GEOGRAPHY

Paper 9696/11
Core Geography

General Comments

There were outstanding performances from some candidates on this paper, displaying both breadth and depth of geographical knowledge.

Generally, the response to the examination was much in line with those of the recent past with candidates exhibiting similar strengths and weaknesses as those seen in previous examinations. Marks continue to be lost in **Section A** due to a lack of precision in the description of and identification of the data and resource material. In **Question 2(a)** many candidates did not identify the precise category of climatic data and in **Question 4(a)** did not make a comparison of the data. Photographs continue to be under exploited by most candidates. Too often candidates appear to identify the main component of the photograph, for instance a mass movement in **Question 3** or a favella in **Question 6**, and then write generic descriptions without further reference to the photograph. Accurate observation is rewarded rather than speculation.

In **Section B**, the precision of definition has been improved and relatively few marks were lost through inaccuracy. Most improvement could have been gained in part **(b)** of the questions where candidates frequently did not address all aspects of the questions, e.g. by not addressing both rock type and soils in **7(b)**, uplift as well as rainfall in **8(b)** or both the nature and intensity of weathering in **9(b)**.

In **Section C**, it was the part **(c)** of questions where candidates often did not address the questions asked. In **10(c)** the success of attempts to control natural increase was not assessed. In **11(c)** forced and voluntary migration were not separately identified and in **12(c)** specific strategies were not discussed. Throughout the paper, the use of examples will always be credited, but clearly wherever they are demanded by the question – not utilising them will result in little credit being rewarded.

It is worth noting the overall clarity of handwriting and the high standards of English that were evident in most candidates work.

Comments on Specific Questions

Section A

Question 1

(a) Candidates scored well on both **(i)** and **(ii)** with abrasion and hydraulic action being described in **(i)** and suspension and solution in **(ii)**.

(b) Most answers did not link channel features to process. Thus many could describe river cliffs and point bars, but were unable to explain their development in terms of thalweg or helicoidal flow. Pools and riffles were described, but their impact on the meandering channel was poorly understood. Weaker answers concentrated on oxbow lakes and often included levees and flood plains.

Question 2

(a) Marks were frequently lost by not identifying *winter* fog and *winter* relative humidity.

(b) The positive and negative differences confused some candidates but most correctly identified that there was more precipitation in urban areas and less snow.

(c) Good candidates demonstrated a clear understanding of the urban heat island relating the increase in temperatures to both the specific heat capacities of urban structures and the increased sources of anthropogenic heat. They were able to explain the increased convection and the existence of condensation nuclei giving rise to increased precipitation. Weaker answers confused albedo with heat gain and often assumed that higher levels of humidity in rural areas would lead to greater rainfall.

Question 3

(a) Few candidates correctly named more than one feature.

(b) Very few candidates made use of the photograph to describe the general lowering of slope gradient, the steepness of the exposed scar and the extended toe of the slump. Instead, vague statements concerning slope convexity were frequently made.

(c) More credit was gained here, although few responses made any reference to the processes involved in the production of such mass movements. Better answers suggested an increase in moisture content and thus weight and lubrication bringing about decreased strength on the slip plane. Weaker answers concentrated solely upon human activities such as building and mining.

Question 4

(a) Most candidates obtained all of the marks with only a few losing a mark by not *comparing* the data for Ghana and the USA.

(b) Only partially answered by many candidates who either described the relationship or attempted to explain it. Better responses were those that described the overall relationship between fertility and GDP, identified anomalies within the data and offered explanations in terms of the changing role of women, economic development, cultural traditions and population policies. Weaker answers saw the relationship only in deterministic terms of high fertility causing low GDP.

Question 5

(a) Virtually all candidates correctly identified Afghanistan.

(b) Candidates struggled to gain all three marks as many merely pointed to the “illegal” nature of refugee migration. The wide dispersal of refugees and the chaotic nature of refugee camps were mentioned by few candidates.

(c) Many candidates picked up marks as they were aware of the importance of fear of persecution through warfare or political instability. Better answers made good use of exemplification often drawing upon the data shown in Fig. 4. Some developed the theme of “environmental refugees”, fleeing from environmental disasters. This was acceptable, but not necessary, for full marks.

Question 6

(a) Most candidates identified the differences of high and low rise buildings but weaker answers then diverted into descriptions of such features as crime within favellas and other socio-economic factors that were not discernible from the photograph.

(b) This was not particularly well answered as many responses developed little beyond the lack of finance in LEDCs and the difficulties of re-housing populations whilst improvements were undertaken. Better answers pointed to the continued growth of urban areas due to migration and natural increase and the problems of lack of space and the provision of infrastructures such as electricity, water and sewerage.

Section B: The Physical Core

Question 7

(a) Overland flow was understood and generally well defined. Some candidates lost a mark on infiltration by not making it clear that water entering the soil was from the surface. Evapotranspiration was less well explained. Most knew that it was a combination of evaporation and transpiration but were often unclear on each element.

(b) This question was not well answered with relatively few responses gaining over half of the marks. Commonly, soil and rock type were often run together with only a distinction between permeable and impermeable surfaces. In these answers only the relative levels of infiltration and overland flow were considered. Better answers saw soils affecting infiltration and rocks affecting percolation and thus subsurface flows and stores. Contrasts were made between clay and sandy soils and the effect of the relative permeability of limestone and granite.

(c) Most gained a Level 2 standard through description of methods of flood prevention. Flood prediction remains an area of uncertainty for most candidates. Recurrence intervals were mentioned by many but often not understood. Storm hydrographs were seen as a predictive tool, but it was unclear how they might be employed in such a role. Better answers outlined recurrence methods, catchment modelling using hydrographs and short term prediction from meteorological satellites and known catchment characteristics. Although most could point to the use of dams and levees for flood prevention, very few made any attempt to assess the effectiveness of different preventative measures.

Question 8

(a) The definitions were mostly accurate, although some experienced some difficulty with “humidity”. Temperature inversions were less well described. Better answers described the rise in temperatures with altitude due to radiation cooling at the earth’s surface. Some made use of cold air drainage in valleys or even cold frontal air undercutting warm air.

(b) The basic concept of air ascent over mountains to bring about relief rainfall was covered in diagrammatic form by most responses. Better answers developed conditional instability of the forced assent of warm moist air that induced adiabatic cooling to dew point and the continued ascent of air at the SLAR producing clouds and rainfall.

(c) Knowledge of greenhouse gases and the greenhouse effect are improving. It is still, however, only better responses that link global warming to the *enhanced* greenhouse effect due to human activities. Many still confuse the greenhouse effect with depletion of the ozone layer. Climatic impacts of global warming were described by better answers which pointed to the incidence of more dynamic atmospheric systems, drought and increased rainfall resulting from higher temperatures. Weaker responses concentrated upon glacial melting and rising sea levels.

Question 9

(a) Salt crystal growth was usually adequately defined although there is still a lot of confusion of hydration with hydrolysis. Exfoliation was well described although some did not make the contrast between the heating/cooling of the outer layers of the rock as compared to the inner parts.

(b) This question was not well answered, with many responses extending little beyond the production of acid rain. Even simple aspects such as the exposure of rock surfaces to weathering by the removal of soils and vegetation were rarely developed. Few responses linked human activities to any type of weathering process or to its intensity.

(c) Mid-ocean ridges were usually correctly associated with diverging oceanic plates and were shown with varying degrees of accuracy by diagrams. Both the explanations and the diagrams were often simplistic. Only a few better responses explained island arcs in terms of subduction and the upwelling of magma to form arc shaped volcanic island chains.

Section C: The Human Core

Question 10

(a) Quite well answered with many responses developing problems associated with an ageing population. The better answers illustrated this through the loss of tax base and the increasing demands from health and social care.

(b) Unfortunately the term "population policy" induces in many candidates' a response whereby all details of the nature of China's one child policy are described at length. Clearly this was not the aim of this question and the better responses were those that addressed the reasons for the introduction of pro-natalist and/or anti-natalist policies.

(c) There were a number of good answers that made clear assessments of the success of population policies, such as in China, in reducing fertility rates and hence overall levels of growth. Limitations were seen in the consequences of gender imbalances and an ageing population. Similar assessments were also made of various pro-natalist policies in attempts to counteract ageing population and low fertility rates, e.g. Japan and Singapore. Weaker answers described the nature of population policies often repeating material in **(b)** and lacking any assessment of the effectiveness of such policies.

Question 11

(a) Most candidates were comfortable with rural–urban migration in LEDCs and produced extensive answers that dwelt mainly on the attractions of urban life. The best answers organised their material into push and pull factors emphasising their points with suitable exemplification.

(b) Apart from a few who misread the question, most obtained good levels of credit. The weakness of many answers was the inability to provide good exemplification – these answers produced generalised and rather generic descriptions.

(c) Many candidates found it difficult to organise their material into a clear argument. Some did not distinguish between forced and voluntary migration, and answered only in general terms about the impact of migrants upon receiving areas. Others saw the distinction only in simplistic terms, i.e. forced migrants being unskilled as against voluntary migrants being skilled. Better answers used examples to illustrate the impacts of different migration flows emphasising both their similarities and differences.

Question 12

(a) (i) Counterurbanisation is a term that was widely understood and accurately described.

(ii) The impact of counterurbanisation on urban areas was not well described. General dereliction was often the only suggestion advanced with no mention of the impact of the loss of higher income groups, succession and changes to socio-economic groupings.

(b) Most responses saw the only cause of urbanisation as being rural to urban migration. This triggered lengthy descriptions of push/pull effects. Very few accounts developed the natural increase of population or continued economic growth in LEDCs.

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GEOGRAPHY

Paper 9696/12
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GEOGRAPHY

Paper 9696/13

Core Geography

General Comments

Excellent marks were achieved by a significant number of candidates from across the geographical range of centres. There has been a continued improvement in answers to the Physical Geography questions except for answers to questions involving mass movement. This element in the syllabus still seems to cause many problems with far too many candidates still confusing weathering with mass movement and erosion with mass movement. The imprecise use of technical terms continues (this point will be examined in greater detail later). The discrepancy in the calibre of answers between Physical and Human Geography still exists. Atmosphere and Weather continues to be the least popular option in **Sections A** and **B**, thus, as in previous years, it was uncommon for all three Physical Geography questions in **Section A** to be answered. As noted later, the misunderstanding of the various plate boundaries and the processes involved is still common. 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. However, many candidates wrote impressively from first-hand experience. Such answers are always welcomed by Examiners. However, some answers were extremely vague and it seems that countries and cities were simply inserted whether they were relevant or not. Thus, reference to Africa, without qualification, adds little to the answer.

Many candidates are still not appreciating the importance of command words and key words such as 'compare', 'overall', 'relationships', 'trend' and many more. Description of patterns still causes difficulties. Many candidates simply list everything without providing a general synthesis. Candidates are still explaining when all that is required is description. This was especially characteristic of answers to **Question 3**, part **(a)**, where candidates were asked to describe the nature of the rock cliff and debris slope from a photograph. Many candidates attempted to explain without actually describing the features. Also, there were many instances of pure description when explanation was required. 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. This was especially notable in answers to **Questions 4** and **6**. However, some candidates did not read the question carefully enough and discussed the wrong table or the wrong data. Comments in previous reports have stressed the importance of being able to evaluate issues with clear 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. There is still a minority of candidates who incorrectly answer all the questions in **Section A**.

Comments on Specific Questions

Section A

Question 1

(a) The response to this question was generally excellent. Most candidates gained full marks for both components although a few omitted the units for the discharge amounts. The figures extracted from the annual hydrograph were generally accurate.

(b) There were very few issues with this part of the question. In fact many candidates went well beyond the expectations for 2 marks with very detailed analyses of Fig. 1. A small number of candidates lost marks by being brief and very vague about the data, missing dates, amounts and rates of change.

(c) Answers to this part of the question were very weak. It was clear that many candidates did not understand what an annual hydrograph was and what it represented. Many viewed Fig. 1 as a localised flood hydrograph and answers tended to reflect this. Thus, the majority of candidates did not relate the causes of the annual variations in discharge to factors that are likely to vary throughout the year. Precipitation intensity and amount were often discussed but with little indication as to why this might vary throughout the year. Also, the repercussions in terms of drainage basin hydrology were usually omitted. Many candidates attempted to explain variations in discharge by 'static' factors, such as drainage basin shape, drainage basin density, soil type and general slope, which do not vary throughout the year. However, a minority of candidates did appreciate the significance of an annual hydrograph and wrote about snow melt, seasonal land use and vegetation changes and possible frozen ground in winter. Water abstraction during the growing season was also discussed by the better candidates.

Question 2

(a) Surprisingly very few identified an urban heat island, yet some of these candidates mentioned urban heat island in parts **(b)** and **(c)**.

(b) This part of the question was a good discriminator with better candidates clearly describing the pattern from A to B. The emphasis was on the description of the pattern. Many candidates simply went from isotherm to isotherm without really describing the pattern and rate of change. There were some very weak answers that were confused about the pattern, or described part of the pattern, omitting data from the diagrams. Many candidates did not identify the general 'plateau-like' pattern in the centre of the city.

(c) The response to this question was mixed. There were some very good answers which provided much detail about heat reflection, re-radiation and albedo effects, although albedo was often quoted the wrong way. The better candidates were able to extend the reasoning from increased temperatures to the possibility of increased convection and therefore increased precipitation. Many used hygroscopic nuclei to explain increased precipitation but without the possibility of increased convection. Unfortunately a few candidates wrote about a blanket of carbon dioxide and global warming.

Question 3

(a) Few candidates demonstrated an ability to describe physical features from the photograph. Analysis of the rock cliff was generally better than that for the debris slope. With respect to the rock cliff, some candidates mentioned its rough nature and steepness. Some recognised the possibility of joints. Many candidates described weathering processes that might have created such a feature. As regards the debris slope a small number referred to large angular blocks but the majority again attempted to explain weathering processes.

(b) There was very little understanding of rock type and structure and little linkage between these elements and mass movement. The description of rock type involved the very vague and generally meaningless terms of hard and soft. Such descriptions will receive very few marks. Limestone is often referred to as a soft rock, which it is not. It may be susceptible to the chemical weathering process of carbonation but it is not a soft rock in the strict meaning of the term. Rock type was also described in terms of heavy, light, roundness and boulder-like. More precise terms, such as permeable and impermeable, were used but only in the context of weathering. There was a general inability to link weathering to the possibility of mass movement, such as rock fall. Only a very few were able to assess structure in terms of joints and bedding planes. But there was an inability to relate these structural characteristics to the possibility of mass movement.

Question 4

(a) (i) This was answered well by most candidates as long as dates, amounts and rates of change were noted. The difference in the marks reflected the detail provided. A minority of candidates also described the death trends.

(ii) This was often the weakest part of the question. A sizeable number of candidates provided an answer more suited to an LEDC rather than to a MEDC. Some candidates wrote about wars, famine and diseases although there was no indication in the death rates that anything such as this had happened. The better candidates wrote about fertility choices, contraception, socio-economic factors and possible natalist policies by the Government.

(b) This part of the question was answered well, in general, with candidates referring to the relationship between prediction and planning. For many candidates, the main omission was not linking the demographic issues to provision. A small number gained good marks by referring to the graph and linking births to deaths.

Question 5

(a) The majority of candidates achieved up to 2 marks for using the data. However, only a small number produced reasons that were age and gender related. There were many descriptions of pull factors but these were rarely related to the age criteria. Few realised that 48% female migrants was an unusually high figure, and those that did were unable to explain such a high percentage.

(b) Most candidates assessed benefits but a few misread the question as referring to immigration. The relief of social and economic pressures and the value of remittances were the most frequently mentioned benefits. However many candidates simply produced a list of issues such as less crime, less pollution and traffic congestion, without being able to explain how these benefits might have occurred.

Question 6

(a) Most candidates obtained at least 3 marks by stating the three elements in the data. However, not all candidates provided comparisons or integrated the percentage losses with the contrasting total populations.

(b) Only a minority of candidates developed answers with relation to counter-urbanisation and inter-urban movement. Too many candidates dwelt on demographic and socio-economic factors and a few candidates confused cities with countries.

Section B

Question 7

(a) (i) The majority of candidates were able to define both traction and saltation, although occasionally the two were confused. The reason for not achieving maximum marks was usually because of vagueness about the size of material being transported.

(ii) Most candidates achieved at least 2 marks. Reasons for not achieving maximum marks were usually because of imprecision in describing the process and no mention of the role of turbulence or high river velocities. Some candidates wrote excellent accounts of the potholing effect. However, there was occasional confusion between abrasion and attrition.

(b) The responses to this question were extremely weak. Many candidates answered as if alluvial fans and deltas were the same features. Those candidates that did realise that they were separate features possessed little understanding of alluvial fans. Some candidates realised that alluvial fans occurred within the drainage basin and even from streams emanating from mountain valleys but were unable to explain the nature of the fans or the processes creating them. Some candidates confused alluvial fans with crevasse splays as a result of overbank deposition. Most candidates realised that deltas were formed where major rivers entered the sea but the descriptive detail was usually quite basic. However, there were a few very good descriptions of the sedimentation processes, the role of coagulation and the nature of depositional units such as topset and bottomset beds. Diagrams, where provided, were usually quite weak with little useful information.

(c) Answers to this part were also weak with little analysis of variations in flow. Many answers mentioned the three processes but with little reference to variations in flow. Some candidates interpreted flow as referring to laminar, turbulent and helicoidal flows. This was a reasonable interpretation, but there was little reference to the way in which these types of flow related to the three processes. Weak answers concentrated on a few channel features such as waterfalls, meanders and braiding but with little reference to flow variations. A significant number of candidates realised that the Hjulstrom curve was a good way to answer the question, but few possessed the ability to interpret the curve correctly.

Question 8

(a) (i) Most candidates were able to offer the basic definitions of convection and orographic uplift, with the latter being usually more precise than the former. Mention of heating was often omitted from the definition of convection.

(ii) The cooling of humid air in the lower atmosphere was mentioned by most candidates and both radiation and advection fog were described. Some candidates provided a description that was extremely thorough and probably worth more than the three marks available.

(b) This part of the question was answered quite well. Most candidates had some idea of the global circulation of ocean currents, although clockwise and anticlockwise were sometimes confused. The naming of the particular current was also quite accurate. Some candidates noted the differences between surface currents and currents at depth. Some candidates even mentioned thermoclines and haloclines. The weakness in many of the answers was not linking the ocean currents to air masses and then the heating or cooling of adjacent land masses. Most candidates possessed some knowledge of how a global balance of heat is achieved. However, there were a few candidates who interpreted the question as being related to the diurnal effects of land and sea breezes.

(c) There were a small number of very good and well-balanced answers but a large number of answers were at the lower end of the mark range. There was the usual confusion over the nature of greenhouse gases and the greenhouse effect but most candidates understood the concepts involved in very general terms. There was some indication that knowledge of the range of greenhouse gases is increasing. Few answers simply referred to carbon dioxide. Unlike some past questions, this question enabled candidates to describe a range of activities that will affect the nature and concentration of greenhouse gases. Thus, as well as the usual industrial related emissions, there were detailed accounts of deforestation, burning and the release of methane from a variety of sources. The second part of the question required the candidates to assess the effects of greenhouse gases on global climate. The better candidates were able to assess possible storm intensification, severe weather events and localised cooling. There were some excellent attempts at this component of the question but, in most cases, there was little mention of possible climate effects apart from very general statements concerning global warming. Many candidates concentrated on sea level change which was irrelevant unless related to local weather effects.

Question 9

(a) (i) Many candidates possessed some understanding of the nature of flows and slides but were unable to articulate this knowledge in precise terms. Flows were generally described with reference to water content and sometimes internal deformation. Slides were less well understood although many candidates were able to mention that the movement was ‘en masse’.

(ii) A significant number of candidates produced good answers with many referring to a free face and a basal accumulation. There were some good diagrams illustrating rotational slumping. However, many candidates possessed little understanding of mass movement and were unable to assess its effect on the shape of slopes.

(b) Answers were either good or very weak. The main problem was an inability to relate knowledge and understanding of the link between climate and weathering to the effects on the slope. There were many discussions of freeze-thaw weathering but the link with rock fall was poorly understood. In a similar way most candidates knew that high rainfall events might have an influence on slope development but were unable to establish the link with mass movement and runoff. Many confused overland flows with mudflows. The role of vegetation was usually in stabilising slopes with the root networks. However, there were some excellent answers analysing the different slope forms in humid and arid areas.

(c) Nearly all candidates mentioned the correct convergent boundaries but diagrams illustrating the convergence were often weak. Ocean trenches were invariably correctly located but there was little explanation. Few candidates mentioned the dragging down of the upper plate to create the trench. The most common explanation for mountains was collision and buckling of plates, which is not the way they are formed. Many diagrams still show the two plates rising up into the sky after collision. There were only a couple of references to the crushing and folding of sediments in the sea as the two plates move towards each other. This message has been mentioned often in previous reports.

Section C

Question 10

(a) The vast majority of candidates described accurately the relationship between infant mortality rate and economic development but the explanation was variable in quality. Good candidates provided a wide coverage of the issues covering health provision, nutrition and post natal care with both LEDCs and MEDCs receiving a balanced treatment. Weaker answers concentrated mostly on LEDCs and were also usually only about health provision – such answers were unbalanced.

(b) This part of the question was answered quite well. Many candidates realised that they could use some of the information that they had provided in part **(a)**. The weaker candidates did not see the difference between the parts, whereas the better candidates did try to explain why countries at lower levels of economic development have problems in reducing their infant mortality rates because of cost, access and environmental issues.

(c) The majority of answers only considered the role of women, concentrating on the emancipation of women with socio-economic and cultural arguments. The contrast between birth rates and population change in Kerala, south India, and the rest of India, was a frequently used example. The contrast between LEDCs and MEDCs was also stressed. Only a minority of the answers were evaluative and considered other controls such as war, natural disasters and political factors such as pro- and anti-natalist policies. As stressed in the introductory remarks, it is not possible to achieve a mark at Level 3 without some evaluation and assessment as required by the question.

Question 11

(a) (i) Most candidates provided at least two of the three components in the Mark Scheme. The component most often missing was the fear of persecution.

(ii) Answers to this part of the question were very good with health factors, disease, cultural and religious tensions and cost featuring strongly.

(b) Most candidates were able to score quite good marks on this question. There were some excellent examples used in the explanation of push and pull factors but there was sometimes no link between these factors and patterns in terms of numbers, locations and demographic characteristics. As noted earlier, the meaning of the term ‘pattern’ seems to be only loosely interpreted. However, better answers did mention factors such as ease of access, distance and family connections.

(c) As with other part **(c)** questions in **Section C** this provided a varied response. The focus of the question was the link between the effects of a declining population and the possible solutions, of which immigration is one but not the only one. Some candidates recognised the issues of an ageing population and a decline in the skill and workforce base of a country. But for many candidates the solutions became a somewhat simplistic and unsupported list mostly concerning fertility levels or the potential conflict between immigrants and the resident population. There was some effective evaluation including assessment of internal policies aimed towards increasing birth rates, as a long term measure. Such evaluations raised the marks to the top of Level 2 and sometimes into Level 3.

Question 12

Many candidates struggled to answer the question in a meaningful way. The definition as to what constituted a rural area was very widely interpreted. Some candidates analysed an entire country or area, such as the whole of China, which was not in the meaning of the question. A few candidates answered with respect to favelas and even the whole of Sao Paula and Rio de Janeiro. Very few candidates who answered this question seemed to have studied a rural area in detail.

(a) (i) Character for many candidates meant house design, economy and various descriptions of status rather than geographical features. There was not a single map provided nor clear references to site, situation and function.

(ii) As this part of the question relied on the choice in part **(i)**, if that choice was weak then the answer to this part was also weak. A valid selection meant that employment, a declining population and communications were possible avenues to marks.

(b) Many candidates were able to write in generic terms, without reference to a specific example, but answers rarely mentioned management. Most answers mentioned very general attempts to develop new sources of employment and services.

GEOGRAPHY

Paper 9696/21

Advanced Physical Options

General Comments

The overall standard was much in line with that achieved in recent past examinations although, as ever, there was a wide range of quality within it. As often commented upon in the past, the quality present in the better answers was a sound knowledge and understanding of the basic physical elements required in all of the questions. Accuracy in the description of physical processes and factors using appropriate terminology was often missing in weaker answers. A recurring comment from Examiners was the need for candidates to consider carefully the full demand and implication of a question before putting pen to paper. 'Describe' and 'Explain' should be recognised as being different commands. Too often the need to 'Assess', 'Evaluate' or to consider 'To what extent' in questions was not fully addressed and in some cases ignored. Added to the importance of following the specific demands in questions was the need to achieve a proper balance between parts **(a)** and **(b)** and between the two elements which occurred within all of the part **(b)** questions.

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

Generally the Examiners were impressed by the standards of written English. The majority of scripts were well written and diagrams and maps generally well presented. There were very few infringements of the rubric.

Comments on Specific Questions

Tropical environments

Question 1

(a) Overall, answers were limited in both content and accurate detail. Most candidates were able to explain that such soils were deep due to intensive weathering under the hot and humid tropical rainforest environment. However, accurate descriptions of a soil profile, the nature of the different horizons, including a thin humus layer, were generally lacking. The few good answers were distinguished by accurate descriptions of downward movement of acidic water removing bases through leaching and described the red and yellow B horizons from hydrated oxides of iron and aluminium. The best of such answers were accompanied by accurately drawn profile diagrams. More candidates were able to explain factors that affected the formation of such soils; that rapid decomposition of litter from the dense forest vegetation by digesters such as microbial organisms provided humic acids and that high temperatures and rainfall accelerated weathering to give soils of thirty or more meters in depth.

(b) Most candidates gave adequate descriptions of the nutrient cycle provided although a number did ignore the removal of nutrients from the cycle by crops. Many drew Gersmehl diagrams to illustrate nutrient cycling in undisturbed tropical rainforest which were described effectively in most cases. What distinguished the better answers was the ability of candidates to explain fully the differences between the two. Most stated that there would be the largest nutrient store in the biomass in the undisturbed cycle but accuracy in explaining the different sizes of the soil and litter stores and of the flows was poorly addressed in many answers. The best answers revealed a good knowledge and understanding of how the effect of clearance, including that of harvesting of crops and removal of the canopy, would expose the soil and the litter to more rainfall and hence leaching and nutrient loss.

Question 2

(a) This question provided a very wide range of answers. There were some excellent examples where candidates gave both accurate descriptions, including relevant data for rainfall and temperatures, as well as clear explanation. These latter revealed a very good knowledge of the development of continental seasonal high and low pressure areas and the consequent pattern of wind systems. The best answers coupled these factors with the movement of the ITCZ. The most common example used was the Indian sub-continent and again good answers included the relief effects of both the Western Ghats and the Himalayas. Those candidates clearly defined the three seasons of the climate; cool dry, hot dry and warm wet. There were however many weak answers, some likened the monsoon to large scale land and sea breezes but were unable to go any further to apply the model to an appropriate scale or example. Other weak answers revealed a lack of any relevant monsoon effect as such and merely described some type of humid or seasonally humid climate with a lack of any acceptable explanation.

(b) This question also provided a wide range of answers but too few of an appropriate standard at an advanced physical option level. A majority of candidates suggested that the major landforms were cave systems with stalactites and stalagmites the principal elements. Others modelled their answers on karstic landforms more appropriate to temperate climates than tropical ones. Hence very few described either tower karst or cockpit karst, which are striking landforms of limestone areas of humid and sub-humid tropical environments. Features such as sink holes (dolines), poljes and pavement were relevant and were well credited if adequately described. The second demand required an assessment of the extent to which the factors listed contributed to the shape of the landforms. Good candidates recognised that they had their effect but that the processes of weathering, notably carbonation, erosion and the chemical composition of limestone as well as its bedded and jointed nature, were of paramount importance. Similarly the better candidates demonstrated that vegetation and climate contributed to the effectiveness of weathering and erosion.

Coastal environments

Question 3

(a) Many candidates recognised that the major source of coastal sediment was normally from the input of rivers into estuaries and deltas and then worked into the costal system by on shore wave action and longshore drift. Most candidates also added the input from cliff erosion and produced by a range of marine erosion processes. The best answers also included good explanations of how coastal sediment was removed from beaches and bars by destructive waves and recycled by constructive wave action. Additional sources included the input from occasional major events such as storm surges and tsunami which excavated and deposited material from ocean floors. Human activities were cited relevantly by some as adding sediment from beach nourishment and dredging.

(b) The best diagrams mirrored the outline of the photograph provided. Such an approach enabled candidates to label effectively the most important landforms; a spit, dunes and an area of mudflat/salt marsh. Many candidates drew standard text book type diagrams of spits often showing multiple recurves which were not present in the photograph. Although the requirement to draw a diagram was met, such diagrams were generally less informative. Most candidates gave adequate explanations for the development of the spit, relating the direction of longshore drift to a prevailing wind but explanations for dunes and mudflat/salt marsh were often superficial. The best explanations referred to the low energy environment behind the spit for mud flats to accumulate with flocculation of river sediments in the salt water followed by the establishment of salt tolerant pioneer plants and so on. Similarly the development of dunes was often only superficially explained. Good candidates gave valid suggestions for and the possible extent to which, human activities affected such landforms. The effect of groynes was often well explained but there were weaker references to trampling on dunes and reclaiming salt marshes.

Question 4

(a) There were fewer attempts at this alternative coastal question and answers were generally weaker. The demand in the question was to explain but too few candidates attempted any explanation but merely described the characteristics. In most cases high and low energy waves were described in the model answer pattern for destructive and constructive waves. Explanation in terms of wind strength, fetch and duration was generally absent. Similarly, answers to refractive waves most frequently merely stated that such waves were bent as they approached an irregular coastline of headlands and bays. Only very few candidates could explain that approaching at an angle to a shelving shore the leading part of the wave front would be slowed by friction leading to bending of the waves to approach normally to the shore. There were many diagrams attempting to show wave refraction with orthogonals but too few were accurate and even fewer had a satisfactory accompanying explanation.

(b) Many answers lacked precision in detailing the processes of marine erosion. There was often confusion between such terms as hydraulic action, wave pounding, wave quarrying, abrasion and attrition. However, there were candidates who did demonstrate accurate knowledge and clear understanding. Many of those were also able to explain the action of corrosion accurately and that it was a weathering process related to marine organisms on limestone and not to sea water which is neutral. The responses to the second demand were extremely varied; many candidates got no further than headlands and bays with an addition detailing the development of caves, arches, stacks and stumps. Those were creditable when there was detail of the rock type and structure such as bedding, jointing, faults and dip. There were good answers where candidates did provide a range of factors and processes that influenced the rate of marine erosion. Those included the role of geology with reference to examples of both location and actual rock types rather than 'hard' and 'soft' which too often occurred in answers. Exposure to high energy waves from a large fetch and sub aerial processes also featured in those more successful responses.

Hazardous environments

Question 5

(a) There were two approaches to answering this question and often a combination of them both was seen. Examiners accepted either approach. The first was focused on the nature of the plate boundaries and the range of tectonic events; earthquakes, volcanic eruptions and tsunami. Candidates provided detail of such events and how they related to the three major types of plate boundary. The second approach focused on the hazards such as ground shaking leading to building collapse, fracturing gas and water pipes and secondary hazards that might arise. In both cases there was a need to consider location and this was done well by many through siting examples such as Haiti, Kobe and San Francisco in close proximity to plate boundaries. Similarly in better answers it was recognised that constructive boundaries were generally less hazardous both from the nature of associated eruptions and earthquakes, and their location away from populated areas.

(b) Accurate knowledge of the nature of the hazards was severely lacking in many of the answers. Lava flows were often regarded as extremely hazardous whereas they posed little threat as they were restricted to the summit area. Good candidates did recognise that they could play a part in melting any ice and snow to provide water to create lahars (mudflows). However misunderstanding of the actual nature of lahars, as well as that of pyroclastic flows, was common. Threats from ash clouds were better understood. In answering the second demand, many recognised that evacuation provided the most significant way of reducing loss of life. What was less well addressed was detail of methods of prediction and monitoring in order to provide adequate warning. The better answers referred to successful evacuations from Mt St Helens and Pinatubo. Roofing structures to combat ash fall, diverting lava flows and spraying or bombing them featured in some cases for limited credit. Too many answers were unbalanced in detailing the provision of rescue teams, first aid facilities, insurance, building structures more appropriate to earthquakes, in fact a catalogue of responses not particularly focused on 'prevention of deaths' or 'volcanic hazards'.

Question 6

(a) This was a less popular choice of question but there were many quite accurate and full accounts of the genesis of both tropical cyclones and tornadoes. There were a few answers where the distinction between the two types of atmospheric disturbance was not made but the overall level of both knowledge and understanding showed a marked improvement over answers in previous papers. The very best answers explained how tropical cyclones developed from local low pressure cells over warm tropical waters where winds drawn in were influenced by the Coriolis force. Such good answers also explained the energy developed from latent heat as rising moist air was condensed into towering cumulonimbus clouds. Understanding of tornadoes had also developed from past years with many explaining their genesis involving the meeting of warm moist and cold air masses, temperature inversions and violent thunderstorms. With the addition of appropriate locations, many answers were well rewarded.

(b) Following quite good responses to part **(a)**, many candidates produced weaker accounts of the hazards produced by tropical storms and tornadoes and often ill focused possibilities to manage them. Many candidates wrote of the great destruction caused by the storms but did not describe the actual hazards such as very high wind speeds and intense rainfall. In the case of hurricanes, too few described the massive impact of storm surges or the intense low pressure and powerful uplift generated by tornadoes. As in answers to part **(b)** in **Question 5**, the management of the hazards followed the all too common pattern of prediction, evacuation, providing rescue services, education, building codes and others without due reference to the specific hazards. Good candidates were able to detail the techniques and possibilities of predicting tropical storms and tracking their progress and that tornadoes were not so effectively predictable. They also focused on the hazards of coastal and river flooding from storm surges and high rainfall and that sea walls and levees might be effective management approaches. As ever, the best candidates made reference to and used well documented examples to support their answers.

Arid and semi-arid environments

Question 7

(a) There were some very good answers where candidates had both described the types of vegetation and then explained how it had adapted to survive in hot arid environments. However, too many candidates went straight to listing a range of adaptive features without describing the types of vegetation or relating such features to specific types of plant species. Such answers went rarely beyond a mention of cactus whereas in better answers, candidates were able to exemplify their answers effectively. Many of the weaker answers made no references to grass, thorn bushes or trees which could have been credited even if specific names were not provided. The question only demanded a description of the vegetation not an identification of the plant species. A range of adaptations was provided by most candidates with impressive and accurate detail given in many answers.

(b) Many candidates did not make clear which environment they were considering and their examples were often drawn from both without any explanation. Only in the fewer more appropriate answers did candidates set out the problems clearly. Essentially these should have been insufficient and unreliable rainfall with often extended droughts. The resultant effect of sparse vegetation and poor soils were rarely mentioned and the majority of candidates went straight into the problems of forest clearance, overgrazing and overcultivation. These were of course relevant in most cases but there should have been the physical environment underpinning. The second demand to evaluate solutions should have been firmly based on specific and well documented examples and this was the case in some of the better answers. Too many answers again did not specify the environment, either arid or semi-arid, and often were a random selection of drip irrigation, afforestation (plant a tree day), game farming and paddocking, plus ecotourism in many cases. Any of these could have been the basis for good responses with appropriate accurate detail and some evaluation.

Question 8

(a) As in part **(b)** of **Question 7**, many candidates did not distinguish between arid and semi-arid environments in both describing and explaining the characteristics of the climates. Most answers focused on arid climate and then added a brief statement to the effect that semi-arid areas would have more rain and not such high daytime temperatures. Many candidates did provide the basic characteristics of arid climates effectively quoting 250 mm as average annual rainfall and daytime temperatures of 40ºC or more with cold nights. Explanation for arid environments was also often quite appropriate with many aware of the descending limb of the Hadley cell, the effect of continentality and/or rain shadow, and the influence of west coast cold ocean currents. Only very few candidates explained semi-arid environments in terms of their lower latitude and being under the influence of the movement of the ITCZ. In fact the seasonal rhythm of both environments was not appreciated by other than a very small minority.

(b) With some notable exceptions, the answers to this question were limited and revealed considerable weaknesses in knowledge and understanding of this branch of physical geography. There was a lack of detail and accuracy in describing the processes of both weathering and erosion. Freeze thaw, described probably the most effectively, featured inappropriately as a weathering process in 'hot arid areas'. In contrast, thermal fracturing was superficially explained in most cases with few references to the nature of the rock, whether homogeneous or heterogeneous or to block or granular disintegration. Some candidates recognised that chemical weathering could be important from dew and capillary moisture and such processes were well explained by the better candidates. Many candidates ignored erosion by running water from episodic rain storms but wrote at length on wind erosion and often irrelevantly of wind deposition to create dunes. There were, however, some very good candidates who demonstrated effectively that the scale of wadis and the presence of integrated valley systems were clearly the result of fluvial processes and therefore reasoned that 'the extent to which they were the product of present day climatic conditions' was limited. Others explained that, at present, wind transport and deposition dominated but that wind etching and occasional stream floods transporting debris in wadis were the most active present day other processes.

GEOGRAPHY

Paper 9696/22
Advanced Physical Options

General Comments

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(b) Most candidates gave adequate descriptions of the nutrient cycle provided although a number did ignore the removal of nutrients from the cycle by crops. Many drew Gersmehl diagrams to illustrate nutrient cycling in undisturbed tropical rainforest which were described effectively in most cases. What distinguished the better answers was the ability of candidates to explain fully the differences between the two. Most stated that there would be the largest nutrient store in the biomass in the undisturbed cycle but accuracy in explaining the different sizes of the soil and litter stores and of the flows was poorly addressed in many answers. The best answers revealed a good knowledge and understanding of how the effect of clearance, including that of harvesting of crops and removal of the canopy, would expose the soil and the litter to more rainfall and hence leaching and nutrient loss.

Question 2

(a) This question provided a very wide range of answers. There were some excellent examples where candidates gave both accurate descriptions, including relevant data for rainfall and temperatures, as well as clear explanation. These latter revealed a very good knowledge of the development of continental seasonal high and low pressure areas and the consequent pattern of wind systems. The best answers coupled these factors with the movement of the ITCZ. The most common example used was the Indian sub-continent and again good answers included the relief effects of both the Western Ghats and the Himalayas. Those candidates clearly defined the three seasons of the climate; cool dry, hot dry and warm wet. There were however many weak answers, some likened the monsoon to large scale land and sea breezes but were unable to go any further to apply the model to an appropriate scale or example. Other weak answers revealed a lack of any relevant monsoon effect as such and merely described some type of humid or seasonally humid climate with a lack of any acceptable explanation.

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Coastal environments

Question 3

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Question 4

(a) There were fewer attempts at this alternative coastal question and answers were generally weaker. The demand in the question was to explain but too few candidates attempted any explanation but merely described the characteristics. In most cases high and low energy waves were described in the model answer pattern for destructive and constructive waves. Explanation in terms of wind strength, fetch and duration was generally absent. Similarly, answers to refractive waves most frequently merely stated that such waves were bent as they approached an irregular coastline of headlands and bays. Only very few candidates could explain that approaching at an angle to a shelving shore the leading part of the wave front would be slowed by friction leading to bending of the waves to approach normally to the shore. There were many diagrams attempting to show wave refraction with orthogonals but too few were accurate and even fewer had a satisfactory accompanying explanation.

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Question 5

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(b) Accurate knowledge of the nature of the hazards was severely lacking in many of the answers. Lava flows were often regarded as extremely hazardous whereas they posed little threat as they were restricted to the summit area. Good candidates did recognise that they could play a part in melting any ice and snow to provide water to create lahars (mudflows). However misunderstanding of the actual nature of lahars, as well as that of pyroclastic flows, was common. Threats from ash clouds were better understood. In answering the second demand, many recognised that evacuation provided the most significant way of reducing loss of life. What was less well addressed was detail of methods of prediction and monitoring in order to provide adequate warning. The better answers referred to successful evacuations from Mt St Helens and Pinatubo. Roofing structures to combat ash fall, diverting lava flows and spraying or bombing them featured in some cases for limited credit. Too many answers were unbalanced in detailing the provision of rescue teams, first aid facilities, insurance, building structures more appropriate to earthquakes, in fact a catalogue of responses not particularly focused on 'prevention of deaths' or 'volcanic hazards'.

Question 6

(a) This was a less popular choice of question but there were many quite accurate and full accounts of the genesis of both tropical cyclones and tornadoes. There were a few answers where the distinction between the two types of atmospheric disturbance was not made but the overall level of both knowledge and understanding showed a marked improvement over answers in previous papers. The very best answers explained how tropical cyclones developed from local low pressure cells over warm tropical waters where winds drawn in were influenced by the Coriolis force. Such good answers also explained the energy developed from latent heat as rising moist air was condensed into towering cumulonimbus clouds. Understanding of tornadoes had also developed from past years with many explaining their genesis involving the meeting of warm moist and cold air masses, temperature inversions and violent thunderstorms. With the addition of appropriate locations, many answers were well rewarded.

(b) Following quite good responses to part **(a)**, many candidates produced weaker accounts of the hazards produced by tropical storms and tornadoes and often ill focused possibilities to manage them. Many candidates wrote of the great destruction caused by the storms but did not describe the actual hazards such as very high wind speeds and intense rainfall. In the case of hurricanes, too few described the massive impact of storm surges or the intense low pressure and powerful uplift generated by tornadoes. As in answers to part **(b)** in **Question 5**, the management of the hazards followed the all too common pattern of prediction, evacuation, providing rescue services, education, building codes and others without due reference to the specific hazards. Good candidates were able to detail the techniques and possibilities of predicting tropical storms and tracking their progress and that tornadoes were not so effectively predictable. They also focused on the hazards of coastal and river flooding from storm surges and high rainfall and that sea walls and levees might be effective management approaches. As ever, the best candidates made reference to and used well documented examples to support their answers.

Arid and semi-arid environments

Question 7

(a) There were some very good answers where candidates had both described the types of vegetation and then explained how it had adapted to survive in hot arid environments. However, too many candidates went straight to listing a range of adaptive features without describing the types of vegetation or relating such features to specific types of plant species. Such answers went rarely beyond a mention of cactus whereas in better answers, candidates were able to exemplify their answers effectively. Many of the weaker answers made no references to grass, thorn bushes or trees which could have been credited even if specific names were not provided. The question only demanded a description of the vegetation not an identification of the plant species. A range of adaptations was provided by most candidates with impressive and accurate detail given in many answers.

(b) Many candidates did not make clear which environment they were considering and their examples were often drawn from both without any explanation. Only in the fewer more appropriate answers did candidates set out the problems clearly. Essentially these should have been insufficient and unreliable rainfall with often extended droughts. The resultant effect of sparse vegetation and poor soils were rarely mentioned and the majority of candidates went straight into the problems of forest clearance, overgrazing and overcultivation. These were of course relevant in most cases but there should have been the physical environment underpinning. The second demand to evaluate solutions should have been firmly based on specific and well documented examples and this was the case in some of the better answers. Too many answers again did not specify the environment, either arid or semi-arid, and often were a random selection of drip irrigation, afforestation (plant a tree day), game farming and paddocking, plus ecotourism in many cases. Any of these could have been the basis for good responses with appropriate accurate detail and some evaluation.

Question 8

(a) As in part **(b)** of **Question 7**, many candidates did not distinguish between arid and semi-arid environments in both describing and explaining the characteristics of the climates. Most answers focused on arid climate and then added a brief statement to the effect that semi-arid areas would have more rain and not such high daytime temperatures. Many candidates did provide the basic characteristics of arid climates effectively quoting 250 mm as average annual rainfall and daytime temperatures of 40ºC or more with cold nights. Explanation for arid environments was also often quite appropriate with many aware of the descending limb of the Hadley cell, the effect of continentality and/or rain shadow, and the influence of west coast cold ocean currents. Only very few candidates explained semi-arid environments in terms of their lower latitude and being under the influence of the movement of the ITCZ. In fact the seasonal rhythm of both environments was not appreciated by other than a very small minority.

(b) With some notable exceptions, the answers to this question were limited and revealed considerable weaknesses in knowledge and understanding of this branch of physical geography. There was a lack of detail and accuracy in describing the processes of both weathering and erosion. Freeze thaw, described probably the most effectively, featured inappropriately as a weathering process in 'hot arid areas'. In contrast, thermal fracturing was superficially explained in most cases with few references to the nature of the rock, whether homogeneous or heterogeneous or to block or granular disintegration. Some candidates recognised that chemical weathering could be important from dew and capillary moisture and such processes were well explained by the better candidates. Many candidates ignored erosion by running water from episodic rain storms but wrote at length on wind erosion and often irrelevantly of wind deposition to create dunes. There were, however, some very good candidates who demonstrated effectively that the scale of wadis and the presence of integrated valley systems were clearly the result of fluvial processes and therefore reasoned that 'the extent to which they were the product of present day climatic conditions' was limited. Others explained that, at present, wind transport and deposition dominated but that wind etching and occasional stream floods transporting debris in wadis were the most active present day other processes.

GEOGRAPHY

Paper 9696/23

Advanced Physical Options

General Comments

Overall the standard was in line with that of recent previous examinations but with the usual wide range in the quality of answers within it. In the better scripts, candidates not only displayed a sound knowledge and understanding of geography at advanced level but were also more precise in their descriptions and explanations. A lack of accurate and/or fine detail was typical of many weaker candidates. These differences between the better and weaker answers were polarised in the treatment of physical geography. This was a paper in advanced physical options but too frequently the balance in answers was too heavily weighted in favour of the human aspects of the questions. The limited credit awarded to many answers could often be attributed to a weak, or very basic, knowledge and understanding of physical factors and processes. Additionally the better answers were those that addressed the specific demands of the question. Many candidates do not pay sufficient attention to the command words such as 'describe', 'explain', 'evaluate', 'identify' and 'to what extent'. That was particularly evident in many of the answers to part **(a)** of **Question 3** on coral. The division of questions into two parts did seem to pose a problem for a number of candidates. Parts **(a)** tested basic knowledge requiring candidates to offer identification, descriptions and/or explanations of some part of the syllabus content. Being a straightforward demand, too many candidates expanded their answers beyond that which was required for what was two fifths of the total question mark. This often led in such cases to limited responses to parts **(b)**. Such imbalance was often evident in answers to **Questions 5** and **6**.

The use of appropriate and well documented examples, or case studies, were again a feature of many of the more successful answers. Examiners commented upon deterioration in the quality of well executed and accurate diagrams. This was particularly evident in answers to both parts of **Question 3** (reefs and atolls in **(a)** and spits etc. in **(b)**. It was also true in many cases in answers to **Question 4 (a)** (wave-cut platform). A relevant and well executed diagram or sketch map, appropriately annotated, should be an important skill in a candidate's geographical 'toolkit'. Their use in answers would often reinforce or clarify the written text and could in some cases replace the need for extended writing.

Examiners continue to be impressed by the general standard of written English achieved by so many candidates. They were also impressed by the generally clear legibility of the writing and presentation. There were very few infringements of the rubric, the most common being that of answering more than the required two questions.

Comments on Specific Questions

Tropical environments

Question 1

(a) There were only a few responses to this question and a range of quality within them. Most knew the nature of the ITCZ but were unable to apply its movement satisfactorily to explain how it influenced tropical climates. Only in the one or two good responses was a clear distinction made between the humid tropical and the seasonally humid tropics, and even in those answers there was a lack of either exemplification or any accurate data.

(b) This question was very poorly answered even by the few who showed quite good knowledge and understanding required in part **(a)**. Answers were limited in both coverage and understanding of the demands and no meaningful generalisation can be usefully made.

Question 2

There were few and limited responses and so no meaningful comments can be made.

Coastal environments

Question 3

(a) This was by far the more popular choice of question and it was clear that candidates had rehearsed well the conditions required for the growth of coral. However, that was not the question asked in this case. The first demand of the question was to 'Describe the characteristics of coral'. The detailed accounts of 'conditions necessary' for coral to grow were therefore largely irrelevant. There were relevant responses to this first demand where candidates did describe corals as diverse ecosystems; coral polyps attaching themselves to hard surfaces in shallow seas where they exuded calcium carbonate to form their skeletons and to build up coral colonies. Some also described their symbiotic relationships with other organisms. There was a wide range of quality in the answers to the second demand. Most common was a superficial account of Darwin's subsidence theory; the more accurate ones were generally well illustrated with clear diagrams of the successive stages from fringing reefs to barrier reefs and finally atolls. The best of these explained how coral reefs grew outwards from the shore and the need for growth upwards to keep pace with subsidence. A number of candidates referred to Daly's theory but with limited understanding of the sequence of glacial sea level changes and the role of marine erosion during periods of lowered sea level.

(b) The best diagrams mirrored the outline of the photograph provided. Such an approach enabled candidates to label effectively the most important landforms; a spit, a vegetated area of dunes and a developing off shore bar. Deposition inside the spit was accepted as mud flats or salt marsh or other depositional sediment in a low energy environment. However, many candidates drew standard text book type diagrams of spits often showing multiple recurves which were not present in the photograph. Some candidates suggested the photograph represented a tombolo which could only be given limited credit if a good explanatory case was made for it. Although the requirement to draw a diagram was met, such diagrams were generally less informative. Most candidates gave adequate explanations for the development of the spit, relating the direction of longshore drift to a prevailing wind but precise explanations of the process were often lacking. Similarly explanations for dunes and mudflat/salt marsh/sediment deposition were often superficial and lacking any stage by stage development. However, there were better responses which referred to the low energy environment behind the spit for mud flats to accumulate where flocculation of river sediments in the salt water was followed by the establishment of salt tolerant pioneer plants and mangrove. Similarly there were some accurate accounts of how dunes might develop. The responses to the second demand were similarly wide ranging in quality. Many candidates omitted to answer it and others only addressed human interference. Better answers stated that, being fragile landforms, they could be destroyed or drastically changed by storms and storm surges, also that changes in wind direction over a period could affect their shape and others suggested the impact that rising sea level, due to global warming, would have. Human interference was answered mainly in terms of the knock on effect of hard engineering, notably the construction of groynes. This was well developed by some candidates with detailed reference to a specific stretch of coast.

Question 4

(a) A large number of the answers were extremely weak for what was thought to be a fundamental aspect of coastal geomorphology. What was written in many answers was a list of wave erosion processes with very simplistic or inaccurate explanations. A large number of candidates followed with an illustrated account of the cave, arch, stack and stump sequence of landforms with no specific reference to a wave-cut platform. Other answers did describe the cutting of a notch at the base of a cliff with subsequent cliff collapse and the accumulation of debris which was often regarded as the platform. There were some good answers where the sequence of development was accurately explained and understanding that in time wave erosion would become less effective as the platform became extended. Such answers also referred to sub aerial processes and the need to remove debris to maintain cliff recession.

(b) There was a very poor understanding of the nature of a coastal sediment cell in many answers. There were some exceptions where there were excellent responses. In such answers, sediment cells were clearly described as a contained part of a coast, often between headlands, and it's off shore sea bed. They were able to describe the nature of inputs, transport and sinks. The best recognised that they were not normally completely closed systems although generally self contained enough to provide a basis for management planning. The second demand was best done with reference to specific examples. Some did this very effectively by reference to a well executed case study. Many explained that hard engineering at one location might promote accelerated coastal erosion at some other part of the cell. Similarly other types of human activity could disrupt the state of dynamic equilibrium such as off shore dredging and artificial reef construction.

Hazardous environments

Question 5

(a) There were two demands to this question and many responses did well on one at the expense of the other. The better candidates integrated the two demands effectively. Candidates who described the types of eruption well often did not give adequate detail to the location of, or types of, plate boundary and vice-versa. Examiners accepted 'where they occur' as either specific plate boundaries or global location examples. One common problem was the time taken up by drawing diagrams which often simply repeated written points, whereas if well annotated, they might have saved time. A number of candidates went into too much detail about the materials and hazards involved in eruptions which would have better served part **(b)** responses. A number erroneously divided 'types of volcanic eruptions' into active, dormant and extinct.

(b) Too many answers simply repeated the data provided in Fig. 2 with little or no input as in 'underground tunnels monitor earthquakes' without actually describing or explaining how this information would be useful. On hazards, many candidates simply listed the hazards without answering the question about which of the hazards would be most likely to cause deaths. A number of responses gave irrelevant details of how to prevent the hazards causing problems such as diverting lava flows or cooling or bombing them. Too many candidates took the question as an opportunity to write at length on building structures, evacuation plans, first aid and rescue teams, training and preparation. Such lists were not appropriate and rarely are, unless made specific to the particular context of the question.

Question 6

(a) The question demanded an explanation of the causes of mass movements. The best answers were those which demonstrated an understanding of shear stress overcoming shear strength and the idea of an inherently unstable slope needing some form of trigger action. Too many candidates wrote about heavy rain or skiers or building on slopes causing mass movements without understanding that there needed to be some critical state to be triggered. There was too little understanding that if a slope were of some solid and stable rock formation then no amount of rainfall or earthquake would lead to any form of mass movement. There were however some very good responses where candidates employed relevant examples such as in explaining how heavy rainfall may lead to the increased weight and saturation of soil overcoming pore pressure or an earthquake shaking an unstable mass of rock or earth debris. Avalanches were a popular choice of mass movement and generally better understood but there was poor knowledge of what constitutes a steep slope angle. Terms such as gravity and friction were all too rare in many answers.

(b) There was often a considerable degree of overlap with what candidates had written in response to part **(a)** with many writing at length on the causes of, say, avalanches or landslides rather than the resultant specific hazards. As in part **(a)**, avalanches were a common example used and there were some accurate and well documented accounts of settlements becoming engulfed by snow and ice. Similarly good examples were mudflows consequent on heavy rainfall from hurricanes or landslides where buildings had added extra weight when similarly heavy rainfall had saturated slopes. The second demand to 'explain how far it was possible to manage the risks' yielded too often a list again, as in some answers to **Question 5 (b)**, although storm warnings might have had some value for areas known to be at risk. Avoidance of risk by not building in areas prone to such hazards was suggested but too rarely evaluated in terms of 'how far possible'. There were acceptable suggestions such as avoiding human factors of deforestation, quarrying and undercutting of slopes. With regard to avalanches, snow fences, road and rail coverings, hazard zoning and triggering in advance were often quite well explained if again not well evaluated.

Arid and semi-arid environments

There were few and limited responses and so no meaningful comments can be made.

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Advanced Human Options

Key Messages

- It is important to read the question carefully and to plan in order to ensure that the focus of the response is the focus of the question.
- Remember to integrate examples in response to parts **(a)** in order to achieve 6 or more of the total 10 marks.
- Developing a vocabulary of useful expressions for providing assessment and practising assessment skills helps to achieve credit in response to parts **(b)**.

General Comments

A great diversity of responses was seen in terms of approach, depth and detail. A spectrum of quality was observed from very good geography demonstrating detailed up-to-date knowledge (AO1), strong conceptual understanding (AO2), and skills in data interpretation (AO3) and evaluation (AO4); to those which were incomplete or faulty in some way and not being of A Level standard.

The performance of candidates would be enhanced by developing a few examination skills and disciplines. Careful attention should be given to:

- the question set, breaking the wording down into its constituent parts and planning a response which includes answering all of them
- the command word(s), designing the response accordingly, e.g. a description for “Describe”, an explanation for “Suggest reasons”
- relevance, as only material which is pertinent to that which is asked can be credited, rather than content which has been learned, reproduced and is correct. Including irrelevant material may obscure the thread of a response and takes valuable time.

Overall, the main feature of responses was the lack of in-depth analysis. Even in carefully planned, factually accurate responses which were spatial in conception and clearly located, it was the higher order skills of application, analysis and evaluation which marked out higher-achieving candidates from those of pass quality. Whilst moderate candidates could offer opinions or judgements, for example about success, it was the ability to substantiate these which identified the more able.

The Options **Environmental management** and **Global interdependence** remain the more popular, but some high quality work was also seen on **Economic transition** as an Option. It was good to see the use of home country and home region examples and case studies from a range of locations including Zimbabwe, Kenya and South Africa.

One resource in the Insert, Table 1 was from sub-Saharan Africa; and one, Photograph A, from South America. Fig. 1 was an unfamiliar model of tourism development and Fig. 2 a graph of data about disparities in wealth in China over time. As such, developing skills in resource reading and interpretation is an important part of the course.

The quality of many responses would have been enhanced by the careful integration of pertinent examples. One Examiner reported that “Many of these questions asked for specific examples. Too frequently these were absent, in inadequate detail or overgeneralised. Sometimes the examples were at the wrong scale.”

One marking approach of which teachers preparing candidates for the syllabus are reminded is that in parts **(a)** where there is no division into sub-parts (so in **Questions 1**–**4**, **7** and **8** on this paper), three bands of marks, **1–4, 5–7** and **8–10**, are used to assist Examiners with differentiating responses. 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.

Qualities of language and expression varied greatly from articulate responses, deploying subject terminology fluently and robustly, to some where meaning was unclear and where note-form or bullet points were used. Candidates are reminded that narrative responses are expected and that lists and notes do not show the development of ideas and arguments which is expected at A Level. In part **(b)** of questions, responses which are in note-form or bullet points are restricted to Level 1, i.e. a maximum of 6 out of 15 marks.

A small number of rubric errors were seen, usually where a candidate wrongly attempted one question from each of the four options. In these cases, Examiners mark all the responses and award the candidate the highest total allowed within the rubric.

Comments on Specific Questions

Production, location and change

Question 1

(a) Candidates who spent some time reading and interpreting Table 1 before starting to write, benefitted in being able to produce tighter responses with less repetition both of descriptive points and of the reasons they were asked to suggest. The best approach to 'differences' was by column, e.g. the differences in average meat production per animal, rather than by row. As each row related to a single agricultural system, differences were difficult to identify except by comparative language: "higher", "more", etc. Full descriptions used some data from Table 1 as evidence, although not every observation made needed data support.

Candidates suggested reasons based on their knowledge of physical and human factors influencing production in agricultural systems (two pastoral systems and three mixed systems were shown in Table 1). Most focused on physical factors, probably because of the identifications given, such as 'humid areas' or 'highland areas'. Better quality accounts suggested human factors, such as subsistence or profit motive, levels of education and skill, finance and the intensity of the system, for example, seeking to explain the great productivity of 'small scale dairy' in both meat and milk production.

(b) Candidates responded well to the idea of 'the role of the government', either choosing a single example, such as recent agricultural changes in Zimbabwe, or taking a number of located examples to show how the role of the government differed, for example between the Green Revolution and the EU's CAP (Common Agricultural Policy). Two main features differentiated the quality of the responses. One was candidates' ability to assess, rather than simply to describe or narrate the story of what a government did. The other was to develop and substantiate that assessment, for example by considering different aspects of government action (and/or inaction) and to offer some critical appreciation of it in the chosen context(s); and, perhaps, to consider the significance of other factors, especially economic, in promoting change in agriculture. Some high quality responses introduced the concept of constraints to the assessment; for example considering lack of finance to see change through or to scale it up, or the key role of farmers' attitudes and openness to change, in terms of traditionalism in agriculture.

Question 2

(a) Most candidates took the approach of a developed list of factors, which gave the responses a natural structure. Many took a classical approach to industrial location, dealing with land, labour, capital, raw materials and markets. Some considered other attractions such as linkages and the potential for agglomeration economies. Almost all accounts would have gained from greater use of examples and greater detail, such as of named locations, named industries, appropriate data on costs, details of infrastructure, etc. Responses without the required examples, if developed very well conceptually, could achieve a maximum of 6 marks.

(b) The best responses were framed as assessments throughout and identified clearly what the 'recent changes in manufacturing production' were in the chosen country as well as what 'success' meant in terms of different criteria. Middle quality response were characterised either by an explanatory approach with limited assessment of success, or by the context remaining broad and, at times, implicit. At the lower end, responses were basic in approach, with little clear identification of 'changes', some of which were not 'recent' in the question's terms. Success was usually expressed in economic terms; such as in output, profits, the expansion of the sector and attraction of FDI or TNCs. Some candidates identified how success varied spatially within the country, for example, between core and periphery or in an EPZ; and, some, how it varied over time, for example in relation to the political climate nationally, or to the global economy, such as in the recent period of economic downturn.

Environmental management

Question 3

(a) The question contained two commands 'Outline, and suggest reasons for'. Many responses would have been enhanced with greater attention being given to the outline. It was valid to do this separately or to integrate it with the content for the rest of response. Most candidates approached this at the global scale and in the context of two main concerns about fossil fuels: their depletion and environmental impact, especially in relation to greenhouse gas emissions and climate change. It was valid to approach the question at other scales and some chose a perspective relating to one or more countries, often the home country. This required detailed knowledge of trends in energy consumption and the reasons for them to perform well. Some high quality responses recognised that the consumption of fossil fuels in MEDCs remained high, because of the significance of oil for the transport sector and affluent lifestyles, despite increasing investment in and use of renewable energy. Some also recognised the large energy demands of emerging economies such as BRICS (Brazil, Russia, India, China, South Africa) and the dependence on fossil fuels, such as coal in China, even when renewables are being developed. A few high quality responses included the important issue of energy security. Candidates were able to define 'recent' in terms of the material they had and some responses were highly contemporary. The syllabus dateline for Advanced Human Options remains 1970. Weaker responses tended to describe sources, both fossil fuels and renewables, rather than explain, or to give reasons for changes in one which were simply the opposite of changes for the other.

(b) The full range of response quality was seen. Conceptual understanding of nuclear power ranged from the robust, such as about half-life, and perceptive, for example, as to how 'concerns' arise, to the faulty, for example with reference to "nuclear gases flying about", instead of to radioactivity. Knowledge of examples was dominated by the catastrophic events at Chernobyl (1986) and Fukushima (2011), many pointing out the key difference in nature and origin of the two. Responses were also differentiated by the quality of the assessment of the concerns offered. At the lower end concerns or "problems" tended to be stated in terms of danger. Middle quality responses attempted to weigh and judge significance in some way, such as the likelihood of recurrence or the timescale of impacts. At the top end, some high quality assessment was seen in relation to perception of safety and risk, likelihood of catastrophe, the perspectives of different groups such as the nuclear industry and environmentalists or the place of nuclear power in relation to alternatives in terms of relative costs, energy potential and energy futures. Three main areas of environmental concerns provided the content: catastrophic events, such as the explosion at Chernobyl; failures or errors in normal operation; and the disposal of nuclear wastes. For the last two of these the importance of good management and working procedures was acknowledged. Given the wording of the question, 'environmental impacts', Examiners did not credit material about bombs or about human impact (mortality, injury, birth defects, etc.). Even if true and recalled correctly, material has to be relevant to be credited.

Question 4

(a) This was an opportunity to apply knowledge and understanding about environmental degradation in an unfamiliar context. It required skills of interpretation of the photograph and the ability to provide a linked explanation based on that evidence. Highest quality responses combined physical factors and human factors in the response. For example, many observed that deforestation had removed the canopy of trees and ground cover, leaving the soil exposed to tropical rainfall without the binding effect of roots. This would reduce infiltration capacity and lead to soil erosion by overland flow. An example of a human factor could be the guards needing transport, so clearance of routes or the impact of heavy vehicles directly on the vegetation, associated with noise pollution, scaring birds and animals, and air pollution from vehicle emissions. Some pointed out that once routes were made, they could be used by others, such as illegal loggers or settlers looking for agricultural plots, so opening up the rainforest to risks of further degradation.

(b) Environments chosen and approaches taken were diverse. Most responses would have benefitted from less time being spent on the causes of the degradation, which were not required by the wording of the question, and more attention being given both to the 'attempts' and the assessment of their success. Few candidates were able to carry the assessment much beyond whether an attempt worked or not and only the careful made an explicit link back to environmental quality. Many candidates took this as an opportunity to narrate the story of their case study, with limited regard to the relevance of the material they had learned to this specific question. At this level, the ability to select, direct and apply material is highly creditable and is one of the things that helps to secure a Level 3 mark. Another feature of better quality responses was the articulation of what 'success' means in terms of the quality of the chosen environment and how it can be measured. For example, this could be the return of fish to a previously polluted river such as the Rhine in Europe; the development of soil and an ecosystem after afforestation; or the ability to grow crops on what was previously unusable land.

Global interdependence

Question 5

(a) (i) This was answered effectively by most candidates. A full definition covered both words, i.e. *visible/invisible* and *import/export*. Most did this by using an example of a good, such as cotton, and of a service, such as tourism.

(ii) The demand was unfamiliar and made candidates think in the examination how to draw on and apply their knowledge, making it a high skills demand. The best did as asked, by choosing 'a traded product', such as tea or cocoa, and by considering the trading relationships between MEDCs and LEDCs, whether named or unnamed. Most observed that LEDCs export primary products to MEDCs for refining or processing as they lack the facilities to add value themselves and the economic structures to transport, market, etc. This means that MEDCs dominate the trade relationships both economically and politically and may re-export the finished product to the LEDC at a much greater price. This kind of explanation using a product could achieve full marks. Some other factors, such as the action of trade blocs or of Fair Trade could be made relevant. Responses that gave some sense of trade relationships but which had no clear traded product, or perhaps multiple ones, were credited using a maximum of 2 of the 6 marks.

(b) Candidates were familiar with the role of political factors in trade and defined these effectively in almost all cases. It was clear that in reading or interpreting the question, many candidates choosing it, moved the word 'large' and took it to say that "political factors matter to a large extent". This meant that the intended emphasis on 'large increases and large decreases' was reduced to changes in general. This both limited the quality of responses and led to some irrelevance in what was written. Some effective and well-informed responses were seen that were carefully focused on large-scale changes, for example in relation to the impact of sanctions, conflicts, the decisions of political regimes or the membership of trading blocs. A variety of examples were seen, such as sanctions during the apartheid era in South Africa; the Gulf Wars and the oil trade; and the impact of EU membership, for example on historic trading partners which enjoyed colonial ties with the UK. Any of these examples helped to provide positive assessment to satisfy the question.

Question 6

(a) (i) Almost all candidates could define ecotourism in terms of protecting the environment; only some in terms of the benefits for the local destination and to sustain and empower local communities. The use of the phrase 'With the help of an example' indicated that an example in name only "e.g. Xcaret", or less precisely "e.g. Kenya", would be insufficient. A general response without the use of an example received a maximum of 2 of the 4 marks.

(ii) Some responses interpreted the model well and developed from it to suggest three different advantages. Most seemed to be tied too much to Fig. 1 and did not use it creatively. A few wrote similar things for all three advantages, often generally, such as "it will protect the environment" or that it would earn the country money. Some saw that a three-pronged strategy (mass tourism, alternative tourism, ecotourism) would be more secure given that international tourism is affected by influences such as fashion and the global economy. Some observed that both resort enclaves and ecotourism combine protecting the environment with generating revenue. Some saw the efficiency of the location of the airport in relation to the coastal highway, and that both could be used by local businesses and residents in addition to being used by tourism.

(b) This was an opportunity for candidates to make good use of the case study from Syllabus 3.4. It also used different skills after the unfamiliar context for part **(a)**. The scope and depth of the assessment offered helped to differentiate response quality. Level 1 responses tended to be descriptive with assessment either stated or not present. In Level 2, responses involved some assessment, although this might be uneven (environment / society / economy); overly positive or negative; or, at the lower end, expressed in simple terms such as "good" and "bad". Some impressive Level 3 responses were seen, these were characterised by the whole response being structured as an assessment and by a weighing approach, acknowledging positive and negative impacts of tourism at different levels of significance, perhaps coming to an overall judgement. Almost all candidates defined a resort or tourist destination appropriately. In general, a specific place, such as Victoria Falls, performed better than a country-scale example, such as Kenya, as it allowed tighter, more integrated and better-directed comment.

Economic transition

Few responses were seen to **Question 7** and **Question 8**.

Question 7

(a) The primary sector comprises extractive industries (agriculture, forestry, fishing, mining). Its role in economic development is threefold: to provide raw materials and energy to resource further development in manufacturing (secondary) and services (tertiary); to sustain the lives of those who work in these sectors; and to generate income from exports to finance development at home and stimulate it in the countries with which the products are traded. Most candidates took a global approach to the question, some using the Clark-Fisher sector model as part of the description. A few chose to do this in the context of one country, usually an LEDC, which allowed for some deeper development of the response and provided a more integrated context. This was often the one with which the candidate was the most familiar, i.e. their home country.

(b) The nature of the question was open allowing candidates to use the material they had in the manner they chose. Better quality responses benefitted from the clear identification of 'difficulties experienced in … social and economic development', with 'attempts' carefully linked to each and 'success' assessed in specific terms. Lower quality responses tended to generalise about development, for example without differentiating 'social' from 'economic', to provide attempts in a broad way and to provide assessment at a simple level. This could be in terms such as good and bad, or stating whether something worked or not. Response quality would have been enhanced with located detail from the chosen country, specific attempts and some consideration of what success meant in that context.

Question 8

(a) Interpreting Fig. 2 and the part-question correctly were fundamental to success. In the few responses seen, several candidates described and explained the information given in Fig. 2, rather than its 'strengths and limitations', achieving minimal credit. Others identified one or more strengths, such as its visual representation that could be read easily; and one or more limitations, such as the lack of definition of terms such as 'inland/coastal' and of an accompanying map. Examiners noted that candidates did not develop the response sufficiently in relation to the study of spatial disparities and the application of their knowledge and understanding of unequal development to this unfamiliar context.

(b) Deconstructing the part-question shows two key ideas: the globalisation of industrial activity and changing global patterns of production. In the few responses seen, most candidates focused on globalisation without sufficient focus on patterns of production. This led to responses of limited relevance. A few candidates recognised this as an opportunity to write about the global product networks (GPNs) of TNCs and the new international division of labour (NIDL). This, with the use of examples, performed well as an approach.

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Advanced Human Options

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One resource in the Insert, Table 1 was from sub-Saharan Africa; and one, Photograph A, from South America. Fig. 1 was an unfamiliar model of tourism development and Fig. 2 a graph of data about disparities in wealth in China over time. As such, developing skills in resource reading and interpretation is an important part of the course.

The quality of many responses would have been enhanced by the careful integration of pertinent examples. One Examiner reported that "Many of these questions asked for specific examples. Too frequently these were absent, in inadequate detail or overgeneralised. Sometimes the examples were at the wrong scale."

One marking approach of which teachers preparing candidates for the syllabus are reminded is that in parts **(a)** where there is no division into sub-parts (so in **Questions 1**–**4**, **7** and **8** on this paper), three bands of marks, **1–4, 5–7** and **8–10**, are used to assist Examiners with differentiating responses. 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.

Qualities of language and expression varied greatly from articulate responses, deploying subject terminology fluently and robustly, to some where meaning was unclear and where note-form or bullet points were used. Candidates are reminded that narrative responses are expected and that lists and notes do not show the development of ideas and arguments which is expected at A Level. In part **(b)** of questions, responses which are in note-form or bullet points are restricted to Level 1, i.e. a maximum of 6 out of 15 marks.

A small number of rubric errors were seen, usually where a candidate wrongly attempted one question from each of the four options. In these cases, Examiners mark all the responses and award the candidate the highest total allowed within the rubric.

Comments on Specific Questions

Production, location and change

Question 1

(a) Candidates who spent some time reading and interpreting Table 1 before starting to write, benefitted in being able to produce tighter responses with less repetition both of descriptive points and of the reasons they were asked to suggest. The best approach to 'differences' was by column, e.g. the differences in average meat production per animal, rather than by row. As each row related to a single agricultural system, differences were difficult to identify except by comparative language: "higher", "more", etc. Full descriptions used some data from Table 1 as evidence, although not every observation made needed data support.

Candidates suggested reasons based on their knowledge of physical and human factors influencing production in agricultural systems (two pastoral systems and three mixed systems were shown in Table 1). Most focused on physical factors, probably because of the identifications given, such as 'humid areas' or 'highland areas'. Better quality accounts suggested human factors, such as subsistence or profit motive, levels of education and skill, finance and the intensity of the system, for example, seeking to explain the great productivity of 'small scale dairy' in both meat and milk production.

(b) Candidates responded well to the idea of 'the role of the government', either choosing a single example, such as recent agricultural changes in Zimbabwe, or taking a number of located examples to show how the role of the government differed, for example between the Green Revolution and the EU's CAP (Common Agricultural Policy). Two main features differentiated the quality of the responses. One was candidates' ability to assess, rather than simply to describe or narrate the story of what a government did. The other was to develop and substantiate that assessment, for example by considering different aspects of government action (and/or inaction) and to offer some critical appreciation of it in the chosen context(s); and, perhaps, to consider the significance of other factors, especially economic, in promoting change in agriculture. Some high quality responses introduced the concept of constraints to the assessment; for example considering lack of finance to see change through or to scale it up, or the key role of farmers' attitudes and openness to change, in terms of traditionalism in agriculture.

Question 2

(a) Most candidates took the approach of a developed list of factors, which gave the responses a natural structure. Many took a classical approach to industrial location, dealing with land, labour, capital, raw materials and markets. Some considered other attractions such as linkages and the potential for agglomeration economies. Almost all accounts would have gained from greater use of examples and greater detail, such as of named locations, named industries, appropriate data on costs, details of infrastructure, etc. Responses without the required examples, if developed very well conceptually, could achieve a maximum of 6 marks.

(b) The best responses were framed as assessments throughout and identified clearly what the 'recent changes in manufacturing production' were in the chosen country as well as what 'success' meant in terms of different criteria. Middle quality response were characterised either by an explanatory approach with limited assessment of success, or by the context remaining broad and, at times, implicit. At the lower end, responses were basic in approach, with little clear identification of 'changes', some of which were not 'recent' in the question's terms. Success was usually expressed in economic terms; such as in output, profits, the expansion of the sector and attraction of FDI or TNCs. Some candidates identified how success varied spatially within the country, for example, between core and periphery or in an EPZ; and, some, how it varied over time, for example in relation to the political climate nationally, or to the global economy, such as in the recent period of economic downturn.

Environmental management

Question 3

(a) The question contained two commands 'Outline, and suggest reasons for'. Many responses would have been enhanced with greater attention being given to the outline. It was valid to do this separately or to integrate it with the content for the rest of response. Most candidates approached this at the global scale and in the context of two main concerns about fossil fuels: their depletion and environmental impact, especially in relation to greenhouse gas emissions and climate change. It was valid to approach the question at other scales and some chose a perspective relating to one or more countries, often the home country. This required detailed knowledge of trends in energy consumption and the reasons for them to perform well. Some high quality responses recognised that the consumption of fossil fuels in MEDCs remained high, because of the significance of oil for the transport sector and affluent lifestyles, despite increasing investment in and use of renewable energy. Some also recognised the large energy demands of emerging economies such as BRICS (Brazil, Russia, India, China, South Africa) and the dependence on fossil fuels, such as coal in China, even when renewables are being developed. A few high quality responses included the important issue of energy security. Candidates were able to define 'recent' in terms of the material they had and some responses were highly contemporary. The syllabus dateline for Advanced Human Options remains 1970. Weaker responses tended to describe sources, both fossil fuels and renewables, rather than explain, or to give reasons for changes in one which were simply the opposite of changes for the other.

(b) The full range of response quality was seen. Conceptual understanding of nuclear power ranged from the robust, such as about half-life, and perceptive, for example, as to how 'concerns' arise, to the faulty, for example with reference to "nuclear gases flying about", instead of to radioactivity. Knowledge of examples was dominated by the catastrophic events at Chernobyl (1986) and Fukushima (2011), many pointing out the key difference in nature and origin of the two. Responses were also differentiated by the quality of the assessment of the concerns offered. At the lower end concerns or "problems" tended to be stated in terms of danger. Middle quality responses attempted to weigh and judge significance in some way, such as the likelihood of recurrence or the timescale of impacts. At the top end, some high quality assessment was seen in relation to perception of safety and risk, likelihood of catastrophe, the perspectives of different groups such as the nuclear industry and environmentalists or the place of nuclear power in relation to alternatives in terms of relative costs, energy potential and energy futures. Three main areas of environmental concerns provided the content: catastrophic events, such as the explosion at Chernobyl; failures or errors in normal operation; and the disposal of nuclear wastes. For the last two of these the importance of good management and working procedures was acknowledged. Given the wording of the question, 'environmental impacts', Examiners did not credit material about bombs or about human impact (mortality, injury, birth defects, etc.). Even if true and recalled correctly, material has to be relevant to be credited.

Question 4

(a) This was an opportunity to apply knowledge and understanding about environmental degradation in an unfamiliar context. It required skills of interpretation of the photograph and the ability to provide a linked explanation based on that evidence. Highest quality responses combined physical factors and human factors in the response. For example, many observed that deforestation had removed the canopy of trees and ground cover, leaving the soil exposed to tropical rainfall without the binding effect of roots. This would reduce infiltration capacity and lead to soil erosion by overland flow. An example of a human factor could be the guards needing transport, so clearance of routes or the impact of heavy vehicles directly on the vegetation, associated with noise pollution, scaring birds and animals, and air pollution from vehicle emissions. Some pointed out that once routes were made, they could be used by others, such as illegal loggers or settlers looking for agricultural plots, so opening up the rainforest to risks of further degradation.

(b) Environments chosen and approaches taken were diverse. Most responses would have benefitted from less time being spent on the causes of the degradation, which were not required by the wording of the question, and more attention being given both to the 'attempts' and the assessment of their success. Few candidates were able to carry the assessment much beyond whether an attempt worked or not and only the careful made an explicit link back to environmental quality. Many candidates took this as an opportunity to narrate the story of their case study, with limited regard to the relevance of the material they had learned to this specific question. At this level, the ability to select, direct and apply material is highly creditable and is one of the things that helps to secure a Level 3 mark. Another feature of better quality responses was the articulation of what 'success' means in terms of the quality of the chosen environment and how it can be measured. For example, this could be the return of fish to a previously polluted river such as the Rhine in Europe; the development of soil and an ecosystem after afforestation; or the ability to grow crops on what was previously unusable land.

Global interdependence

Question 5

(a) (i) This was answered effectively by most candidates. A full definition covered both words, i.e. *visible/invisible* and *import/export*. Most did this by using an example of a good, such as cotton, and of a service, such as tourism.

(ii) The demand was unfamiliar and made candidates think in the examination how to draw on and apply their knowledge, making it a high skills demand. The best did as asked, by choosing 'a traded product', such as tea or cocoa, and by considering the trading relationships between MEDCs and LEDCs, whether named or unnamed. Most observed that LEDCs export primary products to MEDCs for refining or processing as they lack the facilities to add value themselves and the economic structures to transport, market, etc. This means that MEDCs dominate the trade relationships both economically and politically and may re-export the finished product to the LEDC at a much greater price. This kind of explanation using a product could achieve full marks. Some other factors, such as the action of trade blocs or of Fair Trade could be made relevant. Responses that gave some sense of trade relationships but which had no clear traded product, or perhaps multiple ones, were credited using a maximum of 2 of the 6 marks.

(b) Candidates were familiar with the role of political factors in trade and defined these effectively in almost all cases. It was clear that in reading or interpreting the question, many candidates choosing it, moved the word 'large' and took it to say that "political factors matter to a large extent". This meant that the intended emphasis on 'large increases and large decreases' was reduced to changes in general. This both limited the quality of responses and led to some irrelevance in what was written. Some effective and well-informed responses were seen that were carefully focused on large-scale changes, for example in relation to the impact of sanctions, conflicts, the decisions of political regimes or the membership of trading blocs. A variety of examples were seen, such as sanctions during the apartheid era in South Africa; the Gulf Wars and the oil trade; and the impact of EU membership, for example on historic trading partners which enjoyed colonial ties with the UK. Any of these examples helped to provide positive assessment to satisfy the question.

Question 6

(a) (i) Almost all candidates could define ecotourism in terms of protecting the environment; only some in terms of the benefits for the local destination and to sustain and empower local communities. The use of the phrase 'With the help of an example' indicated that an example in name only "e.g. Xcaret", or less precisely "e.g. Kenya", would be insufficient. A general response without the use of an example received a maximum of 2 of the 4 marks.

(ii) Some responses interpreted the model well and developed from it to suggest three different advantages. Most seemed to be tied too much to Fig. 1 and did not use it creatively. A few wrote similar things for all three advantages, often generally, such as "it will protect the environment" or that it would earn the country money. Some saw that a three-pronged strategy (mass tourism, alternative tourism, ecotourism) would be more secure given that international tourism is affected by influences such as fashion and the global economy. Some observed that both resort enclaves and ecotourism combine protecting the environment with generating revenue. Some saw the efficiency of the location of the airport in relation to the coastal highway, and that both could be used by local businesses and residents in addition to being used by tourism.

(b) This was an opportunity for candidates to make good use of the case study from Syllabus 3.4. It also used different skills after the unfamiliar context for part **(a)**. The scope and depth of the assessment offered helped to differentiate response quality. Level 1 responses tended to be descriptive with assessment either stated or not present. In Level 2, responses involved some assessment, although this might be uneven (environment / society / economy); overly positive or negative; or, at the lower end, expressed in simple terms such as "good" and "bad". Some impressive Level 3 responses were seen, these were characterised by the whole response being structured as an assessment and by a weighing approach, acknowledging positive and negative impacts of tourism at different levels of significance, perhaps coming to an overall judgement. Almost all candidates defined a resort or tourist destination appropriately. In general, a specific place, such as Victoria Falls, performed better than a country-scale example, such as Kenya, as it allowed tighter, more integrated and better-directed comment.

Economic transition

Few responses were seen to **Question 7** and **Question 8**.

Question 7

(a) The primary sector comprises extractive industries (agriculture, forestry, fishing, mining). Its role in economic development is threefold: to provide raw materials and energy to resource further development in manufacturing (secondary) and services (tertiary); to sustain the lives of those who work in these sectors; and to generate income from exports to finance development at home and stimulate it in the countries with which the products are traded. Most candidates took a global approach to the question, some using the Clark-Fisher sector model as part of the description. A few chose to do this in the context of one country, usually an LEDC, which allowed for some deeper development of the response and provided a more integrated context. This was often the one with which the candidate was the most familiar, i.e. their home country.

(b) The nature of the question was open allowing candidates to use the material they had in the manner they chose. Better quality responses benefitted from the clear identification of 'difficulties experienced in … social and economic development', with 'attempts' carefully linked to each and 'success' assessed in specific terms. Lower quality responses tended to generalise about development, for example without differentiating 'social' from 'economic', to provide attempts in a broad way and to provide assessment at a simple level. This could be in terms such as good and bad, or stating whether something worked or not. Response quality would have been enhanced with located detail from the chosen country, specific attempts and some consideration of what success meant in that context.

Question 8

(a) Interpreting Fig. 2 and the part-question correctly were fundamental to success. In the few responses seen, several candidates described and explained the information given in Fig. 2, rather than its 'strengths and limitations', achieving minimal credit. Others identified one or more strengths, such as its visual representation that could be read easily; and one or more limitations, such as the lack of definition of terms such as 'inland/coastal' and of an accompanying map. Examiners noted that candidates did not develop the response sufficiently in relation to the study of spatial disparities and the application of their knowledge and understanding of unequal development to this unfamiliar context.

(b) Deconstructing the part-question shows two key ideas: the globalisation of industrial activity and changing global patterns of production. In the few responses seen, most candidates focused on globalisation without sufficient focus on patterns of production. This led to responses of limited relevance. A few candidates recognised this as an opportunity to write about the global product networks (GPNs) of TNCs and the new international division of labour (NIDL). This, with the use of examples, performed well as an approach.

GEOGRAPHY

Paper 9696/33

Advanced Human Options

Key Messages

- It is important to read the question and any accompanying resource carefully more than once in order to plan a response.
- Using the natural structure of the question as a scaffold helps to organise a response, for example **Question 3(a)**.
- Remember to integrate examples in response to parts **(a)** in order to achieve 6 or more of the total 10 marks.
- Developing a vocabulary of useful expressions for providing assessment and practising assessment skills helps to achieve credit in response to parts **(b)**.

General Comments

As in previous examination sessions, **Environmental management** and **Global interdependence** were the two preferred Options. Examiners noted that few Centres had prepared candidates for **Economic transition**, but that many of these Centres' candidates responded very well to the questions.

Four areas might usefully receive some comment for teachers' information and in order to enhance candidate response in future. These are the understanding of terms and expressions, the issue of scale, the need for evaluation and assessment and the interpretation of materials contained in the Question Paper's Insert.

There were no terms or expressions used in the questions which caused particular difficulty, but levels of understanding varied. Some candidates had little appreciation of 'tourism destroys itself' in **Question 6(b)** and only answered about tourism destroying tourist destinations, or at least having negative impacts on environment, society and economy.

Examiners observed that some candidates found difficulty responding to questions at the appropriate scale. One of the syllabus's Assessment Objectives for Understanding and Application involves recognition of the significance of spatial scale (2.4). In **Question 3(b)**, many candidates did not choose what could be seen as '**one** country'. Instead they dealt with one named scheme, often the Three Gorges Dam which, without wider comment, could not be regarded as 'China'. Any such interpretation of scale which does not reflect the question's requirement limits the potential credit that can be achieved.

One other characteristic of responses, on which Examiners commented, was the tendency to produce descriptive rather than evaluative responses (see Assessment Objective 4). Questions asked for a variety of types of judgement in response; for example, assessing extent of agreement with a view in **Questions 1(b)** and **6(b)**; assessing the extent of success in **Question 3(b)**; and assessing the extent to which a theory fitted a chosen country in **Question 7(b)**. Responses which are descriptive in character and which have little or no assessment receive awards within Level 1 (1–6 marks out of 15). Learning the language of, and developing and practising skills in, assessment are vital for success in the subject at A Level. High quality evaluative responses are distinguished by such characteristics as the ability to observe positive and negative impacts or consequences; to question decisions or outcomes; to point out uncertainties or conflicts; to differentiate outcomes by location or for different groups of people; to argue a case and produce counter-arguments; and to weigh evidence and provide an overall conclusion or perspective. Where a question requires evaluation, responses that Examiners judge as Level 3 are often structured wholly as an assessment, rather than a candidate's first introducing material in a narrative manner and then evaluating it, which is more characteristic of Level 2.

Candidates in general had few difficulties interpreting any of the Figures contained in the Insert although all were likely to be unfamiliar. Fig. 2 was a map of a remote reserve in the Amazon rainforest, Fig. 3 a postcard promoting Dubai as a different sort of destination for tourists and Fig. 4 a Worldmapper style of map. As such, developing skills in resource reading and interpretation is an important part of the course.

There were a small number of rubric errors committed when candidates' responded to more than two questions usually by choosing one question from each of the four Options. In the event of a rubric error Examiners mark all the responses and credit the candidate with the highest marks achievable within the rubric.

Handwriting, the use of language and expression were so variable across the entry as to make generalisation meaningless. Candidates should, however, be reminded of the need to structure their responses to each part **(b)** in paragraphs, as it was quite common to find two or more sides of continuous writing, or, in in some cases, bullet points or notes. Whilst pressure of time may make these approaches more likely, the ability to organise and structure a response is one aspect embedded in the level descriptors for judging the overall quality of responses.

Comments on Specific Questions

Production, location and change

Question 1

(a) (i) Most candidates read Fig. 1 correctly and made the required comparisons. Data support was needed to achieve full marks. There were no marks for explanation, only for data interpretation.

(ii) Almost all candidates were able to make observations of positive and negative effects about the use of fertiliser in agriculture, such as enhancing crop output and accelerating growth; and its potential to pollute ground water and water bodies. Some could make further points that were conceptually more advanced, such as providing a stimulus to local manufacturing industry (to produce fertilisers) or the significance of diminishing returns, where the application of fertiliser over time has less and less of a positive impact on crop output as soil quality and structure deteriorate. Most responses would have been enhanced by the use of specific examples, rather than an example in name only, such as "e.g. Europe". A few candidates confused fertiliser with pesticides.

(b) This question about agricultural change allowed candidates to devise their own assessment, based on the material they had and to put forward their own view, argument and evidence. Most recognised that farmers' attitudes are highly significant, for example in relation to resistance to change, lack of education, traditional farming, etc., and that other factors also matter, such as government initiatives and the availability of finance. Such responses, recognising that a shift in farmers' attitudes is only one aspect of ensuring successful agricultural change, performed well. The best responses either explored the issue in a specific context, such as that of the Green Revolution in India, or integrated different examples as support for the argument. Many responses which were firm in understanding were limited in overall credit by being general rather than exemplified and descriptive rather than evaluative.

Question 2

Very few responses were seen.

(a) Transport affects production in agriculture in a number of ways. Taking the syllabus's systems approach it can be seen as affecting inputs, such as by deliveries of necessities, e.g. fertilisers; processes and throughputs, such as moving animals, transport for workers; and outputs, in taking products into storage or to market. All these are affected by the availability of transport (vehicles), transport networks and issues of efficiency, capacity, cost and speed. Examples included problems in obtaining reliable supplies of petrol (gasoline) at an affordable price and of safeguarding the quality of harvested crops on the journey to market, storage or processing facility. Local examples known to the candidate in their own home context performed well.

(b) Transport is one factor which affects industrial location. As such, this part-question was similar in style to **Question 1(b)** in setting up an assessment for candidates to take and frame as they chose. It was possible to argue that transport remains very important for some products and types of manufacturing and that for others production is, in effect, footloose at the global scale, with other factors, principally least-cost location, being of greater significance in the 21st century. Some candidates offered a developed list of locational factors which appeared almost note-form, for example using headings of land, labour, markets, raw materials, etc. These showed some knowledge of the material content without having the necessary assessment approach. A few high-scoring responses were seen in which theoretical understanding of influences on location and location decision-making was integrated with detailed examples of manufacturing and related service industry that were contemporary, dynamic and perceptive in the judging manner in which they were treated.

Environmental management

Question 3

(a) Most candidates identified either wind or solar energy as having the least environmental impact for **(i)** and either nuclear or HEP as having the greatest environmental impact for **(ii)**. The least environmental impact could be explained both negatively, for example by the absence of greenhouse gas emissions through lack of combustion or there being no extraction involved with flow resources; and positively, for example, limited disruption to the landscape and the potential for discrete siting, for example of solar panels on the roofs of buildings. Many responses would have been enhanced by a specific 'thumbnail' example of an actual installation in a couple of sentences, rather than by an example of the 'e.g. China' sort. Some presented arguments that contradicted their categorisation of the energy source. Wind, as an example, was recognised as being visually ugly, noisy, intrusive and disruptive to land use and bird flight and was yet judged to have least environmental impact. Careful selection and application of learned material is needed in such instances.

Responses to **(ii)** tended to be more fully developed in that there were several environmental impacts that could be developed. For nuclear these included contamination from normal operation; the disposal of wastes; and incidents of a catastrophic nature, such as at Chernobyl (1986) and Fukushima (2011). For HEP, impacts included dam construction; disruption of flow; flooding upstream; sedimentation; and their effects on habitats, flora and fauna.

In preparing candidates for future examinations they should be advised that when asked for a choice, as here, only one should be given. Some provided two or more types of renewable energy for both **(i)** and **(ii)**. This did not allow for the development of the response and may have taken too much time. One Examiner reported that "Some candidates wasted time by writing about the general characteristics of renewables by way of introducing their answer. They contrasted them generally with non-renewables, which served no purpose, and could gain no credit, in the context of the question set."

(b) This part-question involved the selection and application of learned material from the case study in the syllabus and its careful direction. It required both demands to be addressed (explanation and assessment), but not necessarily in a balanced manner as in many instances the assessment had greater potential for depth and development. One characteristic of higher quality responses was the clear identification of 'issues in meeting the demand for electricity'. Any issues were creditable, such as increasing demand, meeting peak demand, objections to newly proposed schemes, concerns about the use of fossil fuels and their depletion, etc. The best analysis of these issues was supported with contemporary detail and/or located evidence which helped to amplify why these were issues and for whom. Middle quality responses tended to be more general about demand, especially in terms of its increase or to be expressed broadly, leaving the Examiner to identify the issues in the narrative.

Response quality was further differentiated by the assessment offered of the attempts to solve the chosen issues. The full range of quality was seen, as expressed by the level descriptors. The best assessments were perceptive and nuanced, and expressed in a judging manner with different aspects being set against each other and weighed in a conceptually robust way. These often included elements which had and had not been successful, differentiated by space, time or stakeholders. Some included elements of sustainability (environmental, economic, social, political) in the assessment of success. The very best offered success criteria such as percentage capacity, costs, instances of blackouts, positive environmental impacts, etc. Middle quality responses were often more narrative in approach, describing and explaining the attempts before writing whether each worked or not. Some candidates did not assess the success of all the attempts they wrote about, so demonstrating satisfactory knowledge and lower skills. At the lower end of the spectrum of achievement, success might not be addressed explicitly. Sometimes general comments were made about whether an attempt worked. Other times the comments about success were not related to the issue of meeting demand as this question required. Lastly, it should be noted that the success of plans or proposals cannot be assessed, only that of existing attempts.

The use of the case study or example varied in quality. Some excellent detailed work was seen in which the national context, often the home context, was recalled accurately and deployed effectively. In these responses a sense of overall perspective of the country emerged. Middle quality responses tended to be of two sorts. One approach was clearly national, yet lacked country detail. The other attempted to use a single scheme, often the Three Gorges Dam, as 'China', which was self-limiting, even when demand was addressed directly. Scale matters in geography, and 'one country' involves a national scale approach.

Question 4

(a) Almost all candidates read the map effectively. Although as a resource it appeared complex, the coloration and key facilitated interpretation and many candidates recognised the significance of the arrows to indicate expansion. The best responses were written with a clear sense of threat(s) and risk(s). For example, the planned road construction right across the middle of the reserve represented a significant threat to the environment, breaching its integrity and destroying a swathe of rainforest. At least as significantly, it would open the reserve up to traffic and to further outside influences, such as exploitation and modernisation, for example allowing illegal loggers easy access, or permitting settlers to penetrate the forest, build shacks and clear plots for cultivation. Lower-scoring responses tended to repeat the idea of deforestation for each of the land-uses and activities in the key, without developing these observations further in terms of 'becoming degraded'.

(b) The focus of the question was on what makes it difficult to improve the quality of a degraded environment. Candidates who could select and apply their material to this end, scored well. Others produced answers which were more about success than they were about difficulty. This showed that they had satisfactory knowledge of the topic, but lower skills to handle it appropriately. Three things characterised the best responses. The first was the clear identification of one or more examples of a degraded environment. This could be done without needing to explain the causes of its degradation and reasons why it became degraded, for which there was no credit on this occasion. The second was providing exemplar detail and other evidence. This could include data, named locations, specific initiatives, events, and even quotations from media or leaders. The third characteristic was explicit development of why it was difficult, often establishing the dynamic interaction of a combination of factors rather than a single cause. One of the hallmarks of quality for this content was a sense of reality. Middle quality responses tended to be more narrative of the chosen example(s). Some used more examples than could be handled effectively, as each needed to be introduced, or, worse, provided more than one example to illustrate the same basic difficulty, such as problems with finance or a lack of co-operation. This took time without enhancing the depth and development of the analysis or breaking it out into new areas.

Global interdependence

Question 5

(a) This straightforward demand was handled satisfactorily by most candidates. Few candidates had the detailed examples and skills in structuring the response to achieve the highest awards. Responses which covered 'aid' well and which omitted 'aid donors' were marked out of a maximum of 7 marks, being partial. Generally speaking, candidates were more aware of government aid and aid from supranational bodies such as the UN or the EU, than of the work of NGOs such as WaterAid, or philanthropists and their foundations such as the Bill and Melinda Gates Foundation.

(b) Candidates covered 'the relative merits of trade and tourism' economically reasonably well. Few were able to explore the significance of the key phrase 'as a foundation for economic development' and so missed the significance of income potential and possible instability affecting each in different ways. A few good quality responses were seen which were carefully comparative; supported with examples from one or more countries, often the candidate's own or from elsewhere in Asia-Pacific; and which demonstrated robust conceptual understanding of both sectors and of economic development, for example in terms of linkages and the multiplier effect. Lower-scoring responses tended to be couched in simple terms of what was 'good' and 'bad' and to be presented as two largely separate accounts which made 'relative merits' difficult to identify.

Question 6

(a) There were two elements to the part-question: 'describe' and 'explain'. Useful information of answering the description in **(a)** was contained both in the stem to the question and on the resource. Most descriptions of the initiative reused the words and ideas on Fig. 3. Few candidates interpreted the resource more reflectively to describe the initiative in terms of its aims or rationale, such as that it was challenging people's ideas and perceptions of Dubai as a destination or that it was using free gifts (the map and the luggage tag) to entice and cultivate interest. Some candidates rightly associated the idea of the backpack with younger, more adventurous tourists or with those of any age who like to walk, explore and 'get off the beaten track'. Some saw significance in the use of the colour green as an attempt to attract environmental tourists or ecotourists. Some interpretation was misconceived; for example a few thought that it meant people would not have to lift heavy suitcases and that it was therefore intended for the elderly. Similarly some candidates saw the camel and thought that this was Egypt, rather than Dubai, so wrote about the Pyramids and the Nile unrobustly.

The explanation also differentiated effectively. Most candidates only supplied an answer to why it was important for a destination to attract more tourists, not a wider range of tourists, which was what the question asked. As such simple economic explanations of why tourism is a good thing in terms of income, investment, employment, the multiplier effect, etc. dominated. Higher quality responses were stronger conceptually, recognising that a wider range of tourists may help to overcome some of the potential limitations of tourism (compare **Question 5 (b)**). For example, tourism is a fashion industry and people tire of the familiar, looking for something new, different and exciting. As such innovation in relation to the tourism product is a good thing to sustain income from tourism. A wider range of tourists, especially from different parts of the world, may help to overcome the seasonality of established markets, as holiday seasons vary. Business tourism, including conferences and conventions, may help to supplement holiday tourism and fill hotels, etc.

(b) Apart from integrating examples and providing an explicit assessment, the key to a successful response was to get beyond tourism destroying the environment, society and economy of the tourist destination to the point of it destroying itself. This could occur, for example, in relation to the life cycle model of tourism, in the decline phase. As mass tourism degrades and damages the environment, such as polluting beaches or destroying the view; impacts society, such as leading to crimes against tourists; and has economic effects such as leakage, so that necessary reinvestment is not made to maintain or rejuvenate the destination, so tourists begin not to want to return and negative reports deter first-time visitors. A spiral of decline sets in whereby it is the effects of tourism which over time first weaken and then perhaps destroy the tourist trade. A few candidates provided well-conceived counter-arguments using cases where tourism was destroyed by something else, often a catastrophic event, such as a cyclone, the tsunami of December 2004, a health scare, or terrorist attack, for example in a tourist district of Bali in 2002.

There was satisfactory to good knowledge and understanding of models such as the life cycle model of tourism or Doxey's Irridex. Application of these to the question could have been stronger as some candidates simply outlined the model(s) and described how they fitted a destination. This approach related to a different part-question from the one set this session and achieved modest credit.

Economic transition

Very few responses were seen to **Question 7** and **Question 8**.

Question 7

(a) A few candidates seemed familiar with Worldmapper images in that they interpreted the map of projected GDP with confidence, using the natural structure of the question for their response. Strengths and limitations needed some balance, as did the index and the representation, the map, but absolute balance was not required. Weak responses tended to describe what the map showed in terms of content globally, in general terms of inequality, rather than considering the technicalities of the measure and the mapping as required. This approach gained few marks if any.

(b) The expectation from classical economics of regional divergence initially being followed by regional convergence was understood in a general way. The explanation was expressed in terms of core-periphery, or cumulative causation, or both. Higher-scoring accounts identified the work of backwash effects and spread effects and the significance of government regional policy and investment in bringing convergence. Candidates did less well in assessing the extent to which this applied to their chosen country. Most simply told the story of the case study, such as of Brazil, Italy or Malaysia, showing recall knowledge and some understanding. Only a few were able to use the case study in the manner required and to provide their own assessment in the examination, i.e. demonstrating that they had the high order skills to use the case study in a manner other than that in which it had been learned.

Question 8

(a) Prepared candidates met this straightforward demand well, using the case study of a transnational corporation (TNC) specified in the syllabus. Generally speaking large diverse global groups such as motor vehicle manufacturers, clothing manufacturers or petrochemical companies performed well, having good 'global reach' and diverse operations. Suggested reasons included profit maximisation and cost minimisation as fundamental, exploiting comparative advantage, penetrating new markets, exploiting NIDL, taking government incentives, etc. Better accounts differentiated functions within the production chain or global production network (GPN), such as global HQ, regional HQ, R&D, manufacturing, assembly, etc.

(b) This was answered relatively poorly and the government's role seemed little known beyond being seen to be important. Answers could have been developed along the lines of the government's direct role in economic planning and policy, investment in state industries and decisions about trade and tariffs. The government's indirect role could have also been considered in relation to sectors as diverse as education (and skills training), transport infrastructure, energy supply and modernisation. The 'Asian Tigers', especially Singapore and South Korea, which are well-documented, were good choices of NICs to consider, although any example could be taken.