing male and female mortality rates. Although the higher male rates were noted, only the better answers expressed this in terms of the countries in the tables and the comparative levels of the rates such as that the top rate for females in Italy was significantly lower that the lowest rates for males. **(c)** Most answers gained good marks by identifying a variety of lifestyle reasons for higher rate mortality. The best answers demonstrated that life expectancy is longer for women at all levels of economic development.

Question 5

(a) A number of candidates misinterpreted Fig. 4 and gave **(ii)** as 1999 rather than 1998. **(b)** The reason that some did not gain all of the marks was not identifying trends in the data rather than merely describing the data itself. **(c)** Some answers misinterpreted the question as referring to the general impact of immigration rather than its impact upon birth rates. Those that concentrated on birth rates often produced well-argued responses citing the influence of the age structure of migrants and the fact that they often migrate from societies where larger families are the norm. Useful examples were sometimes given, such as Eastern European migration into the UK. Weaker answers argued that the low income levels of migrants would inhibit birth rates.

Question 6

Responses varied in the type and quality of description. Most identified that urban sprawl linked the major city to secondary cities, but few described the linear shape established along corridors prescribed by the main roads. Urban sprawl had limited extent to either side of the roads but was marginally wider around road junctions. **(b)** Many gave long and unfocused responses that demonstrated little appreciation of the impact of urban growth upon rural areas. Weaker answers saw the pressures solely in terms of increased traffic, pollution and litter. Better answers described the socio-economic impacts in terms of land prices and migration as well as environmental pressures induced by demand for building land, construction and water and food supplies.

SECTION B

Question 7

The most popular question in this *section. (a)* Interception was well defined but both stem flow and through flow were less well described. Many thought that stem flow occurred inside vegetation and that through-flow was a general term to describe the flow of water under the surface. **(b)** The flows of water within catchment areas is well understood and most produced accurate diagrams or flow charts. Better answers were those offering explanations rather than merely describing the diagram that they had drawn. They thus explained how infiltration, percolation and various flows occur as well as outlining the nature of surface and ground water stores. Many answers demonstrated problems with the concept of land use change. Some interpreted change as variations in land use and concentrated solely on urbanisation. This was described in terms of its impact upon overland and channel flow with little reference to stores and flows beneath the surface. Better answers reflected changes in land use leading to changes in interception, infiltration, surface and groundwater stores, as well as surface and subsurface flows.

Question 8

Few answers but often attempted by candidates who demonstrated a clear understanding of atmospheric processes. **(a)** Both latent heat and sensible heat transfers were well defined although more difficulty was evident in the description of radiation cooling. **(b)** Most utilised diagrams of the '6 factor day model' but often forgot to label it appropriately and overlooked the role of greenhouse gases in their explanation. **(c)** Most would describe the mechanisms involved in convectional and orographic uplift. More variable was the explanation of adiabatic cooling and the role of lapse rates in the production of condensation and rainfall.

Question 9

Very few answers. **(a)** The definition was often vague and inaccurate and the nature of heave, in terms of the lifting and pulling of soil particles was not well expressed. **(b)** The impact of tree roots and freeze-thaw weathering was described, although many included inappropriate processes such as exfoliation and hydration. Carbonisation was understood in general terms but few could effectively describe the chemistry. **(c)** As in the past, the nature of mass movements and their impact on slopes is little understood. Few answers progressed beyond Level 1 responses with the explanation placed solely upon the human activities deemed responsible for the development of mass movements.

SECTION C

Question 10

By far the most popular question with most answers gaining good levels of credit. **(a)** Generally the diagrams were well produced with accurate description of the birth and death rates. Some omitted natural increase. Better answers made direct comparison of stages 2 and 3 whilst weaker responses gave separate descriptions of the two stages. **(b)** Better answers gave a range of explanations suggesting how developments in food supply, sanitation and medical care could impact upon death rates. Weaker answers produced lists of "factors" with little indication as to how they lowered death rates. **(c)** Better answers realised that the education of women has been a crucial factor in lowering birth rates in many countries and were able to explain and illustrate how this has been achieved.

Question 11

Less popular and with a very variable response. **(a)** Stepped migration was described but lacked references to over one year. Reasons given were usually correct. **(b)** Most answers concentrated on the poverty of migrants and the search for low cost housing in slums or shanty towns. Many, however, ignored the location element of urban occupation. **(c)** Many candidates found difficulty in framing their response to this question. They concentrated only on rural-urban migration in the context of LEDC urbanisation. Better responses contrasted the urbanisation in MEDCs with recent characteristics of counter-urbanisation with the continued growth of urbanisation in LEDCs.

Question 12

A tiny number of candidates attempted this question. **(a)** Functional zonation was not understood with very few references to the concentration of land uses and activities in certain parts of the urban area. Hence **(ii)** was not answered with any relevance. **(b)** The role of planning was not understood. Examples could have been cited from a wide range of urban activities such as new towns or the redevelopment of slums or inner cities. **(c)** The few answers were on firmer ground here. Some examples of urban problems were given, such as the resistant nature of shanty towns and the difficulties of improving them.

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GENERAL COMMENTS

Candidates found this paper accessible and there were many successful responses made to the questions. There was a good balance between the treatment of the aspects of both physical and human geography with many candidates tackling both elements with confidence. There remain, however, areas of relative strength and weakness within the responses to different parts of the syllabus. Candidates seemed more successful in dealing with topics on hydrology than they are with mass movements and slopes. Similarly, in human geography, candidates deal with population and migration with far greater success than they do with settlement dynamics. This was particularly evident in **Section C** of this paper where the few answers to **Question 12** on rural settlement were largely unsuccessful compared to **Question 10** and **Question 11**.

Most candidates allocated their time appropriately within **Section A**, but there is a tendency in **Sections B** and **C** for some candidates not to relate their efforts to the marks available. Thus some spent a disproportionate amount of time on Part **(b)** of the question worth 8 marks, as compared to **(a)** and **(c)** which together were worth 17 marks.

The numbers attempting individual questions varies and therefore some of these comments are made on the basis of very few responses.

COMMENTS ON INDIVDUAL QUESTIONS

SECTION A

Question 1

Attempted by most candidates. **(a)** The amount and time of peak discharges were correctly identified by most. **(b)** Most answers described the differing lag times and level of peak discharges. The element some missed was the relative steepness of the rising and falling limbs of the hydrographs. **(c)** Explanation was advanced correctly in terms of the differing land use between the two catchments. Nearly all answers pointed to the impact of interception although better answers related this to infiltration and overland flow. Comments on the greater drainage density of the Severn catchment were not required and were often inaccurate in their relationship to the hydrograph.

Question 2

(a) The highest and lowest isotherms were correctly identified. **(b)** Candidates often experienced difficulties in describing patterns. In this question they often identified individual isotherm values rather than the concentration of heat in the central area of the city with an eastward extension of the warmth. Temperatures decrease by 5 degrees C rapidly to the north and west and more gently to the south. **(c)** Most correctly identified urban areas as being wetter, more polluted but less windy than surrounding rural areas. Levels of explanation were variable. Better answers explained the higher levels of convection that were engendered by the urban heat island, which together with the greater amount of hygroscopic nuclei increased rainfall. Anthropogenic sources enhanced pollution and friction reduced overall windspeeds despite occasional 'canyon' effects.

Question 3

Less popular and less successfully answered. **(a)** The two mass movements were frequently incorrectly identified. Few saw A as a rockfall, although more did identify B as a rotational landslide. **(b)** Explanation of rotational landslides often failed to indicate a slip plane, or to explain how they occur. There was some

suggestion that water could produce slope instability, but often little explanation as to how it occurs. **(c)** Even with the evidence provided by Fig. 3, few accounts could give much indication of the effect of mass movements on slopes. Some accounts rather irrationally chose soil creep to illustrate slope impact.

Question 4

(a) Most obtained one mark for describing the increase in longevity with GNI, and most noted the contrast between LEDCs and MEDCs. **(b)** Many obtained credit for noting that greater wealth tends to result in better diets, more medication and better sanitation. Some answers tended to repeat the same point in both sections (e.g. improved health care). **(c)** Some answers saw this solely in terms of increased numbers leading to overpopulation. Better responses explained the implications of an ageing population for governments through the effects of greater dependency ratios and the provisions required for an elderly population.

Question 5

(a) Most identified the inward and outward movement of the migrant, but far fewer gained a second mark for noting that the migration was stepped. **(b)** Most obtained the marks for citing economic forces, family status and social activities. Fewer noted the increase in mobility over time. **(c)** Successfully answered by most as retirement was equated with push factors from urban existence and the pull factors of rural tranquillity. Less common were the factors introduced by some candidates such as the downsizing of property and the release from family restraints. Some answers were inhibited by their failure to use examples.

Question 6

Less popular and answered with very variable levels of success. **(a)** The general increase was noted but few distinguished relative levels of change. **(b)** Few reasons were advanced other than an increased but unspecified investment by the Brazilian government. The developing nature of favelas and the advancement of the population were not often described. A few accounts ingeniously suggested the possible impact of forthcoming events such as the World Cup and Olympics. **(c)** Most accounts described the levels of poverty of both the communities and governments as well as the lawless nature of shanty towns. Fewer accounts developed the sheer scale of the communities and their propensity for continued growth.

SECTION B

Question 7

The most popular question and quite well answered. **(a)** Laminar and turbulent flow were well known and often sensibly illustrated with diagrams. The thalweg was similarly known and again often effectively illustrated diagrammatically. **(b)** The knowledge of flows within drainage basins was well rehearsed and many answers produced effective diagrams and descriptions. **(c)** Most accounts described the impact of dams, levees, channel straightening and afforestation on flood amelioration. Better accounts utilised relevant examples but very few addressed the extent to which these activities led to successful flood prevention and amelioration.

Question 8

Fewer answers which were generally more successful in **(a)** and **(b)** than they were in **(c)**. **(a)** Condensation and evaporation were usually correctly defined and latent heat transfer was effectively described. **(b)** Land and sea breezes were generally understood and were well illustrated by diagrams. **(c)** The weakest part of most answers. With a few noticeable exceptions, the lapse rates defining instability are not well understood and few could distinguish between absolute and conditional instability. The differing weather conditions associated with instability were poorly explained.

Question 9

An unpopular choice, although there were a few very good responses. **(a)** Freeze-thaw was better defined than pressure release. Vegetation's contribution to weathering was often limited to the widening of joints and overlooked the role of humic acids and chelation. **(b)** Carbonation was well explained including some good accounts of the chemistry. Some candidates overlooked the possible role of physical weathering processes such as freeze-thaw. **(c)** There were some good accounts that effectively used Peltier diagrams. Again many of these very competent descriptions ignored 'the extent to which' and merely described the association between particular weathering processes and their climatic parameters.

SECTION C

Question 10

Some difficulty continues to be apparent with the definition of carrying capacity. Many did not indicate it as **the maximum** number of people supported and also did not mention level of technology. Most answers clearly stated two causes of food shortages. **(b)** The consequences of food shortages were largely seen in terms of famine and increased death rates. Better answers developed out migration, an increase in imports and the provision of aid. **(c)** There were some good responses that cited the green revolution and the possible advent of GM crops. Weaker answers merely described increased mechanisation. Most answers were descriptive and only a handful of better answers addressed the extent to which technology can solve food shortages.

Question 11

Popular with many Centres in New Zealand. **(a)** Many answers were unbalanced as they often addressed how countries control immigration rather than discussing why they made such attempts. **(b)** The least successful part of most answers to this question. Many merely pointed to the increase in wealth which would encourage people to migrate to a country from a lesser developed country. Fewer dealt with the growth of out-migration that accompanied development or looked at the role of socio economic factors. **(c)** Very well answered by many candidates. For example, some candidates from New Zealand very effectively described the recent history of migration to and from New Zealand and often made insightful assessment of the impact of differing migrant groups.

Question 12

Few answers were seen as to make any general comments impossible. The few answers seen were often quite partial and very weak. The main problem appears to be that few candidates have prepared a case study of any rural settlement or area. This clearly restricts any credit that can be ascribed to a question such as that in **(c)**. A few answers referred to whole countries or even continents and contained very little substantive information.

GEOGRAPHY

Paper 9696/21

Advanced Physical Geography Options

GENERAL COMMENTS

Many candidates found this examination accessible and some produced high quality responses. Others struggled to get to grips with the processes of physical geography and produced sometimes partial and ephemeral answers. As always, virtually every candidate answered questions from Hazardous Environments and the vast majority selected Coastal Environments. Some Centres have specialised in Arid Environments, often to some effect, but very few attempt the questions from Tropical Environments. As a significant number of the entry live in tropical areas it seems a pity that the local environment is not being exploited more for study. Indeed, one feature that distinguishes successful candidates and Centres is their use of exemplification and well prepared case studies. Each study area requires the preparation of a case study relating to sustainable management. Too frequently candidates attempt questions based upon management but clearly have not prepared for such a study. Not surprisingly they gain little credit. In the case of Coastal Environment the more successful candidates have studied the coastal processes and geology within the context of particular stretches of coast. Thus they are able to relate process to landforms, illustrating this with appropriate diagrams and maps.

In the case of Hazardous Environments, it is important to keep in mind that all require an understanding of the physical processes underpinning the hazards and not just the human consequences of the hazard. Often marks are lost as candidates focus on the latter rather than the former.

One question in each topic is accompanied by resource material. Whilst there is no expectation that candidates will slavishly regurgitate resource material, there is a tendency for some candidates to ignore rather than exploit the material provided. Thus in **Question 2 (a)** the photographs could have been employed as useful triggers for the description of tropical rainforest and savanna vegetation. Similarly in **Question 8** the climatic data could be exploited as a basis for the explanation of their differences.

These reports tend to focus on areas where improvement can take place. There were, however, many examples of excellence in the understanding and observation of the operation of the processes of physical geography.

COMMENTS ON SPECIFIC QUESTIONS

Tropical Environments

Question 1

(a)   Very few answers which generally demonstrated a limited understanding of tropical climates. There was little description of the extent of the movement of ITCZ or that the rainy season would get progressively shorter the further away that it moves from the equator. Thus there was virtually no explanation of its role in determining rainfall totals. In the equatorial belt reference could have been made to convergence, uplift and the development of rainfall.

(b)   High rainfall and temperatures were recognised as most significant in determining that chemical weathering was dominant in the humid tropics. The distinction between weathering and erosion was widely ignored and specific processes were rarely developed. The role of rock type and structure was explained only in the better answers, which also demonstrated accurate understanding of chemical weathering processes, as well as erosion applied to either limestone or granite, or even both.

Question 2

The more popular choice and producing some good responses.

(a)   Better answers used the photographs as a trigger for their explanation of vegetation differences. Some answers spent too long on this section of the question giving detailed diagrams and descriptions of the nature of TRF vegetation followed by an account of the variation in savanna vegetation from open forest to desert scrub. Better answers concentrated on an explanation of the differences in vegetation in terms of climate and human interference in the savanna plagioclimax.

(b)   The better answers were able to exploit case studies which showed knowledge of the Tropical rainforest ecosystem and provided good detail of forest management to yield a sustainable future. Many, however, had no such case study and merely produced general governmental attempts to prevent deforestation through legislation or attempts to encourage reforestation through publicity. Some African Centres produced well considered case studies of schemes in the savanna based upon sustainable agriculture.

Coastal Environments

Question 3

(a)   The properties of constructive and destructive waves are now well known and were accurately described in most answers. The impact of such waves upon beach profiles is far less understood and the diagrams were often inaccurate and contradicted the text. Better answers explained that constructive waves break across a gentle profile and the swash builds and steepens the profile. Destructive waves break onto a steeper profile but the backwash combs back material to develop a more gentle profile. These accounts also described plan form in terms of swash aligned and bay head beaches.

(b)   There were some excellent answers that used particular examples of coastal stretches and landforms to illustrate the relative importance of rock type and structure in combination with marine and sub-aerial processes to produce distinctive landforms. One of the more successful of these was the use of the Dorset coast. Many answers were dominated by the development of caves, arches, stacks and stumps, although occasionally this was well done where the significance of rock type and jointing was recognised. Concordant and discordant coastlines were often described although the impact of the dip of strata on cliff profiles was less well demonstrated. The best answers successfully developed the balance between active marine erosion and removal against the rate of sub-aerial processes in the production of cliff profiles.

Question 4

(a)   The optimum conditions for coral growth were well rehearsed, but with a range of accuracy with regard to the specific temperatures, degree of salinity, depth and the like. The biological details of corals and the role of plankton and algae are now far better understood than in the past. Assessing the impact of the threats proved accessible to most candidates, but it was the degree of accuracy in explaining their effect on the conditions that differentiated the answers. The impact of global warming was often exaggerated in terms of rises in sea temperatures and sea levels. The best answers appreciated the impact of pollution from farm fertilizers, sewage from tourism and increased sediment from river discharge.

(b)   Most answers described a range of both hard and soft engineering methods for coastal protection, the use of groynes, gabions and sea walls were deemed hard engineering and were seen as effective against erosion but costly and unsightly. Soft engineering solutions included beach nourishment, draining of cliffs, managed retreat and 'do nothing'. Their advantages were seen as cheaper and better appearance as against continuing commitment and compensation. What was absent was reference to coastal processes, which were incorporated by the best responses where a stretch of coast was considered and an assessment made of the impact of engineering solutions within a coastal system. The Holderness coast was often used as an example, with varying degrees of accuracy.

Hazardous Environments

Answered by virtually all candidates with **Question 5** being by far the more favoured choice.

Question 5

(a)   There were many excellent answers which covered the range of converging tectonic boundaries and gave a full and accurate explanation of how associated hazards were produced. This was followed by a comparison with the hazards produced at diverging and conservative boundaries. Weaker answers tended to describe all types of plate boundaries without explanation of the hazards produced.

(b)   Most agreed with the contention although a small minority argued that earthquakes were easier to predict. The methods employed for predicting and monitoring volcanoes are now well known, although there is often uncertainty as to exactly why their measurements are taken in the run up to a volcanic eruption. Better answers included a comparison with the levels of success in predicting other hazards such as earthquakes, hurricanes and tornadoes. There was a range of quality in responses to the second demand of ways of reducing the hazardous impact of volcanoes. The best responses were sensible, apposite and assessed. The weakest responses were little more than lists.

Question 6

(a)   Most answers concentrated on the economic conditions in Bangladesh and the difficulties this produced in responding to any hazardous event. Relatively few discussed the nature of hazards produced by tropical storms and why their hazardous impact was that shown in Fig. 2. Few accounts explained the nature of storm surges and why they were so lethal in the context of Bangladesh. Similarly, the relatively lower deaths from high winds and drowning went unexplained.

(b)   This produced many confused and rambling answers that involved a mixture of mass movements. Some catalogued types of falls, slides and flows and gave their effects in very general terms. Avalanches were the type of mass movement most often covered with some degree of understanding and were often well exemplified. The cause of all forms of mass movement were often given as a trigger or tipping point (tectonic, heavy rain etc.) rather than actual causes of more instability. The best answers were those based upon well chosen examples such as Aberfan, Galfur avalanche, Rio de Janeiro landslides or the Vajont dam.

Arid and Semi-Arid Environments

Apart from one or two Centres, this is not a popular study area. Centres that concentrate on this topic often produce answers of high quality, but elsewhere the answers are often very limited.

Question 7

(a)   The first part of this question was generally well covered with details of wind transport methods as well as the nature of wind abrasion and deflation. Less well achieved was the development of one type of desert landform. It was often included almost as an afterthought with rough diagrams of yardangs, zeugens or barchan dunes.

(b)   There were some excellent answers that described the development of wadi/valley systems alluvial fans and even pediments. Some debate was entered over relative roles of wind and water, although this was not often developed in the context of the past. Weaker answers could not develop the processes of water erosion and had difficulty in relating process to landform.

Question 8

(a)   There were a few excellent responses that made good use of the data provided. This was employed to outline differences between the two climates as well as forming a basis for explanation. Generally, explanations were on firmer ground when dealing with aridity. The effects of Hadley cell, ocean currents, continentality and rain shadow were all described. Explanations relating to semi-arid areas were often limited with few explaining the significance of the movement of the ITCZ. Weaker accounts merely regurgitated the data with little attempt at any explanation.

(b) Answers tended to be at either end of the quality spectrum with little in between. Knowledge of soils in hot arid environments has improved considerably in recent years, although semi-arid soils are often ignored. Many good responses gave detailed accounts of the nature of hot arid soils covering their lack of humus, unstructured nature, the upward movement of water and their alkalinity. Poor accounts developed little beyond the soils being dry and sandy. Plant and animal adaptions are often well known and there were many extremely detailed and comprehensive accounts. Weaker answers described little more than cacti and camels.

GEOGRAPHY

Paper 9696/22
Advanced Physical Geography Options

GENERAL COMMENTS

There was a wide variation in the quality of the responses to this examination. Some produced a very high quality of response whilst others struggled with some of the concepts and processes in physical geography. As has been common in previous examinations, virtually every candidate answered questions from the Hazardous Environments section of the paper with the vast majority choosing Coastal Environments for the other question. There were a few answers to Tropical Environments but very few attempted arid and semi-arid environments.

In all of the environments addressed on this paper an opportunity was given for candidates to respond to questions on the sustainable management of that environment. In order to effectively answer such questions, candidates need to have prepared a case study or examples of such management strategies, yet many candidates attempted these questions displaying little evidence of such preparation. Consequently some of these answers were vague, undeveloped and somewhat generic. Clearly, less credit could be afforded such responses in terms of the problems of environmental management; candidates need to be able to assess the degree to which such management is sustainable.

Throughout the paper, the most effective answers were those that used examples or even framed their answer within a particular example. This was particularly relevant to questions such as 3**(b)** and 4**(b)** in Coastal Environments. The most impressive answers were often from Centres, such as those in Vietnam, who employed local coastal exemplars to very good effect.

In answering questions on Hazardous Environments, it is important for candidates to understand the physical processes that underpin the generation of hazards. This always forms an important part of all of the questions. Often candidates concentrate solely on the human response to such hazards, which forms only part of the questions.

Despite the variation in quality that was evident, it is pleasing to note the very high standards of geographical knowledge that was cogently expressed in excellent English by the best answers.

COMMENTS ON SPECIFIC QUESTIONS

Tropical Environments

Not a popular choice but producing a few excellent answers.

Question 1

(a) Trophic levels were better understood than energy flows with the former often illustrated by well annotated diagrams. Some candidate confused energy flows with nutrient cycles and produced Gerschmel diagrams that lacked any reference to energy flows.

(b) Many answers ignored the problems of sustainable management and went straight into generalised accounts of management action, such as re-afforestation in Tropical rainforests. Better answers outlined the problems of sustainable management in such fragile environments and then evaluated examples or case studies of attempts to overcome them.

Question 2

(a)   Many candidates appeared to experience difficulty in dealing with climatic data and in offering explanations as to its meaning in terms of the formation of tropical climates. Better accounts were those that used the data in Fig. 1 to describe the principal features of the climates of the two stations from the distribution of the rainfall and the range of temperatures. Few answers, however, developed explanations in terms of heavy rainfall from convectional uplift or related the seasonality of rainfall to the movement of the ITCZ. Similarly, in equatorial latitudes, few referred to the equatorial convergence or to the impact of low pressure.

(b)   The factors that affect deep weathering in the tropics were not well developed, although most accounts realised that chemical weathering was the main process involved. Better answers described chemical processes such as hydrolysis operating at a basal surface of weathering below a thick layer of regolith. The subsequent stripping of such regolith by uplift and erosion allowed the development of granite landforms such as inselbergs and tors. Weaker answers gave little indication of the nature and operation of the weathering processes and made only vague allusion to the resultant granite landforms.

Coastal Environments

Question 3

(a)   The optimum conditions for coral growth are now well known, although there is a range in the accuracy of specific temperatures, salinity levels and the depths at which coral will thrive. The biological details of coral development and the role of plankton and algae are also far better understood than in the past. The cause of the threats to coral proved accessible but the manner in which these threats impact upon the conditions for coral growth provided the discriminator in this part of the question. Better answers explained how threats arising from pollution, run off from agriculture and sedimentation from rivers could affect the conditions that favoured photosynthesis.

(b)   Many answers did not specify a stretch of coastline, but were management led. For example, they described how groynes and sea walls were constructed to combat coastal erosion, but made no reference to any coastal processes that were operating. Better answers cited particular stretches of coastline often illustrated by useful maps. They outlined the problems and by using particular examples of coastline were able to describe where erosion was occurring, where cliffs were being undermined and retreating, where beaches were being lost and what processes were operating. The second demand to 'evaluate the effectiveness of attempted solutions' at times became a catalogue of hard versus soft engineering methodologies. Some examples were cited from Miami (beach nourishment), the Norfolk coast (managed retreat) and East Sussex (groynes). Particularly effective assessments were made of some solutions employed along the coast of Vietnam.

Question 4

(a)   Some candidates experienced difficulty in interpreting Fig. 2. and did not confine their answers to sedimentation and saltmarsh development in the estuary. Instead they wrote, in very general terms, about beaches, dunes, longshore drift and spits. Credit was given to better accounts that showed some understanding of sedimentation as illustrated, for example, by the development of dunes in circumstances of a large tidal range and a wide beach exposed at low tide. Half of the question's demand was for the formation of saltmarsh, but their development was often poorly understood. There were some good answers where sedimentation in the estuary was explained accompanied by detailed accounts of the development of salt marshes. Here the mixing of river discharge with salt sea water was seen to cause flocculation and the developing stages of algae and pioneer plant species was well understood.

(b)   The most common approach was to use the coastal land forms of caves, arches, stacks and stumps to illustrate the results of marine action. This could be an effective way of demonstrating the interaction of the factors listed in the question, but unfortunately this was not what many candidates did. They did not explain the need for the development of a headland or promontory (rock type) or the vital role of jointing (rock structure) and the impact of refracted waves (marine erosion). Weaker answers described sequences of 'hard' and 'soft' rocks, the Cass sequence, and perhaps, wave cut platforms. Better answers demonstrated an understanding of the role of rock type and structure and the balance between sub-aerial processes in lowering cliff profiles and

marine erosion in steepening them. The use of specific examples considerably enhanced such accounts.

Hazardous Environments

Question 5

(a)   The cause and nature of mass movements appear problematic for many candidates. Few realise that slope failure and hence mass movement are due to shear strength being overcome by shear pressure. The trigger or tripping point can be provided by higher rainfall or earthquakes. Mudslides were better described than rotational slides. Good answers referred to the role of lubrication and increased pore pressure. These factors brought about an increased weight from a mass of saturated soil that could no longer be held in place. Better answers in the case of rotational slides gave examples of porous / permeable strata overlying impermeable ones. Examples of the hazards so created that were given were lahars, overwhelming settlements, landslides in Rio de Janeiro and Hong Kong, and the disaster of Aberfan.

(b)   Some candidates continued with accounts of hazardous environments threatened by mass movements, usually in the form of avalanches. The more common choice was, however, either a volcanic or an earthquake environment. Good answers clearly set out the problems such as the difficulties of prediction, the extent of preparedness, and the levels of development in LEDCs as compared with MEDCs. Solutions that were suggested were commonly those of hazard mapping, building design, infrastructure, education and plans for evacuation. There were some excellent answers that employed detailed examples making a full evaluation of all solutions.

Question 6

(a)   Tropical storms were more favoured than tornadoes but there were some excellent answers to both. In the case of tropical storms, the better answers showed how they developed from relatively small atmospheric disturbances into large scale hurricanes. This was because of the conducive conditions provided by such things as high sea temperatures in appropriate latitudes. In the case of tornadoes, good answers often use the example of the meeting of warm air from the Gulf of Mexico with cold Canadian or Rocky Mountain air. This led to temperature inversions, violent uplift, wind shear and the tight rotation of air around extreme low pressures. Weaker answers were restricted to accounts of high sea temperatures and the coriolis force in the production of hurricanes and violent thunderstorms in the case of tornadoes. "The immediate impact" was often seen only in terms of death and destruction with little attention being given to storm surges, high winds, high rainfall and extreme low pressure. There were some excellent accounts of the impact of Hurricane Katrina on New Orleans.

(b)   Many answers revealed some very good knowledge of the techniques now used to predict and track hurricanes effectively as well as some candidates demonstrating an understanding of the difficulties in predicting tornadoes. The majority, however, were much more limited in both knowledge of the methods and in an evaluation of their reliability. Measures to reduce the impact followed the well trodden path of preparedness, building design, insurance and education. Better answers were more specific to the types of hazard such as sea walls against storm surges, levees against river floods, and basement shelters to combat tornadoes.

Arid and Semi-Arid Environments

There were very few answers to either of these questions so it is difficult to make any meaningful generalisations. Virtually no complete answers were seen to **Question 8**.

Question 7

(a)   The few answers generally recited the list of continentality, rain shadow and ocean currents. Some did mention the role of high pressure and the Hadley cell but offered little explanation. Some climatic data was given for arid areas but little was advanced in terms of an explanation for semi-arid climates. There was no suggestion that latitude or the ITCZ had any part in determining such climates.

(b)   There was some understanding of adaptations but with little regard for the question demand to select either arid or semi-arid. There was a mixed selection of cacti, acacias, baobabs and

saltbush, with some explanation of the adaptations. Overall, the answers were rather limited in both coverage and accurate detail.

Question 8

(a)   No complete answers were seen despite the straightforward nature of the photographs depicting concentric or barchan dunes **(A)** and zeugens **(B)**.

(b)   It might have been expected that the principal evidence cited would be the landforms particularly the well integrated relic drainage systems. Archaeological evidence could also have been used. For the second demand, candidates could well have contrasted the contribution of wind and water in the production of landforms.

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GENERAL COMMENTS

Many candidates found this examination accessible and some produced high quality responses. Others struggled to get to grips with the processes of physical geography and produced sometimes partial and ephemeral answers. As always, virtually every candidate answered questions from Hazardous Environments and the vast majority selected Coastal Environments. Some Centres have specialised in Arid Environments, often to some effect, but very few attempt the questions from Tropical Environments. As a significant number of the entry live in tropical areas it seems a pity that the local environment is not being exploited more for study. Indeed, one feature that distinguishes successful candidates and Centres is their use of exemplification and well prepared case studies. Each study area requires the preparation of a case study relating to sustainable management. Too frequently candidates attempt questions based upon management but clearly have not prepared for such a study. Not surprisingly they gain little credit. In the case of Coastal Environment the more successful candidates have studied the coastal processes and geology within the context of particular stretches of coast. Thus they are able to relate process to landforms, illustrating this with appropriate diagrams and maps.

In the case of Hazardous Environments, it is important to keep in mind that all require an understanding of the physical processes underpinning the hazards and not just the human consequences of the hazard. Often marks are lost as candidates focus on the latter rather than the former.

One question in each topic is accompanied by resource material. Whilst there is no expectation that candidates will slavishly regurgitate resource material, there is a tendency for some candidates to ignore rather than exploit the material provided. Thus in **Question 2 (a)** the photographs could have been employed as useful triggers for the description of tropical rainforest and savanna vegetation. Similarly in **Question 8** the climatic data could be exploited as a basis for the explanation of their differences.

These reports tend to focus on areas where improvement can take place. There were, however, many examples of excellence in the understanding and observation of the operation of the processes of physical geography.

COMMENTS ON SPECIFIC QUESTIONS

Tropical Environments

Question 1

(a) Very few answers which generally demonstrated a limited understanding of tropical climates. There was little description of the extent of the movement of ITCZ or that the rainy season would get progressively shorter the further away that it moves from the equator. Thus there was virtually no explanation of its role in determining rainfall totals. In the equatorial belt reference could have been made to convergence, uplift and the development of rainfall.

(b) High rainfall and temperatures were recognised as most significant in determining that chemical weathering was dominant in the humid tropics. The distinction between weathering and erosion was widely ignored and specific processes were rarely developed. The role of rock type and structure was explained only in the better answers, which also demonstrated accurate understanding of chemical weathering processes, as well as erosion applied to either limestone or granite, or even both.

Question 2

The more popular choice and producing some good responses.

(a)   Better answers used the photographs as a trigger for their explanation of vegetation differences. Some answers spent too long on this section of the question giving detailed diagrams and descriptions of the nature of TRF vegetation followed by an account of the variation in savanna vegetation from open forest to desert scrub. Better answers concentrated on an explanation of the differences in vegetation in terms of climate and human interference in the savanna plagioclimax.

(b)   The better answers were able to exploit case studies which showed knowledge of the Tropical rainforest ecosystem and provided good detail of forest management to yield a sustainable future. Many, however, had no such case study and merely produced general governmental attempts to prevent deforestation through legislation or attempts to encourage reforestation through publicity. Some African Centres produced well considered case studies of schemes in the savanna based upon sustainable agriculture.

Coastal Environments

Question 3

(a)   The properties of constructive and destructive waves are now well known and were accurately described in most answers. The impact of such waves upon beach profiles is far less understood and the diagrams were often inaccurate and contradicted the text. Better answers explained that constructive waves break across a gentle profile and the swash builds and steepens the profile. Destructive waves break onto a steeper profile but the backwash combs back material to develop a more gentle profile. These accounts also described plan form in terms of swash aligned and bay head beaches.

(b)   There were some excellent answers that used particular examples of coastal stretches and landforms to illustrate the relative importance of rock type and structure in combination with marine and sub-aerial processes to produce distinctive landforms. One of the more successful of these was the use of the Dorset coast. Many answers were dominated by the development of caves, arches, stacks and stumps, although occasionally this was well done where the significance of rock type and jointing was recognised. Concordant and discordant coastlines were often described although the impact of the dip of strata on cliff profiles was less well demonstrated. The best answers successfully developed the balance between active marine erosion and removal against the rate of sub-aerial processes in the production of cliff profiles.

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(a)   The optimum conditions for coral growth were well rehearsed, but with a range of accuracy with regard to the specific temperatures, degree of salinity, depth and the like. The biological details of corals and the role of plankton and algae are now far better understood than in the past. Assessing the impact of the threats proved accessible to most candidates, but it was the degree of accuracy in explaining their effect on the conditions that differentiated the answers. The impact of global warming was often exaggerated in terms of rises in sea temperatures and sea levels. The best answers appreciated the impact of pollution from farm fertilizers, sewage from tourism and increased sediment from river discharge.

(b)   Most answers described a range of both hard and soft engineering methods for coastal protection, the use of groynes, gabions and sea walls were deemed hard engineering and were seen as effective against erosion but costly and unsightly. Soft engineering solutions included beach nourishment, draining of cliffs, managed retreat and 'do nothing'. Their advantages were seen as cheaper and better appearance as against continuing commitment and compensation. What was absent was reference to coastal processes, which were incorporated by the best responses where a stretch of coast was considered and an assessment made of the impact of engineering solutions within a coastal system. The Holderness coast was often used as an example, with varying degrees of accuracy.

Hazardous Environments

Answered by virtually all candidates with **Question 5** being by far the more favoured choice.

Question 5

(a)   There were many excellent answers which covered the range of converging tectonic boundaries and gave a full and accurate explanation of how associated hazards were produced. This was followed by a comparison with the hazards produced at diverging and conservative boundaries. Weaker answers tended to describe all types of plate boundaries without explanation of the hazards produced.

(b)   Most agreed with the contention although a small minority argued that earthquakes were easier to predict. The methods employed for predicting and monitoring volcanoes are now well known, although there is often uncertainty as to exactly why their measurements are taken in the run up to a volcanic eruption. Better answers included a comparison with the levels of success in predicting other hazards such as earthquakes, hurricanes and tornadoes. There was a range of quality in responses to the second demand of ways of reducing the hazardous impact of volcanoes. The best responses were sensible, apposite and assessed. The weakest responses were little more than lists.

Question 6

(a)   Most answers concentrated on the economic conditions in Bangladesh and the difficulties this produced in responding to any hazardous event. Relatively few discussed the nature of hazards produced by tropical storms and why their hazardous impact was that shown in Fig. 2. Few accounts explained the nature of storm surges and why they were so lethal in the context of Bangladesh. Similarly, the relatively lower deaths from high winds and drowning went unexplained.

(b)   This produced many confused and rambling answers that involved a mixture of mass movements. Some catalogued types of falls, slides and flows and gave their effects in very general terms. Avalanches were the type of mass movement most often covered with some degree of understanding and were often well exemplified. The cause of all forms of mass movement were often given as a trigger or tipping point (tectonic, heavy rain etc.) rather than actual causes of more instability. The best answers were those based upon well chosen examples such as Aberfan, Galfur avalanche, Rio de Janeiro landslides or the Vajont dam.

Arid and Semi-Arid Environments

Apart from one or two Centres, this is not a popular study area. Centres that concentrate on this topic often produce answers of high quality, but elsewhere the answers are often very limited.

Question 7

(a)   The first part of this question was generally well covered with details of wind transport methods as well as the nature of wind abrasion and deflation. Less well achieved was the development of one type of desert landform. It was often included almost as an afterthought with rough diagrams of yardangs, zeugens or barchan dunes.

(b)   There were some excellent answers that described the development of wadi/valley systems alluvial fans and even pediments. Some debate was entered over relative roles of wind and water, although this was not often developed in the context of the past. Weaker answers could not develop the processes of water erosion and had difficulty in relating process to landform.

Question 8

(a)   There were a few excellent responses that made good use of the data provided. This was employed to outline differences between the two climates as well as forming a basis for explanation. Generally, explanations were on firmer ground when dealing with aridity. The effects of Hadley cell, ocean currents, continentality and rain shadow were all described. Explanations relating to semi-arid areas were often limited with few explaining the significance of the movement of the ITCZ. Weaker accounts merely regurgitated the data with little attempt at any explanation.

(b) Answers tended to be at either end of the quality spectrum with little in between. Knowledge of soils in hot arid environments has improved considerably in recent years, although semi-arid soils are often ignored. Many good responses gave detailed accounts of the nature of hot arid soils covering their lack of humus, unstructured nature, the upward movement of water and their alkalinity. Poor accounts developed little beyond the soils being dry and sandy. Plant and animal adaptions are often well known and there were many extremely detailed and comprehensive accounts. Weaker answers described little more than cacti and camels.

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Advanced Human Geography Options

Key messages

- At the start of the examination, reading carefully all the questions in the Options studied and looking closely at the accompanying resources, supports good question choice and effective responses.
- At this level it is important to develop points and link them clearly to the question, rather than just making statements or listing points without expansion.
- The ability to select from learned material, apply it and direct it to the actual question set is fundamental to success. Being able to use material in a manner other than that in which it was learned is a high order skill compared to basic recall.

General comments

As in previous sessions, ***Environmental management*** and ***Global interdependence*** were taken by the majority of Centres. Within these Options, **Questions 3** and **6** dominated the entry.

Candidates need to pay careful attention to all the demands of the question. Omitting to do key things, such as use examples, where specified, or referring to a resource in the Insert, limits outcome. For example, in **Question 2(b)** many candidates wrote about industrial estates without mentioning EPZs. In **Question 3(a)(ii)**, 'With reference to Fig. 2B …' was sometimes overlooked, which meant a maximum of 6 of the 8 marks. Many general answers were seen to **Question 4(b)** about degradation, although the question began, 'With reference to examples'. This was also true of a generalised approach to **Questions 6(b)** and **8(b)**.

The Insert contained a variety of styles of resources: line graphs in Figs. 1A and 1B; a text and bar graph in Figs. 2A and 2B; a different kind of line graph in Fig. 3; and a data table of GDP in Table 1. Throughout the course it is important to develop candidates' skills in interpreting a wide range of styles of resources, including those not seen this session, such as photographs and maps, and in expressing effectively what they find there.

Whichever Options are studied, teachers preparing candidates for examinations on this syllabus could emphasise helpfully that the main attributes which differentiate performance in responses at this level are:

- accuracy, specificity and detail of knowledge (AO1)
- conceptual rigour of understanding and the ability to apply it and make links (AO2)
- skills in interpreting resources and analysing issues and perspectives (AO3)
- development of evaluation and assessment (AO4).

Most candidates' work was legible and suitably expressed. A few rubric errors were seen where a candidate answered both questions from the same Option or answered more than two questions in total.

Comments on specific questions

Production, location and change

This Option remains popular, especially in countries in which the agricultural sector of the economy is significant in terms of lives and livelihoods and in which manufacturing industry has a major role.

Question 1

The question operates at two different scales in the two parts.

(a)   It was important to be able to identify 'trends', i.e. changes over time, from the figures, in order to explain them. Given the use of the command 'Suggest reasons', no credit was given to the description of the trends. One strong approach to the question was to consider first irrigated area, and then fertiliser use holistically, in suggesting reasons. This performed better than trying to deal with each world region's line on the graph separately, as that tended to hide trends and lead to repetition. To perform well, some overall global perspective was needed with candidates doing more than suggesting reasons for the trend in their own home region, often Africa. Some produced sweeping generalisations that were not robust, such as few crops being grown in Europe because it is too cold and population is falling.

(b)   Candidates took and argued a number of different positions on the given statement, based on argument and on evidence from agricultural change. Many argued that additional land was hard to find because of a range of factors including cost and population pressure, and so, however difficult in reality to do, intensification was easier. Others argued that intensification was hard to achieve with a lack of knowledge and of training and low inputs of labour and capital for improved seeds, fertilisers and irrigation. As such, opening up additional land for cultivation, especially where soil fertility was higher, such as occurs in shifting cultivation, was considered 'easier' in the question's terms. Some more sophisticated responses were seen in which specific contexts were used to support a response of the 'in one situation this / but in another situation that' approach.

Question 2

Comparatively few responses were seen. Responses to part **(a)**, on the informal sector, were often of higher quality than to part **(b)** on industrial estates and export processing zones (EPZs) as locations. In **(a)** it was important to follow the command words carefully.

(a) (i)   The four marks could be achieved with reference to characteristics such as the informal sector's being outside the law, using low skilled family labour including female labour and child labour, being located at home or on the streets near likely customers, and being diverse, involving three sectors, primary, secondary (manufacturing) and tertiary (services). Two developed points were needed for full marks.

(ii)   Better responses avoided overlap with content used in **(i)**. Good responses identified the lack of capacity of the formal sector to employ people in many LEDCs and the lack of jobs, combining this with reasons why people are unable to enter formal employment, such as illiteracy or their lack of training. Some identified the positives of the informal sector for survival and making a living with some prospect of improvement and betterment. Three well-developed points, preferably in an integrated response, were needed for full marks.

(b)   Most candidates took industrial estates and EPZs together in quite a general way. Knowledge of 'advantages and disadvantages' was stronger than of specific examples. Some examples given were examples in name only 'e.g. Johannesburg'. Good credit was given to located examples known to or studied by the candidates as these supported the general comments and added contemporary authenticity, for example where specific incentives (an advantage) or recent problems (a disadvantage) were explained. The very best responses showed good conceptual understanding of industrial location and used the associated terms effectively. At the lower end, some candidates lost the focus of the question and reproduced material about location more generally, or about transnational corporations (TNCs) and the advantages and disadvantages when they locate. If candidates had good examples of industrial estates and EPZs they would understand them much better.

Environmental management

Question 3

Responses to this question dominated the entry and the full range of answer quality was seen. It is a good example of the third key message found at the start of this report. The ability to select from learned material, apply it and direct it to the actual question set was fundamental to success. Being able to use material in a manner other than that in which it was learned is a high order skill compared to basic recall. Many candidates who had a case study of a country's energy strategy struggled to use it to consider 'the ideas of sustainability and self-reliance'.

(a) (i) Nearly all candidates achieved one mark for the idea that total energy demand is all energy needs. Fewer expressed the second idea, either that this was from all sectors (domestic, manufacturing, transport, etc.) or involving all sources of energy (oil, coal, gas, nuclear, renewables, etc.)

(ii) Better answers covered the advantages of each of the three renewable sources shown in Fig. 2B, compared to the usage of fossil fuels. Many articulated the problems of fossil fuel usage concisely, especially depletion, environmental degradation and the issue of energy security. The question was phrased in a positive way, 'why countries may choose to invest', so any content about why countries did not invest was not creditable, even if it was linked to the graph. This was one place where a careful reading of the question was needed and a disciplined response for relevance. At the lower end some candidates responded with the advantages and disadvantages of renewable energy which did not target the question directly. A small number referred only to biofuels even though the question was 'forms of energy', plural.

(b) The concept of sustainability, often involving the Brundtland definition, was stronger and more apparent in most responses than that of self-reliance. Many candidates took the two together without defining and identifying them, which limited the assessment made. Some interpreted sustainability weakly, as simply meaning long-lasting, without engaging with the term's environmental, economic and social dimensions. In energy terms self-reliance means a country using its own resource endowment and not depending on energy imports. Different countries import different forms of energy. All countries without oil reserves are dependent on imports of oil and petroleum for transport which is a significant issue both for energy security and for the future. Some countries import energy at peak times to avoid power cuts, such as the UK importing energy from France by submarine cable (HVDC). Some industrialising countries have large energy demands which they cannot meet, or cannot yet meet.

Any country could be taken. Some responses were exceptionally good on 'strategy' and offered considerable detail, such as named policies, dates and specific aims. China was frequently taken as the example and good responses developed a number of energy sources within the sector, linking these to the stated strategy explicitly. One approach that did not perform well was the attempt to make a case study of the Three Gorges Dam into the whole strategy. The UK case provided a good basis on which to consider both sustainability and self-reliance and some interesting use was made of Norway, with its electricity generation by HEP, and Iceland, a country powered by HEP and geothermal energy. Many candidates used their home country well, being able to write about it with experience and some cultural understanding of the context which is not the case for other locations. One indicator of answer quality was the use of case-specific detail, such as data about energy consumption and costs, predictions and quotations from the media and/or politicians about the energy sector.

Question 4

Some high quality responses were seen. Most candidates showed a limited understanding of combustion in **(a)** and seemed to find the analysis and assessment required in **(b)** challenging.

(a) Some candidates articulated a number of forms of burning very effectively, developing those which contribute greatly to pollution, such as the incomplete combustion of fuel in vehicles producing greenhouse gases and particulate matter, or the contribution of thermal power stations (coal, gas and oil). Other forms of combustion with local significance include domestic fires and forest burning. Some candidates did not associate burning with transportation, which limited the response. Better responses put burning in a context of population growth, growth in the global economy and increased expectations of quality of life and comfort underpinning its increase and the increase in air pollution in some parts of the world, such as in the emerging economic giants, China and India.

(b) After a more straightforward demand in **(a)**, this was an innovative part-question requiring candidates to consider similarities and differences between urban degradation and rural degradation. In many responses, Examiners could discern that this was new to candidates who wrote in a way that showed they were working it out in the examination. At this level, such opportunities are to be expected. Not all questions in part **(b)** will be classic, for example about the causes of the degradation of an environment, or how successful attempts have been to improve it.

The best responses identified similar causes, such as population pressure or development, perhaps showing how they manifest differently in urban areas from rural ones even within the same

MEDC or LEDC context. These responses then identified causes of degradation that differed, such as industrial development in urban areas and deforestation in rural areas. One effective approach was to consider broader issues in both urban and rural contexts, such as management/mismanagement, conflicts of interest between stakeholders and issues of financing, whether the profit motive or the financing of environmental protection. Some candidates produced the framework of an argument with little evidence or exemplar content. The best responses were richly evidenced, either by the detailed comparison and contrast of two examples, or by a wider-ranging exemplar base.

Global interdependence

Answers to **Question 6** dominated the entry. In some Centres there was strong uptake on **Question 5**.

Question 5

Of the three elements, **(a)(i)** and **(b)** were answered the most effectively.

(a) (i)   A full description consisted of some overall comment on pattern, such as that all tariffs decreased, with reference to each of the three groups of products and some data, detailing percentage tariff and dates. For agricultural goods it was not necessary to describe all the changes. Many used the verb 'fluctuates' as a useful summary.

    (ii)   Better quality responses showed understanding by integrating definitions of trade agreements and preferential tariffs into the writing. Many explained the help received through the use of one or more examples, although this was not necessary for full marks. Economic success was rightly seen as providing social and economic benefits, such as through investment in education and healthcare.

(b)   Stronger responses considered both the motivation for aid and the effectiveness of aid projects of different types, illustrating positive and negative views with specific, detailed, located examples. Whilst balance was not needed, it was important to consider both 'the giver' and 'the poor' as recipients. A few were willing to challenge the accepted views that all bilateral aid is 'bad' and all emergency aid is 'good', using evidence from examples studied. Many provided insightful comments about tied aid and knew the case of the Pergau Dam in Malaysia. Some made a useful distinction between aid from supranational organisations or governments and aid from NGOs. At the lower end of the spectrum of achievement, responses tended to lack the focus of the question and to be more about the pros and cons of aid in a general way, or the problems caused by it. Response quality would be enhanced by considering more types of aid than loans and financial aid only.

Question 6

One of the most popular questions on the paper. The full range of response quality was seen. Key to success was maintaining a focus on 'types' of international tourism in **(a)** and on 'economy' in **(b)**.

(a)   The question was about 'recent developments in the types of international tourism'. Responses about two or more types such as ecotourism, sustainable tourism, business tourism, wilderness tourism, adventure tourism, heritage tourism or medical tourism were anticipated. Some were described and reasoned very effectively, with some use of examples to support the general comments. It was important to maintain the focus on 'types' as many candidates wrote about the development of, or growth in, international tourism generally. Whilst some of these reasons could be made to apply to 'types', the lack of application often limited the outcome. For example, greater affluence does mean more people take holidays abroad, both in what could be called 'old types' of tourism, such as mass tourism to 'sun, sand and sea' destinations and in recently developed types. In relation to the question set, a link was needed from affluence to recent types of tourism, many of which are low intensity high yield (LIHY) for the destinations, represent niche markets and have 'exclusive' appeal, given the low numbers of visitors and the perceived desirability of the holiday experience.

(b)   The question suggested a simple structure for responses, considering the positive impacts of tourism on the economy of the country or countries chosen, and then the negative impacts, before coming to an overall assessment. The highest-scoring responses were conceptually strong, for example about the tourism multiplier, the labour market or dependency, and well-supported with

located detail and/or data (percentages, numbers, $ values, etc.). Some compared and contrasted two examples, such as that of a small island economy dependent on tourism and vulnerable to changes in the market, with an economy in which tourism, although of great importance, is only part, as in Kenya and many European countries. Response quality could be enhanced in three ways: by nuanced comments, rather than simple, mainly positive ones such as 'creates many jobs', etc.; by avoiding true content of little or no relevance here, such as recall knowledge of models; and by developing the assessment offered. Simple assessments included the idea that "tourism is vital to this country's economy". Some well-developed assessments considered economic impact in terms of the dynamics of tourism, changes over time, threats, risks and potential in a conceptually robust and contemporary manner.

Economic transition

Question 7 was chosen by the majority of candidates taking this Option.

Question 7

Many candidates used the resource, Table 1, to good effect in **(a)**. In responses to **(b)**, general knowledge and understanding of NICs needed enhancing with reference to examples to perform well.

(a) (i)   The full range of answer quality was seen in responses as they varied greatly in data response skills. A full response summarised the projected changes in the top 10 countries by name, their rank order and GDP, using data to achieve 4–5 marks. Many identified the significance of China and India, how the MEDCs which dominated in 2009 were eclipsed by the rise of NICs such as new-entering Mexico and Indonesia, and by four of the BRICS (Brazil, Russia, India and China). Key elements of the projected changes to GDP were overall increase in size (approximately four times growth in the first rank economy) and increases and decreases on which the rises and falls in rank order were based. Some weaker responses simply rewrote Table 1 in words, row by row, or only considered the highest and lowest countries, or the top few.

    (ii)   This was answered well in many cases, with the difficulties of statistical projection being understood by most candidates. Reasons tended to be more about external influences, such as recessions or catastrophic events, than about internal changes, such as to regimes. Full marks could be achieved by any two valid well-developed points, with or without the use of examples.

(b)   Some very high quality responses were seen, in which the required factors provided a natural structure to the response and detailed content from examples and/or case studies of NICs was used impressively. Some contrasted the emergence and growth of two NICs, such as that of the 'Asian tiger' NICs, Singapore and South Korea. Given the plural in the question, a response based on one NIC only was limited in the number of marks which could be achieved. Better responses showed a critical appreciation to factors and to 'emergence and growth', which are two phases of economic development, providing an evaluation which in the words of one Examiner, "went beyond simply 'bringing success' ". Lower-scoring responses tended to be more descriptive, or narrated the story of an NIC. In these answers, factors were more difficult to identify clearly and some frameworks used were not made pertinent, such as Rostow's stages of growth.

Question 8

Relatively few candidates chose this question. Responses to **(b)**, which is a classic issue in regional development, tended to be firmer than to **(a)** which often lacked detail in the comparisons made.

(a)   To perform well, candidates needed to compare the HPI, which, being relatively new, may have been an unfamiliar measure of development to some, with one measure of their choice. Both single criterion measures, such as GDP per capita PPP, and other multiple criteria measures, such as HDI, were taken. Better responses made good use of the content in the stem, recognising the importance of measuring environmental impact in the 21st century, showing how life expectancy reflects development in several key sectors (such as food production, healthcare, education and governance) and commenting realistically on the difficulty of measuring 'life-satisfaction' cross-culturally. Some high quality comments were made about the need to measure the political dimension of development in terms of representation, governance, etc. and gender, for example in terms of empowerment. Many candidates stated that development is a complex idea, even a controversial one. Some still went on to say that a classic economic measure was the stronger one to take, which is hard to support.

(b) The persistence of disparities in development is a familiar issue. Classical economics expects initial divergence between regions to change over time to convergence, as lagging regions 'catch up' in development. Good explanations considered this issue both theoretically, in terms such as those of spread effects and backwash effects, core and periphery, or cumulative causation, and in terms of other factors working to reduce or increase these differences, such as remoteness, resource endowment, economic change and government policy. A few high-scoring responses were careful to consider both social development and economic development. Some picked up on the phrase in the question 'tend to last for a long time' in a critical way, considering timescale or showing how experience varies. Better quality responses were based in one or more examples and developed from them. At the lower end, some general responses were seen and others which used examples in name only, such as 'e.g. Brazil'. In these responses key terms such as *backwash effects* were sometimes used without explanation or illustration to make them convincing.

GEOGRAPHY

Paper 9696/32

Advanced Human Geography Options

Key messages

- Answer quality can be enhanced by providing detail and some depth by developing points or arguments, so avoiding sweeping statements and generalisation.
- The focus of the response needs to be the focus of the question. For a question which asks about attempts to overcome problems, the response needs to focus on these attempts, rather than first explaining how the problems were caused.
- All elements of the question need to be addressed, as credit is given for each element.

General comments

In a moderate-sized entry from this time zone in the middle of the year, the full range of answer quality was encountered. A spectrum of quality of responses was seen from excellent contemporary geography showing detailed located knowledge (AO1), strong conceptual understanding (AO2), and skills in extended writing (AO3) and evaluation (AO4).

The options *Environmental Management* and *Global interdependence* remain the more popular, and within them **Questions 3** and **6**. Many responses and some high quality work were seen on the other two options also. There was much good, and some exceptional, use of home country and home region examples and case studies from a range of locations including Brunei, Malaysia and Pakistan. This is to be welcomed and is part of the intention of 9696 as a syllabus.

The Insert contained four resources of different styles and at different scales, which required a variety of skills to read effectively. **Fig. 1** was an annotated location map for a new factory; **Table 1** contained data about the consumption of natural gas and nuclear power by world region; **Photograph A** showed a popular tourist destination in Europe, of 'sun, sand and sea' character; and **Fig. 2**, was a version of the sector model developed by Clark and Fisher. All the part and sub-part questions based on these resources required the integration of information from the resource with the response, for example data in **Question 3(a)**. The skills of making appropriate and accurate reference to resources are a development of skills used in the data response questions in *Section A* of the Paper 1 variants.

It is worth drawing attention to a marking approach of which teachers preparing candidates for the syllabus should be aware. In parts **(a)** of questions, where there is no division into sub-parts and 10 marks are available, three bands of marks, **0–4**, **5–7** and **8–10**, are now commonly used to assist Examiners with differentiating responses reliably. In all questions which ask explicitly for examples, responses without exemplar support may achieve a maximum of 6/10, i.e. the middle mark in the middle band.

Comments on specific questions

Production, location and change

More responses were seen to **Question 1** than to **Question 2**, but this varied greatly by Centre. Some combine teaching manufacturing industry and related services in this Option, with the industrial content in *Economic transition* very effectively.

Question 1

Overall, responses to **(a) (ii)** were stronger than to **(i)**. Few candidates were able to develop the aspects of agriculture that can be attributed to government in sufficient detail or depth to produce high quality responses to **(b)**.

(a) (i) Most candidates interpreted 'physical factors' correctly and wrote about the ways that aspects such as temperature, precipitation (or the lack of it), slope and soil characteristics, such as infertility or stoniness, still operate as constraints. Pests and diseases were acceptable as physical factors and so were climatic hazards which destroy crops. Some candidates misinterpreted 'physical' as being related to labour. This could be because of the expression 'physical labour'; however labour is defined as a human factor which is both social and economic. The best quality responses provided two or more developed points and addressed the term 'land-use' in the question clearly. Land-use means what the land is used for. An example of how this can be presented is given here. 'Drought, which is a physical factor, makes cultivating the soil for crops impossible. Therefore, in areas such as the Sahel in Africa, land-use is restricted to pastoralism (grazing animals).'

(ii) Response quality was often stronger than for **(i)**. Candidates needed to develop two or more explanatory points to gain full marks. Irrigation, glasshouses (greenhouses) often linked to horticulture in the Netherlands, terracing and indoor environments for raising animals were the main elements seen in responses. Many candidates took a descriptive approach which, given the command word 'Explain', limited rewards.

(b) The question was phrased in an open way to allow candidates to make the best use of the examples or case study they had. Some used two or more examples of government influences, others developed a single case study, most often that of the Green Revolution or a classic case of land reform and its impacts such as in Malaysia or Brazil. Some responses showed a narrow view of 'political factors'. It is a term which applies to any factor linked to government (national, regional or local scale), through decision-making, policy, strategy, initiatives and investment in schemes from training and agricultural extension, to land reform, marketing and subsidies for inputs such as fertilisers. It can also include conflict, instability and regime change and their effects on agriculture.

Better quality responses were characterised by the focus of the question on 'agricultural land-use and practices', being the focus of the response. This involved skills in the selection, direction and application of learned material to the question set, rather than a narrative response based on recall knowledge. For example, government investment in the construction of dams has allowed rivers to be controlled and the water abstracted to intensify production. This affects both land-use and practices.

Question 2

(a) (i) A number of reasons for the location could be derived from the information given in Fig. 1, such as labour from the towns and cities, room for expansion on the edge of the city and the airport both for company executives and for components, given that the context is 'luxury cars'. Some candidates did not notice 'other than functional linkages' in the question and wrote about aspects such as transfers of components, which were not creditable. Clear reference to Fig. 1 was needed for full marks.

(ii) The concept of functional linkages was firm and there were some very good answers indeed, in relation to cost reduction and profit maximisation, production chains and the business's efficiency.

(b) The key to success here was the use of the case study chosen for Syllabus 1.4. Other examples often did not have the content about 'industrial policy' and change which the wording of the question required and so the assessment was limited. Some candidates presented industrial policy in more than one phase, such as for China, Singapore or South Korea, which was an effective way to consider both the location and the organisation of manufacturing. Material on transnational corporations could be used well when the link to 'industrial policy' was made, for example about attracting foreign direct investment (FDI).

Environmental management

In this Option, **Question 3**, on energy and environmental degradation was more popular as a choice than **Question 4** on deforestation and water supply.

Question 3

Question 3 was the most chosen question on the paper overall. The full spectrum of response quality was seen.

(a)   The key to a successful response was approaching Table 1 and its interpretation in such a way that 'patterns' became apparent. A descriptive approach, taking each world region and each of the two sources of power separately did not achieve the necessary focus on pattern. One Examiner reported, "although pattern requires more thinking, it does not require a lengthy response". Candidates are encouraged to think about the data and to plan their response before they start to write both for this reason and to avoid repetition. The description of the patterns in Table 1 needed to refer to all four world regions and to use the percentage data. The explanation could be developed in different ways. Reasons most commonly suggested for the patterns described were level of development, resource endowment and attitude to nuclear power, especially relating to safety. It was not necessary but many candidates integrated country-specific content creditably. One term that was misinterpreted by some candidates was *natural gas*. Seen as a fuel for cars it was probably confused with the American usage of 'gas' meaning petrol.

(b)   A variety of degraded environments were seen, both rural and urban, at different scales. Most were terrestrial environments (land), but some good responses were seen both on air pollution and marine pollution in Asia.

        This part-question is an illustration of the second key message at the start of this report. Many candidates spent some time providing background information about the degraded environment and introducing the causes of its degradation, sometimes at some length. For material to be credited it has to be pertinent to the specific questions set, not simply true or recalled accurately in the examination. This approach had implications for time management in that the 'attempts' and the evaluation of their success were limited as a result. The best evaluations provided clear success criteria for 'the effectiveness', such as improvements in environmental quality or in people's lives. Many also identified the key reasons for the attempts' relative success or failure, such as law enforcement, sustained funding or the cooperation of different stakeholders.

Question 4

Reponses to part **(a)** were often more successful than to part **(b)**, for which few candidates seemed to have the necessary detailed material.

(a) (i)   This was handled well by the majority of candidates. Responses covered a number of causes, such as unsustainable collection of fuelwood, population pressure and the growth of settlements, agricultural expansion, wood for construction, mining, logging (sometimes illegally), effectively.

   (ii)   This sub-part was more challenging conceptually and involved the correct interpretation of the word 'constraint' in this context. Many answered this very well, developing a response about key constraints such as other priorities, conflicts of interest, scale, funding issues, profit motivation, weak government and/or a lack of enforcement. In some answers, the word 'constraint' seemed to have been confused with effect or impact.

(b)   One key to success here was recognising that this part-question was about water quantity rather than water quality, as in 'increasing the water supply'. As such examples of water pollution and attempts to solve it were not creditable. Candidates who developed responses about two or more different attempts, at any scale from digging a well to major infrastructure projects such as dams, could achieve high marks if offering detail and providing a good assessment of the attempts themselves and/or the outcomes. Some of the best provided an assessment from more than one point of view, notably in relation to dam construction and its effects on landscapes, lives and livelihoods.

Global interdependence

Question 6, on tourism, was by far the more popular in this Option.

Question 5

Examiners observed that there were some very good responses to this question. Most responses were of moderate quality compared to those for **Question** 6, the alternative.

(a)   Overall, candidates' knowledge and understanding of the term *debt relief* was stronger than of the term *trade agreements*. There were a number of possible approaches to trade agreements,

including through the World Trade Organization (WTO), product-specific trade agreements and named initiatives such as NAFTA (North American Free Trade Agreement). Suggestions 'of their benefits to LEDCs' ranged in quality from the specific, such as how Mexico benefits from NAFTA, to basic and general ideas that they help. When a question asks two things for each of two terms (meaning and benefits), it is important to consider both for each term.

(b) Some excellent responses were seen to this part-question, offering more than one perspective and coming to an evidence-based assessment. These considered causes of the debt crisis that were internal to named LEDCs and causes that were external. Many recognised the significance of government borrowing, the oil crisis and the challenge of repayment and could also detail country-specific circumstances which were contributory. At the lower end of the spectrum of attainment, some candidates produced a broad argument and provided an overall assessment, in a trained manner, showing very little material knowledge of the debt crisis.

Question 6

This was one of the most popular questions on the paper.

(a) (i) The keys to success here were recognising the significance of the phrase 'local economy', so avoiding benefits that were not creditable, and referring to Photograph A in the response. Four marks could be achieved by developing two or more benefits, such as direct and indirect employment, the tourism multiplier or the stimulus to local businesses from bars and restaurants to taxis and leisure services such as water sports or entertainment.

(ii) A full response required some explanation of two aspects. One was problems developing with the destination, such as environmental degradation, its falling out of fashion, negative reactions from the resident population to tourists and tourism or perception of risk/danger, for example in relation to crime, disease or adverse media reports. The other aspect was competition from other newer destinations, for example linked to changing types of tourism (ecotourism, adventure tourism, etc.) in unknown and more distant locations, and their advertising and promotion. Many candidates integrated conceptual understanding from models such as the tourism life cycle or Doxey's 'Irridex' effectively. Some introduced the whole model, which for a small mark allocation was unnecessary, rather than referring to the relevant element(s) of the models.

(b) Sustainability is firmly understood as a concept and many candidates expressed it in terms of its environmental, economic and social dimensions. Using an example of ecotourism was a popular way to approach the question, although it was necessary to do so. The highest-scoring responses were well-founded in one or more case studies and picked up on 'truly sustainable' in the question, weighing tourism's claims against reality. One useful term is *greenwashing*, which is when tourism is presented as 'green' and environmentally-friendly to attract customers and gain revenue, but actually is not.

Three ways to enhance candidate performance on this style of questions are suggested. Firstly, avoiding spending a lot of time writing about 'the negative impacts', when the focus of the question is about attempts to reduce them. Secondly, if more than one attempt is taken, making sure that later examples do not simply repeat the same ideas in a different context as given for the first. Thirdly, using the words of the question in the assessment. In this case it meant answering whether the chosen attempt was 'truly sustainable', not whether it was a success.

Economic transition

The majority of candidates chose **Question 8** with its resource-based part **(a)** and classic part **(b)**.

Question 7

This was less popular than **Question 8** and was answered well by only a few candidates.

(a) Most candidates chose to compare and contrast one single criterion measure, such as GDP per person or a demographic measure, such as infant mortality rate (IMR), with one multiple criteria measure such as HDI, MPI or PQLI, although it was not necessary to do so. Better responses were careful to consider social inequalities and economic inequalities; what the chosen measures are able to show and unable to show; demonstrated clear understanding of 'levels of development' and integrated some exemplification. Providing two separate accounts was acceptable for the

description, but did not perform well for the command word 'Compare'. It was acceptable to include content about difficulties with data collection and calculation and how they impact effective measurement, but not necessary.

(b) Candidates tended to write about either industrialisation or deindustrialisation. They made few links between the two, despite the wording of the syllabus in *section 4.2*. One approach that worked well was to take one or more examples of where manufacturing industry had relocated from one country, usually an MEDC, to another country, usually an LEDC or NIC, to reduce costs and gain other benefits, such as market penetration, non-unionised labour and less strict environmental laws. In this context some good work was seen about the emergence of Asian NICs including South Korea, Thailand and China as 'the workshop of the world'. A few recognised that in time one country may lose industry to the next cheapest location, for example Vietnam. Some candidates needed a firmer understanding of industrialisation within the context of globalisation, the rise of transnational corporations (TNCs) and the global shift in production.

Question 8

Some very good responses were seen to this question, showing skills of different kinds in answering its two parts.

(a) This version of the sector model seemed familiar to most candidates. With the command word 'Explain', there were no marks available for description. Most candidates recognised this. A full answer covered all four sectors over time. Explanation needed to be coherent but did not have to be detailed. Better responses demonstrated understanding that there was more than one thing going on, so avoiding a 'single factor' explanation. So, for example, the improvement of education is important, as skills required for secondary employment are greater than for primary employment, etc. However, the formation of capital is also important, so that money which is saved is then later invested in the sectors which bring the greatest return, first secondary, then tertiary and, finally, quaternary. Some high-scoring candidates explained how people choose to move away from hard physical work on the land to employment in the secondary sector or tertiary sector, in shops, offices and Schools as standards of living rise, opportunities increase and aspirations change.

(b) Some excellent responses were seen, in which strong conceptual understanding of regional development and its theoretical base were combined with a detailed country-specific example (or examples) in a confident assessment. The best argued carefully, picking up on the word 'always' in the question discriminatingly. In moderate quality responses candidates used ideas of core and periphery and of cumulative causation appropriately, often in a general way. Some made unsupported assessment, or offered examples in name only, 'e.g. Brazil', which limited the reward.

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Key messages

- At the start of the examination, reading carefully all the questions in the Options studied and looking closely at the accompanying resources, supports good question choice and effective responses.
- At this level it is important to develop points and link them clearly to the question, rather than just making statements or listing points without expansion.
- The ability to select from learned material, apply it and direct it to the actual question set is fundamental to success. Being able to use material in a manner other than that in which it was learned is a high order skill compared to basic recall.

General comments

As in previous sessions, ***Environmental management*** and ***Global interdependence*** were taken by the majority of Centres. Within these Options, **Questions 3** and **6** dominated the entry.

Candidates need to pay careful attention to all the demands of the question. Omitting to do key things, such as use examples, where specified, or referring to a resource in the Insert, limits outcome. For example, in **Question 2(b)** many candidates wrote about industrial estates without mentioning EPZs. In **Question 3(a)(ii)**, 'With reference to Fig. 2B …' was sometimes overlooked, which meant a maximum of 6 of the 8 marks. Many general answers were seen to **Question 4(b)** about degradation, although the question began, 'With reference to examples'. This was also true of a generalised approach to **Questions 6(b)** and **8(b)**.

The Insert contained a variety of styles of resources: line graphs in Figs. 1A and 1B; a text and bar graph in Figs. 2A and 2B; a different kind of line graph in Fig. 3; and a data table of GDP in Table 1. Throughout the course it is important to develop candidates' skills in interpreting a wide range of styles of resources, including those not seen this session, such as photographs and maps, and in expressing effectively what they find there.

Whichever Options are studied, teachers preparing candidates for examinations on this syllabus could emphasise helpfully that the main attributes which differentiate performance in responses at this level are:

- accuracy, specificity and detail of knowledge (AO1)
- conceptual rigour of understanding and the ability to apply it and make links (AO2)
- skills in interpreting resources and analysing issues and perspectives (AO3)
- development of evaluation and assessment (AO4).

Most candidates' work was legible and suitably expressed. A few rubric errors were seen where a candidate answered both questions from the same Option or answered more than two questions in total.

Comments on specific questions

Production, location and change

This Option remains popular, especially in countries in which the agricultural sector of the economy is significant in terms of lives and livelihoods and in which manufacturing industry has a major role.

Question 1

The question operates at two different scales in the two parts.

(a) It was important to be able to identify 'trends', i.e. changes over time, from the figures, in order to explain them. Given the use of the command 'Suggest reasons', no credit was given to the description of the trends. One strong approach to the question was to consider first irrigated area, and then fertiliser use holistically, in suggesting reasons. This performed better than trying to deal with each world region's line on the graph separately, as that tended to hide trends and lead to repetition. To perform well, some overall global perspective was needed with candidates doing more than suggesting reasons for the trend in their own home region, often Africa. Some produced sweeping generalisations that were not robust, such as few crops being grown in Europe because it is too cold and population is falling.

(b) Candidates took and argued a number of different positions on the given statement, based on argument and on evidence from agricultural change. Many argued that additional land was hard to find because of a range of factors including cost and population pressure, and so, however difficult in reality to do, intensification was easier. Others argued that intensification was hard to achieve with a lack of knowledge and of training and low inputs of labour and capital for improved seeds, fertilisers and irrigation. As such, opening up additional land for cultivation, especially where soil fertility was higher, such as occurs in shifting cultivation, was considered 'easier' in the question's terms. Some more sophisticated responses were seen in which specific contexts were used to support a response of the 'in one situation this / but in another situation that' approach.

Question 2

Comparatively few responses were seen. Responses to part **(a)**, on the informal sector, were often of higher quality than to part **(b)** on industrial estates and export processing zones (EPZs) as locations. In **(a)** it was important to follow the command words carefully.

(a)(i) The four marks could be achieved with reference to characteristics such as the informal sector's being outside the law, using low skilled family labour including female labour and child labour, being located at home or on the streets near likely customers, and being diverse, involving three sectors, primary, secondary (manufacturing) and tertiary (services). Two developed points were needed for full marks.

(ii) Better responses avoided overlap with content used in **(i)**. Good responses identified the lack of capacity of the formal sector to employ people in many LEDCs and the lack of jobs, combining this with reasons why people are unable to enter formal employment, such as illiteracy or their lack of training. Some identified the positives of the informal sector for survival and making a living with some prospect of improvement and betterment. Three well-developed points, preferably in an integrated response, were needed for full marks.

(b) Most candidates took industrial estates and EPZs together in quite a general way. Knowledge of 'advantages and disadvantages' was stronger than of specific examples. Some examples given were examples in name only 'e.g. Johannesburg'. Good credit was given to located examples known to or studied by the candidates as these supported the general comments and added contemporary authenticity, for example where specific incentives (an advantage) or recent problems (a disadvantage) were explained. The very best responses showed good conceptual understanding of industrial location and used the associated terms effectively. At the lower end, some candidates lost the focus of the question and reproduced material about location more generally, or about transnational corporations (TNCs) and the advantages and disadvantages when they locate. If candidates had good examples of industrial estates and EPZs they would understand them much better.

Environmental management

Question 3

Responses to this question dominated the entry and the full range of answer quality was seen. It is a good example of the third key message found at the start of this report. The ability to select from learned material, apply it and direct it to the actual question set was fundamental to success. Being able to use material in a manner other than that in which it was learned is a high order skill compared to basic recall. Many candidates who had a case study of a country's energy strategy struggled to use it to consider 'the ideas of sustainability and self-reliance'.

(a) (i) Nearly all candidates achieved one mark for the idea that total energy demand is all energy needs. Fewer expressed the second idea, either that this was from all sectors (domestic, manufacturing, transport, etc.) or involving all sources of energy (oil, coal, gas, nuclear, renewables, etc.)

(ii) Better answers covered the advantages of each of the three renewable sources shown in Fig. 2B, compared to the usage of fossil fuels. Many articulated the problems of fossil fuel usage concisely, especially depletion, environmental degradation and the issue of energy security. The question was phrased in a positive way, 'why countries may choose to invest', so any content about why countries did not invest was not creditable, even if it was linked to the graph. This was one place where a careful reading of the question was needed and a disciplined response for relevance. At the lower end some candidates responded with the advantages and disadvantages of renewable energy which did not target the question directly. A small number referred only to biofuels even though the question was 'forms of energy', plural.

(b) The concept of sustainability, often involving the Brundtland definition, was stronger and more apparent in most responses than that of self-reliance. Many candidates took the two together without defining and identifying them, which limited the assessment made. Some interpreted sustainability weakly, as simply meaning long-lasting, without engaging with the term's environmental, economic and social dimensions. In energy terms self-reliance means a country using its own resource endowment and not depending on energy imports. Different countries import different forms of energy. All countries without oil reserves are dependent on imports of oil and petroleum for transport which is a significant issue both for energy security and for the future. Some countries import energy at peak times to avoid power cuts, such as the UK importing energy from France by submarine cable (HVDC). Some industrialising countries have large energy demands which they cannot meet, or cannot yet meet.

Any country could be taken. Some responses were exceptionally good on 'strategy' and offered considerable detail, such as named policies, dates and specific aims. China was frequently taken as the example and good responses developed a number of energy sources within the sector, linking these to the stated strategy explicitly. One approach that did not perform well was the attempt to make a case study of the Three Gorges Dam into the whole strategy. The UK case provided a good basis on which to consider both sustainability and self-reliance and some interesting use was made of Norway, with its electricity generation by HEP, and Iceland, a country powered by HEP and geothermal energy. Many candidates used their home country well, being able to write about it with experience and some cultural understanding of the context which is not the case for other locations. One indicator of answer quality was the use of case-specific detail, such as data about energy consumption and costs, predictions and quotations from the media and/or politicians about the energy sector.

Question 4

Some high quality responses were seen. Most candidates showed a limited understanding of combustion in **(a)** and seemed to find the analysis and assessment required in **(b)** challenging.

(a) Some candidates articulated a number of forms of burning very effectively, developing those which contribute greatly to pollution, such as the incomplete combustion of fuel in vehicles producing greenhouse gases and particulate matter, or the contribution of thermal power stations (coal, gas and oil). Other forms of combustion with local significance include domestic fires and forest burning. Some candidates did not associate burning with transportation, which limited the response. Better responses put burning in a context of population growth, growth in the global economy and increased expectations of quality of life and comfort underpinning its increase and the increase in air pollution in some parts of the world, such as in the emerging economic giants, China and India.

(b) After a more straightforward demand in **(a)**, this was an innovative part-question requiring candidates to consider similarities and differences between urban degradation and rural degradation. In many responses, Examiners could discern that this was new to candidates who wrote in a way that showed they were working it out in the examination. At this level, such opportunities are to be expected. Not all questions in part **(b)** will be classic, for example about the causes of the degradation of an environment, or how successful attempts have been to improve it.

The best responses identified similar causes, such as population pressure or development, perhaps showing how they manifest differently in urban areas from rural ones even within the same

MEDC or LEDC context. These responses then identified causes of degradation that differed, such as industrial development in urban areas and deforestation in rural areas. One effective approach was to consider broader issues in both urban and rural contexts, such as management/mismanagement, conflicts of interest between stakeholders and issues of financing, whether the profit motive or the financing of environmental protection. Some candidates produced the framework of an argument with little evidence or exemplar content. The best responses were richly evidenced, either by the detailed comparison and contrast of two examples, or by a wider-ranging exemplar base.

Global interdependence

Answers to **Question 6** dominated the entry. In some Centres there was strong uptake on **Question 5**.

Question 5

Of the three elements, **(a)(i)** and **(b)** were answered the most effectively.

(a) (i) A full description consisted of some overall comment on pattern, such as that all tariffs decreased, with reference to each of the three groups of products and some data, detailing percentage tariff and dates. For agricultural goods it was not necessary to describe all the changes. Many used the verb 'fluctuates' as a useful summary.

(ii) Better quality responses showed understanding by integrating definitions of trade agreements and preferential tariffs into the writing. Many explained the help received through the use of one or more examples, although this was not necessary for full marks. Economic success was rightly seen as providing social and economic benefits, such as through investment in education and healthcare.

(b) Stronger responses considered both the motivation for aid and the effectiveness of aid projects of different types, illustrating positive and negative views with specific, detailed, located examples. Whilst balance was not needed, it was important to consider both 'the giver' and 'the poor' as recipients. A few were willing to challenge the accepted views that all bilateral aid is 'bad' and all emergency aid is 'good', using evidence from examples studied. Many provided insightful comments about tied aid and knew the case of the Pergau Dam in Malaysia. Some made a useful distinction between aid from supranational organisations or governments and aid from NGOs. At the lower end of the spectrum of achievement, responses tended to lack the focus of the question and to be more about the pros and cons of aid in a general way, or the problems caused by it. Response quality would be enhanced by considering more types of aid than loans and financial aid only.

Question 6

One of the most popular questions on the paper. The full range of response quality was seen. Key to success was maintaining a focus on 'types' of international tourism in **(a)** and on 'economy' in **(b)**.

(a) The question was about 'recent developments in the types of international tourism'. Responses about two or more types such as ecotourism, sustainable tourism, business tourism, wilderness tourism, adventure tourism, heritage tourism or medical tourism were anticipated. Some were described and reasoned very effectively, with some use of examples to support the general comments. It was important to maintain the focus on 'types' as many candidates wrote about the development of, or growth in, international tourism generally. Whilst some of these reasons could be made to apply to 'types', the lack of application often limited the outcome. For example, greater affluence does mean more people take holidays abroad, both in what could be called 'old types' of tourism, such as mass tourism to 'sun, sand and sea' destinations and in recently developed types. In relation to the question set, a link was needed from affluence to recent types of tourism, many of which are low intensity high yield (LIHY) for the destinations, represent niche markets and have 'exclusive' appeal, given the low numbers of visitors and the perceived desirability of the holiday experience.

(b) The question suggested a simple structure for responses, considering the positive impacts of tourism on the economy of the country or countries chosen, and then the negative impacts, before coming to an overall assessment. The highest-scoring responses were conceptually strong, for example about the tourism multiplier, the labour market or dependency, and well-supported with

located detail and/or data (percentages, numbers, $ values, etc.). Some compared and contrasted two examples, such as that of a small island economy dependent on tourism and vulnerable to changes in the market, with an economy in which tourism, although of great importance, is only part, as in Kenya and many European countries. Response quality could be enhanced in three ways: by nuanced comments, rather than simple, mainly positive ones such as 'creates many jobs', etc.; by avoiding true content of little or no relevance here, such as recall knowledge of models; and by developing the assessment offered. Simple assessments included the idea that "tourism is vital to this country's economy". Some well-developed assessments considered economic impact in terms of the dynamics of tourism, changes over time, threats, risks and potential in a conceptually robust and contemporary manner.

Economic transition

Question 7 was chosen by the majority of candidates taking this Option.

Question 7

Many candidates used the resource, Table 1, to good effect in **(a)**. In responses to **(b)**, general knowledge and understanding of NICs needed enhancing with reference to examples to perform well.

(a) (i) The full range of answer quality was seen in responses as they varied greatly in data response skills. A full response summarised the projected changes in the top 10 countries by name, their rank order and GDP, using data to achieve 4–5 marks. Many identified the significance of China and India, how the MEDCs which dominated in 2009 were eclipsed by the rise of NICs such as new-entering Mexico and Indonesia, and by four of the BRICS (Brazil, Russia, India and China). Key elements of the projected changes to GDP were overall increase in size (approximately four times growth in the first rank economy) and increases and decreases on which the rises and falls in rank order were based. Some weaker responses simply rewrote Table 1 in words, row by row, or only considered the highest and lowest countries, or the top few.

(ii) This was answered well in many cases, with the difficulties of statistical projection being understood by most candidates. Reasons tended to be more about external influences, such as recessions or catastrophic events, than about internal changes, such as to regimes. Full marks could be achieved by any two valid well-developed points, with or without the use of examples.

(b) Some very high quality responses were seen, in which the required factors provided a natural structure to the response and detailed content from examples and/or case studies of NICs was used impressively. Some contrasted the emergence and growth of two NICs, such as that of the 'Asian tiger' NICs, Singapore and South Korea. Given the plural in the question, a response based on one NIC only was limited in the number of marks which could be achieved. Better responses showed a critical appreciation to factors and to 'emergence and growth', which are two phases of economic development, providing an evaluation which in the words of one Examiner, "went beyond simply 'bringing success' ". Lower-scoring responses tended to be more descriptive, or narrated the story of an NIC. In these answers, factors were more difficult to identify clearly and some frameworks used were not made pertinent, such as Rostow's stages of growth.

Question 8

Relatively few candidates chose this question. Responses to **(b)**, which is a classic issue in regional development, tended to be firmer than to **(a)** which often lacked detail in the comparisons made.

(a) To perform well, candidates needed to compare the HPI, which, being relatively new, may have been an unfamiliar measure of development to some, with one measure of their choice. Both single criterion measures, such as GDP per capita PPP, and other multiple criteria measures, such as HDI, were taken. Better responses made good use of the content in the stem, recognising the importance of measuring environmental impact in the 21st century, showing how life expectancy reflects development in several key sectors (such as food production, healthcare, education and governance) and commenting realistically on the difficulty of measuring 'life-satisfaction' cross-culturally. Some high quality comments were made about the need to measure the political dimension of development in terms of representation, governance, etc. and gender, for example in terms of empowerment. Many candidates stated that development is a complex idea, even a controversial one. Some still went on to say that a classic economic measure was the stronger one to take, which is hard to support.

(b)   The persistence of disparities in development is a familiar issue. Classical economics expects initial divergence between regions to change over time to convergence, as lagging regions 'catch up' in development. Good explanations considered this issue both theoretically, in terms such as those of spread effects and backwash effects, core and periphery, or cumulative causation, and in terms of other factors working to reduce or increase these differences, such as remoteness, resource endowment, economic change and government policy. A few high-scoring responses were careful to consider both social development and economic development. Some picked up on the phrase in the question 'tend to last for a long time' in a critical way, considering timescale or showing how experience varies. Better quality responses were based in one or more examples and developed from them. At the lower end, some general responses were seen and others which used examples in name only, such as 'e.g. Brazil'. In these responses key terms such as *backwash effects* were sometimes used without explanation or illustration to make them convincing.