GEOGRAPHY

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Paper 9696/01
Core Geography
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General comments

This examination produced a wide range in the quality of responses much in line with those of the past. As always, there was a considerable variation in levels of achievement between and within Centres. It was pleasing to note the outstanding performances of some candidates, particularly, but not exclusively, from Centres in New Zealand and Zimbabwe. These candidates not only demonstrated admirable breadth and depth of knowledge and understanding but also were able to enliven their discourse with apposite and intelligent use of local examples. The high standards achieved by these candidates from a wide distribution of Centres is not only a tribute to the careful preparation of teachers but also contradicts any media claims of falling standards.

At the other end of the scale, there were many candidates whose preparation was clearly inadequate. Their grasp of the basic principles of processes within both physical and human geography was lacking and their preparation so partial that many failed to attempt parts of questions in *Sections B* and *C* and whole questions in *Section A*. Most candidates, however, clearly had some knowledge of geographical process and attempted all questions. Many failed to capitalise fully upon their knowledge through an inability to address the questions asked. This most frequently manifested itself in a failure to:

- distinguish between description and explanation,
- use data from the diagrams to support observations when required to do so,
- understand the implications of terms such as 'distribution' , 'source area', and 'discrimination' within the questions.

The use made of diagrams by candidates was generally acceptable and there was some indication within this examination that candidates have realised the importance of effective annotation. Few candidates in this examination wasted time by reproducing diagrams of material already provided for the questions in *Section A.*

Rubric errors were rare and there were very few examples of candidates failing to complete the paper due to inadequate allocation of time between the three sections of the paper. There remains, however, a tendency for candidates to fail to apportion their time within questions in accord to the amount of marks that are available. Thus in *Section A* it was not uncommon for candidates to devote more time to a part of a question worth 2 marks, than to a part that carried 6 marks. In *Sections B* and *C* candidates often lost marks due to a lack of precision in the definitions required in **part (a)** of the questions. This was particularly apparent in **Question 9** and **Question 10** where many candidates failed to identify that both death rate and international migration were measured per annum.

The quality and use of English were frequently commendable and the vast majority of scripts were well presented and entirely legible.

Comments on individual questions

Section A

Question 1

(a) Most candidates correctly calculated the temperature drop of the DALR, but far fewer were able to give the temperature decline of the SALR. In many cases this was due to a miscalculation of the rate per 1000 metres, as the SALR extended over 2000 metres.

(b) Poorly answered, with relatively few candidates obtaining credit beyond that for noting that the SALR cooled at a lower rate than the DALR. Very few were able to account for this in terms of the release of latent heat after dew point temperature had been reached.

(c) Most candidates stated that the cloud base was at condensation level, which marked the start of the formation of water droplets. Curiously, some associated this with the release of latent heat, which they had failed to record in **(b)**. Better answers were those that explained the role of hygroscopic nuclei, described the continued rise of air at the SALR and indicated the vertical extent of the cloud formation.

Question 2

(a) The vast majority of candidates obtained both marks by identifying two plates and indicating the type of boundary between them.

(b) The general distribution of the type of boundary was completely ignored by most candidates, resulting in very little credit being given. Many merely repeated **part (a)** or gave a description of the processes occurring at plate boundaries. Very few answers gained credit by pointing to the mid ocean location of most constructive (divergent) boundaries or the location along continental edges (e.g. Pacific Ring of Fire) of many destructive (convergent) boundaries.

(c) Many candidates obtained credit for sophisticated and well executed diagrams of plate margins. Generally those of convergent margins were more successful than those of divergent boundaries. The weakness of many answers was in relating these diagrams to the landforms and in the description of the landforms. There was considerable confusion concerning the nature and formation of fold mountains, island arcs and mid ocean ridges. Volcanic extrusion and ocean trenches were better described, although poorly explained. Some candidates gave landforms for two types of plate boundaries, where only those pertaining to one boundary were required.

Question 3

(a) Most correctly identified Africa.

(b) As with **Question 2,** many candidates find it difficult to describe distributions as they fail to see any general or global perspective. Most attempted to itemise the countries with a fertility rate of 2.4 – 2.9, which was not required. The widespread nature of the distribution encompassing both MEDCs and LEDCs, and occurring in both the northern southern hemispheres was noted by very few. Similarly, the contrast between continents such as Africa and the Americas was rarely noted, although most did comment upon the concentration of such countries within North and South America.

(c) Most candidates gained reasonable amounts of credit with many obtaining all available marks. Good responses referred to a range of reasons, typically women's emancipation, age of marriage, job priorities, the cost of child care and government policy. Reference was also made to the impact of mechanisation and health care in reducing the need for more children. Weaker candidates tended to list reasons without explaining their impact upon fertility rates or confused fertility rates with birth and death rates.

Question 4

(a) Many gained full marks through various routes. Some identified the top two responses for men and then compared them with the top two for women. Others took the top one for both men and women and then the second for both. Either was acceptable. Failure to consider a second response or to provide data from the table restricted some to a single mark. In many cases candidates wrote long speculative explanations for the responses, which was not required and thus wasted time.

(b) Whilst many gained full marks, there was a tendency for some candidates to explain the difficulties faced by migrants rather than describing why it was difficult to obtain information from them. Better answers typically identified not telling the truth, refusing to cooperate as they were illegal migrants or errors in sampling. Weaker answers mentioned the difficulty of finding migrants or erroneously assumed that 100% needed to be questioned. The responses were often over long for the two marks available**.**

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(c) Many candidates appeared not to understand the term 'discrimination' These candidates wrote, often at length, upon the disadvantages suffered by rural migrants to urban areas i.e. having poor housing, unemployment, low levels of education and health and criminality but did not associate this with discrimination. Better responses identified why and how people in urban areas discriminated against migrants such as a perception that migrants were taking their jobs, cultural and language differences or an assumption that all outsiders had poor social or educational backgrounds leading to a drain on the urban economy and appearance.

Question 5

(a) Most candidates correctly identified Montezuma and Coronado and gave supporting data from Figs. 4A, B and C. Those losing marks did so through a failure to provide supporting data.

(b) Most candidates experienced difficulty with this part of the question, as they were unable to relate economic factors to residential areas within an urban structure. Even better candidates tended to concentrate on one or the other. Thus residential areas were seen solely in terms of high, middle and low class housing and economic factors, such as bid rent, only affecting manufacturing, commercial and retail activity. Better answers did differentiate residential areas by income and some introduced private transportation provision as a factor. Very few saw the cost of land as any influence on residential development or were able to provide any exemplification of government directed activities.

Section B

Question 6

This was the most popular question in this section.

(a) (i) Most candidates were able to define saltation and suspension, often accompanied by useful diagrams. Some candidates lost credit by omitting particle size.

(ii) Turbulent flow was less well understood. Many identified the idea of eddying but very few related the movement to friction.

(b) Accounts of the nature and formation of deltas, floodplains and levees was surprisingly weak. In the case of deltas many responses went little further than a mention of deposition in coastal or lakeside locations without any explanation as to why deposition was occurring. Diagrams were often inaccurate or inappropriate. Floodplains were often accurately described, but lacked any explanation as to their formation. Diagrams were disappointingly vague and inaccurate. Levees were generally the best understood and the best represented diagrammatically.

(c) Flood prediction presented the greatest problem to most candidates. Most mentioned hydrographs, which of themselves are not predictive tools. Very few were able to develop the nature of hydrographs into the concept of basin modelling. The best responses did mention the use of recurrence intervals, but few were able to evaluate their effectiveness. Many accounts got no further than vague suggestions concerning weather forecasting. Descriptions of methods of flood prevention were more successful. Most offered at least one method of prevention and often included artificial levees, dams (although frequently unspecific), channel straightening and widening, and afforestation.

The evaluation implied by the 'to what extent' aspect of the question was widely ignored. The best answers, however, intelligently employed case studies to illustrate the levels of success and limitations of preventative methods.

Question 7

(a) (i) Most had some idea of an urban heat island as an area of higher temperatures, which was in some way influenced by buildings. Few were able to effectively explain the absorption and radiation of heat giving an island effect within surrounding cooler rural areas.

(ii) Many were able to point to the impact of particulate matter upon the development of precipitation, but very few approached the development of fogs and smogs. Weaker accounts produced little more than a vague reference to pollution and in some Centres candidates failed to attempt this part of the question.

(b) Many recognised that the 6 factor 'day model' was the key to a successful diagram and answer. The best answers noted latent and/or sensible heat transfers in addition to the other key factors. Weaker responses described heating through incoming and out-going radiation, but often did not specify short and long wave radiation. Similarly, such accounts were very sketchy concerning the scattering and absorption of radiation by clouds and the contribution of greenhouse gases.

(c) This produced a very disparate distribution of answers with some candidates displaying a clear understanding (Level 3) whilst others had little grasp whatsoever. Weak candidates could often offer only an inaccurate description of land and sea breezes. The best answers explained wind movements in terms of the differential heating of the Earth's surface, usually illustrating this by reference to the tri- cellular model of atmospheric motion or a diagram of the distribution of global wind belts.

Question 8

(a) (i) The definitions of heave and slide were generally very weak, with heave being slightly the better of the two.

(ii) Flow was better understood usually by describing mud flows where saturation was noted. There was little reference to other flows such as solifluction or to the general influences of debris size and liquefaction.

(b) There were very few good answers as most candidates were unable to relate rock structure to slope form. Most answers merely recorded a contrast between hard rocks (steep slopes) and soft rocks (gentle slopes). Failure planes, discontinuities and rock dip were very rarely mentioned. Some candidates drew diagrams of differing slope forms (e.g. free face, convex and concave slopes) but failed to relate them to either rock type or structure.

(c) The best answered part of the question with some excellent responses, particularly from Centres in Zimbabwe. The best answers were those that produced some balance between the physical properties of granite and its weathering. Thus they were able to demonstrate how jointing aided weathering processes and how its mineral structure affected chemical weathering. Weaker answers were stronger on physical properties than upon weathering. These accounts centred on generalised accounts of freeze thaw or exfoliation with little or no link to granite.

Section C

Question 9

This was the most popular question attempted in this section.

(a) (i) Death rate was generally accurately, defined although some lost a mark by failing to indicate that it is calculated per annum.

(ii) Low death rates in MEDCs were usually explained well with medical improvements, diet and education featuring in most accounts. A common limitation to the accounts was a deviation into a discussion of low birth rates.

(b) The demographic transition model is well known and most candidates produced good responses. Many reproduced the whole of the model as a diagram although only the death rates were required. Similarly general accounts and explanations of the model were given, whereas only a

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description of the progress of death rates was required. Some mistakes occurred in the nature of the drop in death rates in stage 2 of the model and in their fluctuation in stage 4.

(c)   A wide range of responses. Better answers recognised the difficulties of making statistical predictions based upon vital rates that could be, themselves, subject to unexpected change. Hence epidemics, wars and economic change might all impact upon birth and death rates. Similarly, migration could produce unforeseen changes. Weaker answers were those that discussed influences upon birth rates without any link to prediction or confined their answer to China and its single child policy.

Question 10

(a) (i)   Nearly all responses defined international migration as a movement across national boundaries, but far fewer recorded its necessary duration of at least one year.

(ii)   Most candidates gained marks for identifying two types of voluntary migration, although not all provided apposite examples. Weaker candidates gave two examples of the same type of migration or erroneously included tourism or business trips.

(b)   Most saw this as an account of the push –pull factors that induce international migration in general. Better answers related these to individuals in terms of age, gender, education and distance as well as outlining obstacles to migration such as visas and government policies.

(c)   Generally well answered, although a significant minority of candidate did not limit their responses to source areas, but wrote instead about the areas receiving migrants. Most concentrated on the negative impacts of brain drain and loss of young enterprising populations. Better answers made telling use of local examples. The 'extent to which' aspect of the question was addressed in such answers by reference to positive outcomes in source areas such as reductions in population pressures and the impact of remittances.

Question 11

(a) (i)   Explanations of urbanisation were frequently imprecise, as most failed to recognise that it represented an increase in the proportion or percentage (not the number) of the population living in urban areas.

(ii)   Better answered than **(i),** with references to counter urbanisation and the attractions of retirement to rural areas. Some answers developed arguments concerning the very high levels of urbanisation already extant in MEDCs.

(b)   The effects on rural areas of urban migration were generally well understood. Negative effects were described in terms of demographic, social and economic impacts. Positive impacts were introduced in most accounts but were often less well developed. Many accounts were limited by the lack of exemplification.

(c)   Most responses looked at the enhancement of rural services and support for farming, marketing and rural growth poles. There were fewer references to urban planning constraints or to government attempts to discourage urban migration and growth. Candidates from Zimbabwe often employed local case studies of the clearance of shanty towns with some evaluation as to the effectiveness of such policies. Weaker answers tended to describe only generalised strategies without case studies, which significantly limited any discussion of the effectiveness of such strategies.

GEOGRAPHY

General comments

There was a wide range in the quality of answers with many of an exceptionally high standard reflecting a thorough knowledge and understanding appropriate to 'A' level physical geography. However, at the other end of the scale, Examiners read a large number of papers which suggested that those candidates had not progressed beyond what might have been learnt at a much earlier stage of their geographical education. The overall standard was comparable with that of previous recent years. As commented upon with respect to last year's examination, what set the very good scripts apart from the ordinary was the underpinning of answers with a genuine knowledge and understanding of physical processes. The better answers also made good use of examples, both where demanded by the question as well as in cases where they added fine detail. A lack of accurate detail or hard data was what was frequently lacking in the weaker responses.

An oft repeated comment in Examiner's reports is the need for candidates to consider carefully the wording of questions and to appreciate the specific requirement before plunging into writing all they know about a topic. Such answers were sometimes more relevant to the demands of the topic set in a previous examination. Some candidates showed an incomplete understanding of the precise meaning of geographical terms such as weathering and erosion, arid and semi-arid, profile and plan form. Also the term 'beaches' was frequently regarded as being synonymous with coastline. It was evident also that in many cases candidates were unaware of the meaning of some of the command words in questions, or paid insufficient attention to them. Such misunderstanding, or ignoring, of commands led in some cases to unnecessary time consuming accounts where there was a need to 'outline' or where candidates chose to both 'describe' and 'explain' when only one was required. A command that was too frequently ignored was to 'evaluate' in the wording of a question. Inattention to the above observations was often the reason why many candidates did not manage their time efficiently to balance their coverage of both questions and parts of questions.

The effective use of appropriate and well executed diagrams continues to be a feature of the better answers. On occasions, a well annotated diagram or map could well have replaced a lengthy text and provided evidence of accurate detail as well as understanding. However there were some instances where diagrams added little, and others where they contradicted the text, as in some cases of constructive and destructive waves.

'Hazardous Environments' continued to be the favoured choice of physical options and was chosen in the majority of Centres world-wide. The second choices were then mainly 'Coastal Environments' and 'Tropical Environments', often related to the geographical location of Centres. Relatively few Centres opted for 'Arid and Semi-Arid Environments'.

Comments on Specific Questions

Tropical Environments

Question 1

This was the more popular choice of the questions on Tropical Environments.

(a) The majority of candidates revealed a reasonable level of knowledge of the nature and types of vegetation in both the humid and seasonally humid tropics. However in some answers the distinction between the two areas was not made clear and in others the seasonally humid tropics were either not covered, or, treated very superficially. However the question demanded an explanation of 'how vegetation is adapted to its climatic environment'. It was the ability of candidates to address this effectively that distinguished the good and very good answers. Most

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recognised that in the humid tropics, high rainfall and temperatures encouraged rapid growth and competition for sunlight promoted tall trees with buttress roots and so on. More specialised adaptations were covered by the better candidates. Similarly in the seasonally humid tropics, adaptations to seasonal drought needed to be developed and those using relevant examples effectively earned good marks.

(b) This was answered very variably. There were some excellent answers from candidates who realised that the removal of vegetation reduced the effect of humic acids (chelation) and that a general reduction of chemical weathering resulted from less infiltration. Similarly increased insolation (mechanical) weathering might result from forest cover removal and a change of local climatic conditions. However, too many simply assumed that all three processes would be increased without putting forward any argument to substantiate it. Far too few differentiated between the types of weathering. Mass wasting generally received scant treatment with little more than increased run off removing material from slopes and with no reference to landforms. Similarly any detail of the effects of erosion was sadly lacking, very few mentioned the possibility of gullying and the development of badland topography. There were better answers where candidates recognised that erosion and mass wasting would increase the load of rivers with development of fluvial landforms. In too many cases, the effect on landforms was an excuse for a long account of the exposure of the basal surface of weathering and the evolution of granite landforms. There was no realisation of the time scale involved and the likelihood of this happening. Some also suggested that karst landforms, such as dints and grykes, would be enhanced, forgetting that such features developed more quickly under vegetation cover.

Question 2

Generally poorly attempted and, with some exceptions, this applied to both parts.

(a) As has so often been the case in the past with soil questions, answers were polarised between those who had a good understanding of soils and pedogenic processes and those who had no or minimal knowledge. In the weaker answers, candidates could do no more than state that under the conditions of high rainfall and temperatures there would be rapid weathering and 'vigourous leaching', but not how? i.e. any explanation. Such answers were often filled out with inappropriate and often inaccurate Gersmehl type diagrams. There were though, some very good answers where candidates not only explained how the conditions led to rapid breakdown of surface organic matter and its rapid leaching, with precipitation greater than evapotranspiration, but, also demonstrated an accurate understanding of the breakdown of clay particles into silica and sesquioxides with resultant ferrallitisation and removal of silica in solution. Very little, if any, reference was made of the soil profile provided which could have provided helpful detail and scale.

(b) The majority of candidates answered this with reference to the tropical rainforest although there were a few good responses from the savanna. However the general level of response was disappointingly low. Many answers started with a definition of 'sustainable development' but the implications of it were soon forgotten as examples of 'slash and burn' and forest clearance for ranching, agriculture and mining were described with minimal attempt to address the question as 'to what extent is sustainable development possible'. As ever, there were some good attempts with reference to relevant examples such as selective logging and controlling illegal exploitation and with sensible discussion of economic pressures in LEDC economies. Other good answers stressed the fragility of the biomes and considered the possibilities and examples of ecotourism, safari parks and management strategies. Effective policing and control of the vast areas in question were recognised as difficulties and therefore hampered the successful implementation of strategies.

Coastal Environments

Question 3

Answers were divided roughly equally between this and **Question 4**. There was a wide range of quality in both cases and **parts (a)** were generally much better attempted than **parts (b)**.

(a) The best answers were well balanced between 'outlining how waves are generated' and 'explaining the effects of constructive and destructive waves'. Too many candidates devoted too much time to writing all they knew about each of the elements of the question. The outline of how waves are generated needed no more than the effect of friction from winds blowing over the sea surface and

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the development of the orbital motion of water particles to create waves. This was done in good answers with clear, well annotated, diagrams. There was still, as in previous examinations, confusion over the effects of constructive and destructive waves. Most got their characteristics correct but the effects on beaches was highly variable. The false concept of constructive waves building up a beach to a gentle slope seemed to escape most. Although many argued that to get a strong backwash required a relatively steep slope, they then failed to understand that the same backwash would reduce the slope to a more gentle profile, and then, as conditions change, e.g. seasonally, constructive waves would build it up again. Text and diagrams were often contradictory in terms of resultant beach shape. Again, as in past examinations, some candidates described destructive wave action in terms of the erosion of cliffs and creation of stacks, stumps and so on, whereas the question clearly states their effect on beaches. With a few candidates, the term beach would seem to be confused as meaning the coast in general.

(b) Although this would seem a straightforward demand, the general level of responses to the question was extremely disappointing. There was a lack of understanding of what is meant by 'factors' and the term 'cliff profiles'. In addition, too few candidates focused their answers on the 'rates of erosion'. Candidates listed and described, with varying degrees of accuracy, the processes of wave erosion including the solution effect of sea water on limestone which was totally misunderstood, as it is neither an erosion process or as significant as many seem to consider it. Geology was recognised as important but too often in terms of 'hard' and 'soft' rocks and their effect to produce 'headlands and bays' which were irrelevant in the context of the question as it was the effect on 'cliff profiles' that was required, i.e. the cross section form. Some candidates recognised the importance of structure, as well as lithology, in affecting the rate of erosion, such as well jointed rocks assisting effective wave quarrying and how the dip of bedding planes related to cliff profiles. Sub aerial processes were seen as important by many, and described in detail, but their application to rates of cliff erosion or cliff profiles was rarely appreciated or effectively demonstrated. The most that many could produce by way of diagrams was the sequence of cave, arch, stack and stump; too often the standard response to any question on coastal erosion and landforms.

Question 4

As stated above, **part (a)** received generally fuller treatment and yielded better responses than **part (b)**.

(a) The features of spits, dunes and salt marshes were known but the degree of understanding of their development was, in most cases, well below that expected and acceptable at A level. Very few seemed to have progressed beyond what might have been learnt at an earlier stage of their geographical education. The role of longshore drift was generally recognised as important in spit formation but only a few candidates detailed the process and offered an explanation for the laterals or the recurved form. Similarly with dunes, too many were content to state that wind picked up fine sand and deposited it around vegetation. Good candidates knew something of saltation and critical wind speed, as well as the importance of tidal range, and were able to detail succession. Again, with salt marshes, few got beyond the shelter provided by the spit and failed to realise the significance of streams bringing in silt to be deposited and of flocculation, where fine clay particles in suspension coagulate on contact with sea water and settle on the sea bed. Also the detail of the nature of colonising vegetation was only known by a few good candidates. Similarly, the best candidates made reference to the figure provided although this was not essentially required for Examiners to award high marks.

(b) The fragility of the landforms was mostly equated with human activities. Episodic events such as storms were generally ignored, as was the disruption of sediment cells by both natural and human causes such as offshore quarrying of sand and gravel, or structures up coast which might reduce the supply of material via longshore drift. Most answers focused on coastal development, hotels and beach resorts with protective sea walls, groynes and revetments to preserve the features. Good candidates used examples and were able to evaluate the measures and recognised that such structures often had negative effects. The threat to dunes was mainly recognised as trampling and protection was provided by fencing, walkways and planting of vegetation. Too few appreciated the interlinked nature of the systems with salt marshes dependent upon spit protection as are dunes. The weak answers were couched in very general terms, lacking fine detail and exemplification whereas the best answers made good use of well researched examples and provided clear maps and or diagrams of location and processes operating.

Hazardous Environments

Question 5

This was the less popular choice of question from this option

(a)   Too many candidates failed to realise that the question needed an 'explanation of the circumstances in which slopes may be regarded as hazardous environments' rather than a descriptive list of slope processes; landslips, mud slides, avalanches and so on. These became relevant when linked to the circumstances/conditions making their associated slopes hazardous. Thus slopes become hazardous when a build up of snow is located above settlements and there is either physical or human circumstance that trigger an avalanche. Similarly, prolonged rainfall or deforestation might be circumstances leading to slope failure. There were some very good answers where candidates used well detailed examples to back up generalisations such as settlements built on, or below, slopes, road construction etc.

(b)   As in **part (a)**, many failed to appreciate the specific requirement of the question which was to 'evaluate'. This was either not addressed or addressed insufficiently. The better answers, as in (a), used examples effectively. Too many candidates had only limited ideas of risk aversion apart from unrealistic suggestions such as that of moving everyone from slope areas. Avalanches were very popular and measures to counter their hazardous effects were generally well detailed but rarely with any evaluation of their effectiveness. Many other methods were advanced including; regrading slopes, putting in drainage pipes, netting and bolting, afforestation, terracing, hazard mapping and so on. Any of these were only worthy of credit when backed up with appropriate detail, ideally with examples, and most importantly, evaluated.

Question 6

Overwhelmingly the most attempted question in the paper. It was often answered at length with a consequent limited coverage of the second question in many cases.

(a)   The command to 'briefly explain how such earthquakes are caused' was not followed by many. Instead, details of earthquake generation at subduction margins (as shown) as well as at collision zones, conservative and constructive margins were detailed. Often, which was apposite to the question, not clarified. This approach revealed a good knowledge of earthquakes but often only a limited amount could be credited. There were, though, good answers which were apposite and often featured a well annotated and relevant diagram of a destructive plate margin. Such a diagram, if accurate, would have been sufficient to gain full credit. However, few candidates could provide an adequate explanation of 'how a tsunami is produced'. Simply 'shaking of the ground' was really not sufficient. Many wrote about the retreat of the sea before the waves hit, but few seemed to wonder why this happened. There were, however, some good attempts where candidates understood that water was sucked into the area where the sea bed had foundered and then surged back out and were able to describe the build up of giant waves as the coastline was approached.

(b)   Most answers consisted of a list of hazardous effects which could have equally been applicable to earthquakes and volcanoes as well as tropical cyclones. In fact, in some cases, the 'flood gates opened' and candidates wrote openly of earthquakes. Similarly the flood hazard descriptions were often more applicable to the torrential rain from hurricanes. Thus the specific nature of 'the hazardous effects of tsunamis' was only well addressed by a minority of candidates. Prediction was little understood in detail and again was in such general terms that it could be equally applicable to other events, principally earthquakes but also volcanoes as 'tilt meters' often featured. Only a few knew details of ocean based warning systems whereas 'animal behaviour" was, as often in past papers, covered out of all proportion to its significance. Mitigation was often couched in terms of earthquake mitigation and not tsunami mitigation. Again though, there was some exceptionally good knowledge and understanding revealed by a number of candidates.

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Arid and Semi-Arid Environments

Question 7

This was the preferred choice of the limited number of candidates who chose this option. Answers to this and **Question 6** were disappointingly of a generally low standard.

(a) The majority of answers were very general statements about temperature and lack of rain. In addition, very few distinguished between arid and semi-arid environments. Overall, the level of responses was well below that expected at 'A' level and below the standard of answers to other **part (a)s** in the paper. Only a few candidates explained how drought impacted on vegetation or how soils became saline and encrusted. Similarly the adverse conditions of high winds and dust storms were only recognised by a minority of candidates. The limited number of acceptable answers included relevant climatic data and the degree of adverse conditions in the two environments.

(b) There were a few good answers to this part of the question. In these, candidates were able to present well detailed examples such as of successful schemes of irrigation together with appropriate evaluation. However, the majority of answers were less specific and merely stated the possibilities of irrigation without any understanding of water availability, the problems of salinisation or run off and only loosely referring to an area such as the Nile valley. Many recognised the need to develop agriculture with drought resistant crops and to control grazing and reduce deforestation but without reference to specific examples or any understanding of the economic or physical constraints.

Question 8

There were very few attempts at this question and answers to **part (b)** revealed very limited understanding of the subject matter.

(a) Although this was attempted by very few candidates, the majority were able to identify accurately the majority of the landforms represented as well as giving acceptable definitions. Some unnecessarily added explanations in addition to, or in place of, a description of the landforms.

(b) Because of the very small number of candidates attempting this question, generalisation of the responses may be of limited value. The few candidates who chose to add explanations in **part (a)** repeated these here and were duly credited. However the level of understanding was limited. Some were able to refer to the action of stream and sheet floods but with limited knowledge of how they operated to create or impact on landforms. Similarly scarp retreat was advanced in explanation of the mountain front but without any understanding of the processes involved. There was therefore some modest understanding of the landforms but knowledge of the second demand of the question; i.e. 'To what extent are they the product of past or present processes?' was, with a couple of exceptions, completely lacking. A common response was that; 'these landforms take a long time to develop so therefore they are the result of past processes'. The concept that the desert landforms are largely a result of a past wetter climate, with active fluvial processes, and that present episodic rainfall and wind action merely modify the landforms was not appreciated.

GEOGRAPHY

| Paper 9696/03 |
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General comments

The examination displayed similar characteristics to those of previous November sessions, both in terms of the nature of the paper and the assessment tasks it contained, and in terms of the candidates' choices of questions and qualities of response.

Environmental management and **Global interdependence** were the more popular Options. Within these **Question 3** on energy resources and **Question 6** on tourism were the main choices. Responses were seen to all eight questions, with a growing number of candidates being prepared for **Economic transition**. Most of these chose **Question 7** on globalisation, a contemporary topic of world importance and geographical interest.

Examiners noted with appreciation, and credited, the ability and willingness of candidates to offer observations integrating their studies in geography with current affairs. This was observed to be true of many candidates, not simply the high-scoring ones. It was seen in relation to several topics, for example, the agricultural realities in southern Africa in **Question 1(a)**; growing concerns over carbon emissions and Kyoto targets in countries in **Question 3(b)**; and the implications of the global economic downturn for trade in **Question 5(b)**, or the world's poor in **Question 7(b)**. Such contextualised comments, whilst insufficient on their own, contribute effectively to the overall quality of a response by demonstrating candidates' ability to "think on their feet" in the examination and to approach their geography holistically, in a relevant and up-to-the-minute manner.

Diagrams and sketch maps to locate examples were used effectively by a small number of candidates. For **Question 3(a)** some candidates produced simple, picture-form, diagrams of structures, such as a dam or wind turbine, which, although aiding candidates' recognition or understanding, are considered inappropriate at A Level. One opportunity to use an annotated schematic diagram or sketch map to make an effective response to a question, which was not taken, was in relation to **Question 8(a)**.

There were very few rubric errors. These were made by candidates who had time to answer three, rather than the requisite two, questions.

Quality of language and expression varied greatly. In some cases it was apparent that restricted understanding of English may have limited the comprehension of questions' demands and contributed to misinterpretation of what was required. Examination nerves and time pressure are two other contributory factors. Examiners reported that the only element that was frequently misinterpreted was in **Question 4(b)(ii)** where candidates were asked to 'Outline the **main** arguments in favour of hydro-electric power (HEP).' A large number of candidates did the opposite of what was asked and produced arguments against HEP. Some candidates wasted time by producing arguments both in favour and against, when only the former could be credited.

In preparing for the examination, especially for those for whom English is not their first language, it would be helpful to have a better understanding of some terms which frequently appear in questions. This is so that candidates can respond better and demonstrate the extent of their geographical knowledge, understanding and skills. One is the term *vary* or *variation* as in **Question 1(a)**. This can mean negative change as well as positive change, i.e. that something can go down as well as up. This is also true of *fluctuation*, as in **Question 6(a)**. Fluctuations are movements up and down, often shown on graphs such as **Fig. 3A**.

Attention could be usefully given to the two terms and concepts which were not particularly well understood or effectively defined this session. These were *industrial estate* in **Question 2(a)** and *eco-tourism* in **Question 6(b)**.

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Comments on specific questions

Production, location and change

The two questions were of approximately equal popularity.

Question 1

Many candidates answered **(a)** rather more effectively than **(b)** as they lacked the detailed example or examples needed to support the response.

(a) The full range of answer quality was seen. At the lower end, candidates tended to write loosely or generally, sometimes seeming to reproduce their notes or over-emphasising one element, such as rainfall, at the expense of others. Middle quality responses included general ones without examples and those which only considered one dimension of factors, such as physical factors. Many answers were phrased only in terms of high output and low output, rather than varying output. Better quality responses were often expressed in systems terms and focused on how varying inputs in varying combination produce varying output within the specified timeframe of 'year to year'. Some candidates only observed increases in output (see General comments). Examiners reported that many answers about varying output considered inappropriate longer term changes, such as those which resulted from the Green Revolution or land reform.

(b) The stimulus material in **Fig. 1** was an aid to thinking through the implications of co-operation. A few of the weakest candidates attempted to use it as the material content from which to answer adding little or no information of their own. More able candidates identified the different groups for which the question asked, such as government agricultural extension agencies or personnel, agricultural banks or credit organisations, and farmers, from smallholders to major landowners, showing how their efforts may combine to increase productivity. Credit was given to the recognition that working together is not always easy and may bring disagreement and conflicts of interest; and to the recognition of the role of other factors, such as fundamental issues of soil quality or rainfall availability. Answers on co-operative farming were accepted, although it was harder to identify 'different groups' meaningfully and did, therefore, restrict the response.

Question 2

As detailed above, **(a)** caused some conceptual difficulty. **Part (b)** was a rare opportunity for candidates to integrate their locational knowledge and understanding of both agriculture and manufacturing industry. Generally speaking, agriculture was the firmer of the two.

(a) The question differentiated well. Some very high quality responses were seen, which built up a number of different advantages of being located on an industrial estate and supported each, usually from one well-known and quite detailed example. Some more moderate candidates had difficulty separating the relevant advantages for manufacturing industry from other advantages, such as those for local people. The most common advantage developed was that of linkages, although road access, assured supplies of water and power and on-site security were also mentioned. Many candidates' accounts would have been improved by a more real and less theoretical approach. Further conceptual weaknesses observed were writing about the idea of industrial agglomeration in general, rather than industrial estates specifically; assuming industrial estates were sites with raw materials; interpreting *estate* incorrectly in the sense of the processing activity on a sugar or tea estate (plantation); and offering examples at too large a scale, such as Silicon Valley in the USA or the M4 and M11 corridors in the UK.

(b) Market locations for agriculture were well understood in terms of perishability and for some this was heightened by a tropical environment and the economic realities of lack of or high costs of fuel for transport. Market locations for manufacturing were less well understood. Many candidates only considered the processing of the kinds of agricultural products already covered, such as dairy or fruit. Better quality responses considered other classic cases, for example weight-gaining products such as soft drinks or beer; bulky items which are hard to handle, such as furniture; or items with a short life, such as newspapers or baked goods. It was highly creditable to counter-argue and to consider market locations in the 21st century as being effectively global for many types of agriculture and manufacturing, because of improvements in transport, such as refrigeration and containerisation. Some weaker candidates had a non-technical appreciation of the economic concept of the market and wrote about the kind which consists of stalls in a street or market place.

Environmental management

Although **Question 3** was the more popular choice, both questions yielded the full range of answer quality and differentiated candidates effectively in terms of knowledge and understanding and in skills, notably through data interpretation in **Question 4(a)(i)**.

Question 3

(a)   The most effective responses seen balanced the twin aspects of nature and potential, considered two or more specific types of renewable energy resource and provided detailed exemplification naming and locating specific projects or installations, either actual or proposed. The highest quality responses usually developed the nature of constraints to great effect, whether technological, for example in harnessing tidal energy; economic, for example in many LEDC contexts; or political, in relation to national economic planning or the priority of other areas of national life. At lower levels candidates could describe the nature of renewable energy resources but had little to say about potential, perhaps offering a simple observation such as "big". At lower levels examples were either absent or in name only such as "USA", when more was required. It was in rare cases, for example in relation to offshore wind farms in Europe, that the use of a country name such as "Denmark" was sufficient. The definition of renewable resources was firm.

(b)   Whilst there were some outstanding quality responses seen to this question, the principle limitation was the lack of appreciation of the word strategy. Many candidates simply wrote descriptively about how energy is obtained and used in the country they had chosen. There was little appreciation of any overall national plan, or government proposal to achieve the objective of energy supply, perhaps in relation to the work of national agencies such as Eskom in South Africa. The assessment made depended on the country chosen and better quality responses were often able to differentiate the current situation, or precautionary measures, for example in relation to the impact of drought on HEP generation, from the country's longer term intentions, such as to reduce the use of coal, or increase the percentage of renewable resources, to meet specific targets (offering data and dates). Other indications of quality included the manner in which the distinctive issue of nuclear power was treated, where relevant, and the acknowledgement of political factors, in relation to public opinion, the nature of the political regime and change of governments. Whilst not all non-renewable resources are consumed in all countries, better responses tended to deal with more than one fuel, and considered imports as well as resource endowment, depletion and discovery. In a few instances there was a misreading of the question as being about renewable resources as in **(a)**. Clearly, this limited the overall outcome, but relevant material was credited.

Question 4

Whilst some very good responses were seen, the main limitation on answer quality was candidates' not following the command words and fulfilling the demands of the question, i.e. doing as they were asked. So for example, **(a)(i)** required description, yet many attempted explanation. In **(b)**, candidates tended to write about the causes of water pollution, why it occurs, rather than the failure of attempts to prevent it.

(a) (i)   The issue of water is of growing importance in the 21st century. **Fig. 2** presented interesting data, by world region, but made no link between them. Whilst credit was achievable in a number of ways, one effective approach was to recognise two groups of world regions, those where percentage population was less than percentage fresh water (North America, South America and Oceania) and those where percentage population was greater than percentage fresh water (Europe, Africa and Asia), before exploring the extent of the differences and recognising the situation of Asia. Rewriting the data in narrative form achieved a maximum of 2 marks. No explanation or interpretation was required by the command word 'Describe'.

(ii)   The main arguments in favour of HEP are dominated by the environmental argument (renewable, sustainable, environmentally-friendly, non-pollutive), but include its great potential, flexibility, low running costs and suitability for multi-purpose schemes. The environmental argument was required with two or more other developed points to make a full answer.

(b)   The full range of answer quality was seen and two types of approach were taken to the question. The main one was to build up a number of reasons why attempts fail, either quite generally at lower levels, or supported by detailed and diverse located examples for moderate to better levels. The other approach was to use one detailed case study of a location or water pollution problem where

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attempts had failed and to draw from it key issues such as scale, vested interests, corruption, the time/space lag or issues of the identification and prosecution of polluters. Examiners main concerns were about the vagueness of many explanations; a tendency to write about the causes of water pollution; and coverage of the failure of clean-up operations, rather than the failure of attempts to prevent the water becoming polluted, both of which are slightly different issues.

Global interdependence

Although in the entry **Question 6** was by far the more popular question, **Question 5** was popular in some parts of the world.

Question 5

This question demonstrates a key point in relation to how questions are phrased. It should be noted that in **(a)** the form '**one** country' is restrictive and only allows the use of a single example, whereas in **(b)** 'a country' is permissive and means any country or countries may be used.

(a)   This seemed to be the choice of prepared candidates and, as a consequence, was answered moderately well to very well indeed, with some responses achieving full marks. Better responses had three characteristics: they combined description and explanation throughout, giving the context for the changes covered; balanced changes in products (visible and invisible), with changes in markets; and offered statistical support, for example values, percentages or dates. The syllabus dateline of 1960 is permissive and there was no penalty for taking a later starting point than 1960, such as a country's independence or the year when membership of a trading bloc changed the situation, such as Britain's entry into the EEC (now EU) in 1973.

(b)   This differentiated candidate achievement well, largely through the deployment of skills in assessment and the ability to select and apply learned material, directing it to the actual question set. One key aspect was the identification of external factors which affect trade, such as shifts in world markets or competition, and, by implication, internal factors, such as resource endowment or government policy. In general, the greater the range and interaction of factors (social, economic, environmental and political), the better the foundation for an assessment to be made. Most candidates drew on examples from different parts of the world, but some quite effective work was seen based on one country, although there was a tendency for material to overlap with **(a)**. Some assessments had content of the moment and included consideration of the growing implications of the credit crunch, global economic slowdown and recession in some MEDCs.

Question 6

Tourism is a popular topic which is generally understood well. Examiners were impressed by many candidates' interpretative abilities in terms of demand and supply in **(a)**, but found that many responses to **(b)** were of lower quality.

(a) (i)   A full answer both described the shape of the demand curve in **Fig. 3A** considering overall levels, trends and gradients using the names of the months on the *x* axis and linked an explanation to it. Usually this was in terms of seasonality based on weather conditions, holiday periods and opportunities in the northern and/or southern hemispheres (either or both of which were acceptable as the location was not specified on the figure). One indicator of quality was the ability to provide an explanation for the secondary peak from July to September, where for example in the USA and Europe, resorts which offer skiing from December to March are used for walking and mountain biking in the summer months. Many candidates achieved only limited marks because they fulfilled one demand or the other: offering either a description or an explanation.

(ii)   The times of low demand asked about here link back to the seasonality in **(i)**. Candidates who chose to write about the rejuvenation of a tourist resort in order to increase demand, failed to recognise the significance of the timescale of months which had been established already. Examiners credited two main ways of increasing demand: by diversifying the market, for example promoting the product in new source areas for tourists, such as emerging Asia; or diversifying the product, for example, by offering promotional deals, speciality holidays or conference packages. A few candidates used their experience of staying in hotels on geography field trips at times of low tourist demand. The best responses gave actual examples of marketing campaigns in the media, promotions such as 2-for-1 or 'kids stay free' at a named hotel, or new events such as a "Spring Festival" introduced in the low season.

(b) Whilst many candidates had some knowledge of eco-tourism and some could provide details of one or more named eco-tourism initiatives, few were able to combine this with their understanding of the negative impacts of traditional forms of tourism, i.e. mass or package tourism. A full answer operated in three dimensions of impacts: environmental, social and economic and considered the extent to which eco-tourism, as a supposedly low impact type of tourism, avoids these problems. There is a growing awareness that eco-tourism is neither as low impact as, nor the general panacea that, it was once thought to be. In order to do reasonably well, candidates needed some appreciation of the potential negative impacts of eco-tourism. For example, this could be where the economic motive makes the expansion of numbers for increased revenue attractive to tourism providers and carrying capacity, as a result, is breached, environmentally or socially. Another example is the growing problem of waste and waste management in eco-tourism locations. Some candidates pointed out that eco-tourists arrive in country by air in the same way as package tourists, with the issues of carbon emission from long haul flights. One candidate wrote impressively that "lately there has been a rise in holiday offers that add to them the prefix 'eco' just to attract tourists".

Economic transition

The number of candidates choosing these questions is growing. Candidates are reminded, though, only to attempt Options which they have studied.

Question 7

(a) (i) There was little difficulty in identifying services or the provision of a service. For the single mark, expansion and explanation were not needed.

(ii) It was important to identify the correct columns in **Table 1**, those headed **P** for primary, before summarising the changes. All decreased, except East Asia. Data support of the variable levels of decrease provided the other marks. Two approaches proved problematic: one was to misread or misinterpret 'world regions' (plural) as the row labelled *World* in **Table 1** and so only consider one change. The other was simply to express the data set in words, row by row, without offering any data analysis, as reported in **Question 4(a)(i)**.

(iii) This was the most demanding element in **(a)** and required candidates to explain, but not, in this case, describe, the changes in employment in the secondary sector. This was usually done in terms of sectoral changes over time, economic development and global shift. The best responses integrated their explanatory points with references to **Table 1**.

(b) Most candidates had something to say of worth here, although some approached it in a concerned, sometimes emotive, manner, rather than as a geographer considering spatial disparities and socio-economic inequalities. The phrase 'the world's poor' was interpreted as poor countries and as poor people within those countries. The few high quality responses seen offered an assessment which comprised elements of agreement and disagreement and supported it with exemplar material. For example, on the one hand, some recognised that regions such as Sub-Saharan Africa have been left out of the process of globalisation, to a large extent, for a variety of reasons. On the other hand, a TNC which locates a branch plant in an LEDC, by creating jobs and providing some skills training, starts an upward spiral of cumulative causation which offers some of the poor a way to higher standard of living, education for their children and a route out of poverty. Weaker responses showed some knowledge, but tended to simply agree with the assertion, rather than make an assessment of extent in a general way. A few wrote about trade, rather than the globalisation of economic activity, which is understood to be the process of growing economic interconnectedness at the world scale.

Question 8

Few responses were seen and they could be characterised as either rather good or rather weak.

(a) As the syllabus requires the study of one TNC in detail, this was a straightforward demand for prepared candidates. Many could do no more than identify where the headquarters is located and one or more countries where production occurs. Many locations were vague, such as "Europe" or inaccurate, ascribing say a Japanese motor vehicle manufacturer wrongly. The few good accounts saw more functions and activities than HQ and "screwdriver" ones and included regional HQs and

R&D. The explanation was necessarily case-specific but many started with the country of origin and considered subsequent expansion based on profit maximisation, competitiveness, corporate strategy, market penetration, the international spatial division of labour, etc. These responses tended to be up-to-date and dynamic in character.

(b) This question made candidates think and, perhaps, use their knowledge in a different manner from which it had been learned. It was acceptable to write about any kinds of disadvantages derived from TNCs' locational decisions. This could be in locating in, operating in and relocating from a country. Some candidates wrote effectively about changes in the spatial margins to profitability, as factors change, and TNCs' search for the next cheaper location, perhaps moving production from MEDC to NIC to LEDC. Others wrote about the local disadvantageous effects in relation to the exploitation of people and damage to the environment. Weaker responses showed some awareness of the issues, but offered little or no specific information in support of their ideas.