GEOGRAPHY

| Paper 9696/11 |
| Core Geography |

General Comments

The comments are necessarily a little curtailed because only a small number of candidates took the paper. However, it is possible to make a number of points. The paper appeared to be quite accessible to most candidates resulting in a very satisfactory outcome with a good spread of marks. Excellent marks were achieved by some candidates. The imprecision in the use and understanding of Physical Geography terms and concepts noted in previous reports still continues. This was especially true of answers to **Question 7**, with particular reference to the nature and significance of helicoidal flow in river channels. There was also confusion between environmental lapse rates and adiabatic/saturated lapse rates.

In contrast to this, it was encouraging to note the detailed understanding of the properties of granite and how granite is weathered. It was still uncommon for all three Physical Geography questions in **Section A** to be answered. In this context, it is worth noting that in the revised syllabus (first examination 2018) there will be no choice available. The data response parts of the Human Geography questions were handled well, although there was the occasional misinterpretation of which graph or data set required analysis. The accurate use of local examples continues to impress. This was especially notable in answers to **Question 11** part **(c)**.

Overall, the paper was completed by most candidates and time did not seem to be a major issue. Very few candidates answered all the questions in **Section A** or more than the one required in **Sections B** and **C**.

Comments on Specific Questions

Section A

Question 1

(a)   Very few candidates found this part of the question difficult. If there was confusion, it was over the terminology for through flow.

(b)   There were some excellent answers to this question. There was, however, a tendency to describe rather than explain. In many cases permeability of soils was stated as an important factor but few candidates explained what permeability meant in relation to the processes in the soil. Also, simply stating that interception by vegetation reduces overland flow was not a sufficient reason unless the processes involved were discussed.

Question 2

(a)   As noted in the introduction, there was confusion over the respective lapse rates for parts **(i)** and **(ii)**. Part **(ii)** presented few issues and the line labelled **C**, in part **(iv)**, was usually identified as the top of the clouds.

(b)   It was clear that many candidates misinterpreted the question or had little understanding of conditional instability. The majority of candidates wrote about instability in itself. However, they could gain some credit for explaining the formation of rainfall.

Question 3

(a)   The question asked for description of both the cliff face and the rock fall. Answers tended to concentrate on the features of the cliff face and paid little attention to the nature of the rock fall. Few were able to describe the rock fall in terms of its shape and the mixture of sizes of the blocks involved.

(b)   Answers tended to describe a variety of weathering processes irrespective of whether they were relevant or not. Also, the role of water was discussed in the same terms as if a landslide or a mudflow was being analysed.

Question 4

(a) (i)   This was mostly answered correctly.

  (ii)   This was answered well apart from the occasional response that described the world situation rather than MEDCs and LEDCs.

(b)   This is a fairly standard question which was answered well. Good marks were obtained by most candidates.

Question 5

(a)   Responses were excellent with most candidates concentrating on the evidence in the photograph. Inevitably there was some overlap between the parts and some candidates wrote about general impacts whether they were visible in the photograph or not.

(b)   Most of the points noted in the mark scheme were mentioned by candidates. Many used examples from the current Syrian crisis to substantiate their argument.

Question 6

(a)   Most candidates were able to gain marks for both parts. Some candidates were very assiduous in analysing and describing the changes In South Asia.

(b)   This question caused some difficulty for a few candidates. Few recognised the fact that MEDCs have been developing and thus urbanising for a much longer period of time. However, the greater agrarian society in LEDCs was recognised by many and used as the main explanation.

Section B

Question 7

(a) (i)   There were few problems with this question apart from the usual confusion between abrasion and attrition.

  (ii)   Most candidates were able to discuss the role of high velocity and high flows and to relate these to the calibre of material that could be entrained and transported.

(b)   There always seems to be a problem when helicoidal flow needs to be discussed. Many candidates still write about a corkscrew movement down the centre of the channel. The movement across the channel on the surface and at depth seems to be unknown. However, the swinging of the line of fastest flow impinging on the river banks and producing erosion was quite well explained with the concomitant deposition on the inner bend. It is just the nature of helicoidal flow that is little understood.

(c)   Most candidates were able to write convincingly about the ways that the growth of urban areas leads to an increase in the amount of water flowing in a river channel. However, few were able to discuss much about the possible increased speed of flow within the channel. Most candidates wrote about the speed of water moving to the channel. A few recognised that channelisation and the concreting of channels could reduce friction and increase the speed of flow. However, irrespective of these points, most candidates obtained reasonable marks, although very few provided the complete coverage needed to obtain a mark in Level 3.

Question 8

(a) (i)   Many candidates confused relative humidity with absolute humidity. Sublimation was understood by most.

(ii)   Most candidates possessed some idea of the nature of temperature inversion but were often limited in their ability to articulate it convincingly.

(b)   This question posed problems for the majority of candidates. Those who had some knowledge of the distribution of pressure and wind were unable to explain this distribution. Unfortunately, most candidates ignored the demand to discuss seasonal variations and were only able to provide a limited response to the question.

(c)   There were two components to this question. Most candidates possessed good knowledge of the nature of greenhouse gases. In the second demand, few were able to assess the 'to what extent' part of the question and many candidates discussed possible climate change without explaining the enhanced greenhouse effect. Also, the hole in the ozone layer was too frequently discussed. The effect on climate change was usually couched in vague terms about global warming. There was very little discussion of the possible effects on increased storminess as a result of increased sea surface temperatures and the possibility of drought in other areas.

Question 9

(a) (i)   Most candidates were able to define subduction and convection currents.

(ii)   This was answered mostly very competently but a very small minority thought that ocean ridges were related to subduction and became confused with island arcs.

(b)   This was a question where most candidates were able to obtain reasonable marks. Physical weathering always seems to be understood better than chemical processes and there is a much greater relationship with climatic factors. Thus, freeze/thaw is always associated with colder climates and insolation weathering/exfoliation with arid climates. As always, in a question phrased like this, there is a greater emphasis on the first part. Thus, the effectiveness was generally ignored with answers simply concentrating on the nature. Effectiveness is related to other factors such as the relative significance of the weathering processes in specific climates, such as insolation weathering versus salt crystallisation in arid climates. Effectiveness is also related to the nature of the rock that might be being weathered.

(c)   Answers to this question were very encouraging. It was good to see that many candidates had studied the specific characteristics of granite, both chemical composition and physical structure. The three main minerals, quartz, mica and feldspar, were frequently described and the manner in which chemical processes, such as hydrolysis, altered them to produce kaolin was impressive. The physical structure was discussed mostly in the context of weathering processes such as freeze/thaw, but the importance of the jointing in allowing the ingress of water for chemical processes to operate was also prominent.

Section C

Question 10

(a) (i) Most candidates were able to give a partial definition, but many omitted the reference to the resources available.

(ii) Answers were often partial, omitting at least one of the important factors. Very rarely was agricultural intensification mentioned.

(b) Some candidates experienced problems in their interpretation of constraints. Most candidates argued for a lack of funds and quite frequently war and conflict. Few mentioned climatic constraints and there was no mention of the possibility of trade barriers being a constraint.

(c) This proved to be a very straightforward question and most candidates obtained good marks. The China one-child policy was most frequently used as an example, although Singapore was also frequently covered. Evaluation of the success or otherwise of the policies received less attention.

Question 11

(a) (i) The basic definition frequently ignored 'for over one year'.

(ii) Apart from visas, many candidates struggled to identify additional political barriers.

(b) Only a very few candidates were able to discuss the role of globalisation, ease of transport and communications and the other factors noted in the mark scheme.

(c) Answers to this question were often excellent. Many candidates chose to discuss the migration of Mexicans to the USA. The amount of detail provided was very impressive and it was clear that this specific example had caught the imagination. Another interesting and somewhat unusual example was the migration of South Vietnamese to Hong Kong. Again, the amount of detail provided was impressive. Thus the response to this question was very good.

Question 12

(a) Sensible answers were produced by many with the emphasis mostly on the advantages of moving. The disadvantages of location in the CBD were mainly the obverse of the advantages of a location near the edge of the urban area.

(b) The quality of the answers depended on knowledge of a specific city and the attempts to provide infrastructure. The level of detail was often quite limited and, even though what constitutes infrastructure was outlined in the question, some candidates strayed into other developments. Some even wrote about the upgrading of shanty towns.

GEOGRAPHY

| Paper 9696/12 |
| Geography Core |

General Comments

There were few problems with the interpretation of the questions and excellent marks were achieved by a significant number of candidates from across the geographical range of Centres. Although the discrepancy between the calibre of answers to Physical Geography and Human Geography questions continues, there were signs of some improvement in the Physical Geography answers. As noted in previous reports, the imprecision in the use and understanding of Physical Geography concepts continues. This was especially noticeable in the description of bankfull discharge and the definitions of *thalweg* and *riffle* for **Question 7** and *continental plate* and *oceanic plate* for **Question 9**. There is still confusion over the various erosion processes in rivers and how these processes lead to the formation of landforms. Questions on mass movement continue to cause problems as was seen in the response to **Question 3**. Atmosphere and Weather continues to be the least popular option in *Section B* but **Question 2** in *Section A* was quite popular with good marks being achieved. It was still uncommon for all three Physical Geography questions in *Section A* to be answered. 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.

Although there is an improvement, there are many candidates who need to focus more attention on the command words used in questions such as 'compare', 'overall', 'relationships', 'trend' and many more. Candidates are still explaining when all that is required is description. Previous reports have stressed the importance of being able to evaluate issues with cogent arguments when answering questions in *Sections B* and *C*. There were again encouraging signs of an improvement in this respect, especially in answers to **Question 10(c)**. It is worth repeating that it is very difficult to obtain a mark in Level 3 without some form of evaluation or assessment.

Overall, the paper was completed by most candidates and time did not seem to be a major issue. Very few candidates answered all the questions in *Section A* or more than the one required in *Sections B* and *C*.

Comments on Specific Questions

Section A

Question 1

(a) The only component that caused problems was baseflow/groundwater flow. The other two components were recognised by the majority of candidates.

(b) The description of bankfull discharge caused many problems. A sizeable minority showed very little understanding of the concept. Others simply described it as the maximum capacity and were unable to add the extra description to obtain the two marks.

(c) There were some excellent answers to this question and most candidates were able to score some marks. However, there was a tendency to describe rather than explain. Thus, simply mentioning that circular drainage basin might lead to a steep rising limb of the hydrograph is a description and not an explanation. Similarly, simply describing the lack of interception by vegetation is insufficient without a discussion of infiltration and overland flow. Candidates are still explaining in terms of the nature of the rocks without realising that there is a soil cover above the rock and that rock permeability will only be effective once the water has infiltrated the soil.

Question 2

(a) The only problem with this part of the question was that many candidates did not note which of the suburban areas experienced the lowest temperature.

(b) Candidates demonstrated a general understanding of the urban heat island effect but without the detailed knowledge to obtain more than a limited number of marks. There was some confusion between reflected and re-radiated heat and the scale of albedo was often wrongly interpreted. Candidates also seem to think that the production of greenhouse gases and the supposed blanket of such gases above urban areas is an important factor.

Question 3

(a) Many candidates did not produce a diagram and those who did were unable to provide anything more than a very basic representation of the flow. The question asked 'with the aid' of a diagram, but many candidates interpreted it as 'by means of' and only produced a diagram.

(b) There were signs that candidates are becoming more knowledgeable with respect to mass movement processes. Thus, there was often frequent discussion of the role of water in saturating fine-grained soils and deceasing shear strength. There was even mention of increased pore water pressure in some answers. However, many candidates still show confusion between flows and slides with many describing a sliding movement rather than flowing.

Question 4

(a) In part **(i)** many candidates answered 133 and not 133 millions. Answers to part **(ii)** were good, apart from a failure to analyse all the data.

(b) Most candidates appeared to relish this question; most answers were good and some were excellent with a wide range of issues covered. However, only a small minority realised that controlling population growth was also a relevant issue.

Question 5

(a) Most candidates were able to gain good marks, although some candidates did not provide a general statement of migration flows with distance.

(b) There were some excellent answers covering most of the points noted in the mark scheme.

Question 6

(a) Most candidates were able to describe some features of the CBD, although many described general features of the CBD that were not visible in the photograph.

(b) Few candidates were able to offer reasons beyond the fact that CBDs are very accessible. The nature of retailing was confused by some and few realised the specific characteristics of retailing that made CBDs advantageous.

(c) Most candidates realised that pollution, lack of space and cost inhibited the location of manufacturing in the centre of cities.

Section B

Question 7

(a) (i) This question demonstrated the lack of precision in defining Physical Geography terms noted earlier. Most candidates had some vague idea of the nature of thalweg but were unable to provide a precise definition. Few candidates were able to define riffle in sufficiently precise terms.

   (ii) The same problem in explaining concepts was seen in answers to this question. Most candidates were able to achieve some marks but many did not provide the precision needed to achieve full marks. The description of turbulent flow often lacked mention of eddies. Many candidates thought that helicoidal flow was turbulent flow.

(b)   The description of the processes of erosion was generally known, albeit in very general and imprecise terms. Some candidates had difficulty in providing two erosional landforms. River cliffs and ox-bow lakes were the most frequent landforms discussed, although the formation of waterfalls was also noted.

(c)   Answers were generally satisfactory, although few candidates covered the two elements in sufficient detail to achieve marks in Level 3. The assessment component, if present, was often of a very general nature. It was good to note that the role of recurrence intervals in flood forecasting was mentioned by many even though the level of understanding was occasionally limited. It was also encouraging to note that catchment-wide procedures to limit flooding were mentioned.

Question 8

(a) (i)   Most candidates were able to offer basic definitions but detail was often lacking, especially with respect to environmental lapse rate. Many candidates wrote about rising air rather than just the reduction in temperature with height.

(ii)   Most candidates were able to explain latent heat transfer, although often in very imprecise terms.

(b)   Most candidates understood the greenhouse effect, but how this affects the Earth's energy budget was less well examined. Quite often, short-wave and long-wave radiation were confused as well as reflection and re-radiation. But with a reasonable explanation of the greenhouse effect, candidates were able to obtain good marks.

(c)   There were encouraging signs of increasing understanding of lapse rates in the answers. Diagrams were often good with the respective lapse rates in the correct juxtaposition. Many answers achieved a mark in Level 3.

Question 9

(a) (i)   Many candidates either misinterpreted the question or did not know the basic characteristics of the two plates, although when discussing subduction it was clear that some of their characteristics, such as density and weight, were understood.

(ii)   The only issue with answers was the omission of convection currents as the driving force for sea floor spreading.

(b)   Diagrams varied quite considerably in detail and accuracy. There were some wonderful, but inaccurate, diagrams of collision between two continental plates. The idea of marine sediments being squashed and folded between the advancing plates is only slowly being realised. There was some indication that the level of detail and accuracy is increasing.

(c)   This was quite a substantial question and caused problems for most candidates. Very few understood what the development of slopes meant. Many candidates simply described the effect of rock type, climate and vegetation on weathering processes with little reference to slopes. The better answers did try to relate the three factors to slope instability, but were unable to translate this understanding into a discussion of how slopes might develop.

Section C

Question 10

(a) (i)   Many candidates were able to give the precise definition and most candidates were able to provide a partial definition.

(ii)   The response was generally sound, although detail was often lacking.

(b)   There were some very good, detailed answers. Most candidates achieved reasonable marks and many candidates received excellent marks.

(c)   Many candidates answered this question well, most using the example of Japan. However, there was a tendency to describe rather than assess. Few recognised that emigration to Japan is restricted.

Question 11

(a) (i)   Very few produced the precise definition of refugees as noted in the mark scheme. However, fear of persecution was prominent, although few recognised the 'unable to return' component.

    (ii)   Most candidates were able to provide two acceptable reasons, but there was confusion between refugees and economic migrants.

(b)   Good marks were often achieved. The balance between positive and negative impacts was sometimes lacking.

(c)   The concept of a 'typical' migrant caused problems for most candidates. Few recognised the elements mentioned in the mark scheme. Most argued that typical migrants were voluntary migrants and produced a long list of why voluntary migration occurred. This received some marks, even though a precise answer to the question was not given.

Question 12

(a) (i)   Few candidates knew what a *world city* was.

    (ii)   Candidates produced satisfactory answers.

(b)   This was a standard question and caused few problems.

(c)   The quality of the answers depended on knowledge of a specific example and the attempts to improve living standards. The level of detail was often quite limited and the answers tended to be generic and not related to a specific example.

GEOGRAPHY

Paper 9696/13
Core Geography

General Comments

This examination produced a wide range in the quality of the responses, but candidates generally seem to have been well prepared. There were outstanding performances from some candidates, who displayed both breadth and depth of geographical knowledge. Many candidates tackled the paper with enthusiasm, and displayed a good understanding of both Physical and Human processes. It proved to be an accessible paper for most, and a very wide spread of marks were evident.

Few candidates did not complete the required number of questions. Indeed, rubric infringements generally were very few, and this has been a continuing trend for some time. Planning, in terms of time allocation, continues to improve, and there were few incomplete answers. However, many questions in *Sections B* and *C* require 'assessment' and 'evaluation', and it is important that sufficient attention is given to these Level 3 discriminators. It is all too easy to concentrate on factual detail without fully evaluating it in the context of the question set.

The general standard of use of English continues to be very impressive, particularly where English is not the candidates' first language. Clarity of expression, however, needs to be accompanied by clarity in terms of presentation, handwriting, and particularly diagrams. Physical Geography questions, in both *Sections A* and *B*, often require diagrams. There has been some improvement in recent years in this respect, but plan drawing from photographs is a skill that needs further development. A three dimensional block diagram can be a very effective method of illustration, and is often more appropriate than long or cross section profiles, particularly if annotated appropriately.

Diagrams are seldom produced unless required, and even then, some candidates offer text only. This usually limits the marks available for that particular question. Candidates should understand that artistic ability is not needed to score effectively.

The quality of detail that is displayed in many answers is impressive, both in terms of content and appropriateness. Nevertheless, much of the material is generic and would benefit from the inclusion of specific exemplar material. Case study material is expected, for example, in **Question 12(c)**, but in other instances would do much to enhance answers, even if not specifically demanded.

Candidates display an increasing willingness to use the source material provided, and to manipulate the data as required. This flexible approach does much to improve answers, and is to be commended. Where candidates draw upon local knowledge, it is often very effective and can be a possible Level 3 indicator. It is essential, however, that answers relate to the specific demands of the question. There has been a marked improvement in this respect, but some candidates still offer explanations when only description is required, and, of course, the reverse can also be true. Furthermore, 'distributions' or 'trends' are commands which seek 'patterns' rather than just isolated repetitive lists.

However, the overall assessment is one of continued improvement. Candidates approach their work intelligently and with impressive commitment. The learning environment is obviously an effective one, and much of the teaching is clearly of high quality.

Comments on Specific Questions

Section A

Question 1

(a)   Most candidates began well and gained marks for a clear understanding of the Hydrological System.

(b)   The 'factors' were identified clearly enough, but explanation was sometimes limited. The essential processes of infiltration and percolation were often just gathered together under 'permeability'.

Question 2

(a)   The art of interpolation was lacking. Most candidates relied upon the limited isobar labelling available and did not search beyond that.

(b)   This was generally well answered.

(c)   Answers tended to be descriptive rather than explanatory. Few ventured into discussions of the Hadley Cell, the ITCZ, or indeed Monsoon systems; but there was some understanding of the specific heat capacity of land as opposed to water.

Question 3

(a)   Many candidates would have benefited if they had produced a diagram; and those who did often produced sectional rather than plan diagrams. This was not a particularly effective technique in this instance.

(b)   Most seemed aware of the importance of the role of water. Discussions of 'lubrication' and 'weight' were evident, but few ventured beyond this into pore pressure and loss of cohesion. However, a variety of factors were discussed, amongst which human activity figured prominently.

Question 4

(a)   The majority of candidates scored well, although some descriptions of the distribution were not sufficiently detailed.

(b)   This was generally well answered, often through LEDC/MEDC comparison. There was much relevant detail from many candidates, but this focused on birth rate and sometimes ignored the crucial role of death rate in influencing natural increase.

Question 5

(a)   This was generally well answered, with peaks and troughs clearly identified.

(b)   Once again many candidates scored effectively, but a minority drifted into international migration.

(c)   Candidates were usually able to answer the question in outline, but seldom developed their ideas.

Question 6

(a)   Candidates scored well. Describing a graph seems to be a more rewarding skill than sketching, or using a map. There were few problems.

(b)   Once again, candidates coped with the concepts involved. Economic recession and gentrification were understood by most, although gentrification was often implied rather than specified.

(c)   Candidates found this question more difficult, but better candidates gained from bid rent theory, with the idea of market forces and limited space. However, although many discussed low value housing, it was not always clearly related to the outer edges.

Section B

Question 7

(a)   This was well answered by many. Traction and suspension were understood, as was loss of energy in **(a)(ii)**. The circumstances under which loss of energy occurs were not so clearly identified. Some useful diagrams were used to illustrate traction and suspension.

(b)   Oxbow lakes are well known, but candidates found it difficult to relate processes to the changes that lead to their formation. Candidates were less familiar with alluvial fans; indeed, many simply explained the origins of marine deltas.

(c)   There were many reasonable attempts to answer part **(c)**. A broad range of relevant factors, together with examples, aided clarity and differentiation.

Question 8

(a)   This was reasonably well answered. Most were able to explain solar and terrestrial radiation in **(a)(i)**, and fog in **(a)(ii)**.

(b)   Many candidates are still drifting into ozone depletion and UV ray issues. Weaker candidates focused on cars and deforestation, but global warming is now a well rehearsed topic, and there were some excellent answers.

(c)   Urban heat island is another popular topic, but other aspects of urban climates are not discussed with the same authority. There was a tendency to drift back into global warming, and many did not discuss 'the extent'.

Question 9

(a)   Candidates scored well. Many clearly understood pressure release and carbonation, but some confused wetting and drying with freeze/thaw.

(b)   Diagrams did little to enhance answers to this question, possibly because the meeting of two oceanic plates is not so well known as other types of plate boundary. Correct landforms were identified by many, but they did not then clearly explain the processes that created them.

(c)   Many candidates have a clear understanding of both the structure and composition of granite, but most did not discuss 'the extent to which', so limiting them to Level 2.

Section C

Question 10

(a)   Most candidates had an accurate understanding of Stage 3 of the DTM, but tended to describe the features rather than explain them.

(b)   There was a wide range of answers to this question. Candidates tended to concentrate on negative factors, but better answers incorporated detailed examples.

(c)   Many answers were dominated by Green Revolution and GM cropping, but stronger candidates incorporated both crop transport and storage. Water and energy supply were also discussed effectively by many.

Question 11

(a)   There were many competent answers on pull factors, and why they might be unrealistic.

(b)   Many found this difficult. Some drifted into international migration, and others reversed the migration process for MEDCs, and discussed urban-rural movements.

(c)   There was a wide range of answers here. Some simply developed the idea of costs, including transport, furniture, housing, etc., while stronger answers considered political regulation and border control. There was some strong exemplar material, where Syrian migrants and Australian policies were prominent.

Question 12

(a)   Most candidates scored reasonably well.

(b)   Many were aware that some rural areas are losing services and others gaining them. There was some attempt to use examples to illustrate these changing circumstances.

(c)   There was some effective case study material, but limited to a few candidates. Without specific detailed knowledge, it is difficult to produce an effective answer.

GEOGRAPHY

General Comments

The combination of some questions, such as for **Questions 5** and **6**, was problematic for some candidates. Many would clearly have preferred a question on hurricanes rather than tornadoes, and few candidates had sufficient knowledge of avalanches to obtain many marks in **Question 6(a)**. Also, a large number of candidates misinterpreted **Question 7(a)** and wrote about hot arid areas rather than hot semi-arid areas, and appeared to be unaware of the differences between the two climatic environments. It is unclear why answers to questions in the arid and semi-arid environments section cause so many problems. This was quite a popular option but the standard of answers was generally poor. However, good marks were achieved by a significant number of candidates from across the geographical range of centres. The use of diagrams still causes some concern as they tend to be limited in detail and are often inaccurate. The use of specific examples is encouraging, although in many cases they were somewhat simplistic, such as 'the coast of eastern USA' for **Question 3(b)**.

Overall, the paper was completed by most candidates and time did not seem to be a major issue. Very few candidates answered more questions than were required.

Comments on Specific Questions

Tropical Environments

Question 1

(a) Answers to this question on tropical monsoons were highly variable in quality. There were some excellent answers covering all the aspects of the tropical monsoon expected in the mark scheme. However, for many candidates it was a struggle to provide any meaningful detail. Some equated the tropical monsoon with the tropical rainforest. There were also misconceptions about the seasons and the pressure distributions. Many transposed the pressure systems, also arguing for winds to blow from low to high pressure areas.

(b) The tropical rainforest ecosystem was the most popular choice. Most candidates were able to provide a good explanation of the vegetation structure. With respect to sustainable management, many candidates recognised that when the vegetation was removed, then the nutrient cycle would be disrupted and land degradation might occur, but were unable to provide the detail necessary for a good answer. The emphasis was on deforestation with the possibility of soil erosion and sediment reaching river channels. There were encouraging signs that good examples of sustainable management were becoming better known. The Milpa System in Central America was frequently referred to and there were good examples of forest conservation in Borneo. However, many of the examples tended to be very generic with little geographical input. There were far fewer answers for savanna ecosystems. Knowledge of the vegetation structure was somewhat limited. Examples of sustainable management were more basic than those offered for the tropical rainforest ecosystem. Some candidates offered examples which were more relevant to semi-arid environments, though it must be accepted that the dividing line between savanna lands and semi-arid areas is an imprecise one. The most popular scheme was the CAMPFIRE project in Zimbabwe.

Question 2

(a) There were a few very good answers but, in general, answers were lacking in an understanding of the nature of soil fertility in both environments. There was limited knowledge of the nature of the soils and the processes involved in their fertility or lack of fertility. There was also too much emphasis on description rather than explanation.

(b) Few candidates were able to utilise what knowledge and understanding they possessed to explain the features of the diagram. It might be that it was because, in order to explain the features, which are the end-point in the evolution of granite landscapes, they needed to reverse the order of development. Nonetheless, there were some very good answers.

Coastal Environments

Question 3

(a) Most candidates were able to describe the main marine erosion processes, but were less adept at assessing the effectiveness of those processes. It was quite often forgotten that effectiveness is also determined by the strength of the driving forces, such as wave strength and duration, and by the resistance of rock types.

(b) There were some excellent examples of coasts where erosion processes were causing management problems. The Holderness coast of eastern England was prominent amongst these with good geographical knowledge exhibited. It was good to see examples from around the world, such as the coast of West Africa, Florida, Zanzibar, Mauritius, New Zealand, and many more. Candidates with such knowledge and understanding produced good examples. Many candidates simply produced generic examples of hard and soft engineering approaches to management without reference to a specific stretch of coast. The emphasis needed to be on erosion processes, but it was possible to relate erosion processes to other processes such as a reduction in longshore drift.

Question 4

(a) The features shown on the figure caused problems for some candidates. Most were able to interpret A as a pocket or bay head beach and most were able to provide a convincing explanation involving wave refraction around the headland followed by deposition of sediment in the bay. Landform A caused a few problems. Most identified it as a type of tombola but then had difficulty in explaining it by the more normal process of longshore drift. Very few were able to provide a satisfactory explanation. For landform C, most candidates identified it as a bar but then tried to explain it by longshore drift, whereas an easier explanation would have been onshore movement of material with a rising sea level, such as Chesil Beach. The last part of the question produced a better response.

(b) Candidates appear to be fixated on the current rise in sea level as a response to global warming. Few realised that the question was also referring to the two main mechanisms of sea level change, namely eustasy and isostasy, and their significance in the development of coral reefs from fringing reefs to atolls. In addition, very few candidates realised that the current rate of sea level rise is too slow to affect the growth of corals very much. Answers to the second part were much better and this was where most candidates obtained their marks.

Hazardous Environments

Question 5

(a) It was clear that candidates would have preferred a question about hurricanes. In fact, many candidates answered as if the question was about hurricanes, arguing for the formation of tornadoes over the sea. Only a small number were really familiar with the nature and formation of tornadoes. Their hazardous effects were discussed essentially in terms of wind speed; other hazards, such as intense hailstorms, torrential rainfall, pressure changes and possibly lightning, were ignored. Many gained a few marks by using the images in the two photographs.

(b)   This was a straightforward question and many candidates obtained good marks. However, the understanding of some of the volcanic products was poor. Pyroclastic flows were a case in point. They were variously described as lava flows, ash clouds and even lahars. Very few candidates really understood the nature of pyroclastic flows. Also, the nature of lava was often confused and was even confused with lahars. Candidates were more familiar with the nature and hazardous effect of ash clouds, using the eruption of Eyjafjallajokul in Iceland as an example. Some candidates overstressed the significance of acid rain. Responses to the second demand mostly consisted of a general description of prediction accounts and evacuation. Only a very few candidates were able to provide any relevant detail for protective measures as outlined in the mark scheme.

Question 6

(a)   Few candidates were able to provide information on different types of avalanches. Even when slab and powder avalanches were differentiated, the description and understanding were limited.

(b)   There were some excellent answers to this part of the question, but the majority of answers were disappointing. Candidates needed to appreciate that it was *physical* hazards that required discussion. Thus the focus of their answers should have been landslides, tsunamis, soil liquefaction, avalanches and other physical hazards. Candidates needed to note that it was the shaking of the ground that was the main initial cause of the hazards. Thus there was very little introduction in the answers. The second demand produced quite detailed discussion of building design and very general statements about education and drills. There was usually little discussion of detail about management techniques for the physical hazards.

Arid and Semi-arid Environments

Question 7

(a)   As mentioned in the introductory comments, the majority of candidates misinterpreted the question and wrote about hot arid areas, namely deserts. Thus, description of the climatic characteristics was often wrong and explanation of the distribution of such areas was essentially about the distribution of hot deserts. Thus the Sahara and Kalahari Deserts were quite frequently analysed. Knowledge of the location of semi-arid areas, apart from brief mention of the Sahel, was weak.

(b)   Answers were equally split between accounts of hot arid and semi-arid environments. For semi-arid areas, most understood that deforestation, overgrazing, overcultivation and population growth were serious problems for the sustainable management of these areas. The fragility of semi-arid environments as a function of lack of rainfall and poor soils was noted by many. Thus the first part of the question received a good response. The same could not be said for the second part. Few candidates knew specific examples in sufficient detail to provide a valid assessment of attempts to manage sustainably such areas, although some of the description and analysis of management schemes in the Eastern Cape were an exception. Answers considering hot arid areas were also quite disappointing with little knowledge of valid sustainable management schemes.

Question 8

(a)   Answers on biodiversity were better than those considering the soils. Most candidates were able to provide some meaningful information of the type and nature of vegetation, and there were good accounts of fauna as well. It is a pity that soils receive so little attention. Answers varied in quality from the excellent to the very poor with the former being in the minority.

(b)   Answers were generally weak, although there were notable exceptions. The photograph did not require a detailed analysis because of the phrase 'such as'. But answers describing and explaining sand dunes were a little off the main focus. The second demand did allow candidates to write about hot desert landforms in general. The response to this demand was generally of a higher standard than that for the first demand.

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> **Paper 9696/22**
> **Advanced Physical Options**

General Comments

The combination of some questions, such as for **Questions 5** and **6**, was problematic for some candidates. Many would clearly have preferred a question on hurricanes rather than tornadoes, and few candidates had sufficient knowledge of avalanches to obtain many marks in **Question 6(a)**. Also, a large number of candidates misinterpreted **Question 7(a)** and wrote about hot arid areas rather than hot semi-arid areas, and appeared to be unaware of the differences between the two climatic environments. It is unclear why answers to questions in the arid and semi-arid environments section cause so many problems. This was quite a popular option but the standard of answers was generally poor. However, good marks were achieved by a significant number of candidates from across the geographical range of centres. The use of diagrams still causes some concern as they tend to be limited in detail and are often inaccurate. The use of specific examples is encouraging, although in many cases they were somewhat simplistic, such as 'the coast of eastern USA' for **Question 3(b)**.

Overall, the paper was completed by most candidates and time did not seem to be a major issue. Very few candidates answered more questions than were required.

Comments on Specific Questions

Tropical Environments

Question 1

(a)   Answers to this question on tropical monsoons were highly variable in quality. There were some excellent answers covering all the aspects of the tropical monsoon expected in the mark scheme. However, for many candidates it was a struggle to provide any meaningful detail. Some equated the tropical monsoon with the tropical rainforest. There were also misconceptions about the seasons and the pressure distributions. Many transposed the pressure systems, also arguing for winds to blow from low to high pressure areas.

(b)   The tropical rainforest ecosystem was the most popular choice. Most candidates were able to provide a good explanation of the vegetation structure. With respect to sustainable management, many candidates recognised that when the vegetation was removed, then the nutrient cycle would be disrupted and land degradation might occur, but were unable to provide the detail necessary for a good answer. The emphasis was on deforestation with the possibility of soil erosion and sediment reaching river channels. There were encouraging signs that good examples of sustainable management were becoming better known. The Milpa System in Central America was frequently referred to and there were good examples of forest conservation in Borneo. However, many of the examples tended to be very generic with little geographical input. There were far fewer answers for savanna ecosystems. Knowledge of the vegetation structure was somewhat limited. Examples of sustainable management were more basic than those offered for the tropical rainforest ecosystem. Some candidates offered examples which were more relevant to semi-arid environments, though it must be accepted that the dividing line between savanna lands and semi-arid areas is an imprecise one. The most popular scheme was the CAMPFIRE project in Zimbabwe.

Question 2

(a)   There were a few very good answers but, in general, answers were lacking in an understanding of the nature of soil fertility in both environments. There was limited knowledge of the nature of the soils and the processes involved in their fertility or lack of fertility. There was also too much emphasis on description rather than explanation.

(b)   Few candidates were able to utilise what knowledge and understanding they possessed to explain the features of the diagram. It might be that it was because, in order to explain the features, which are the end-point in the evolution of granite landscapes, they needed to reverse the order of development. Nonetheless, there were some very good answers.

Coastal Environments

Question 3

(a)   Most candidates were able to describe the main marine erosion processes, but were less adept at assessing the effectiveness of those processes. It was quite often forgotten that effectiveness is also determined by the strength of the driving forces, such as wave strength and duration, and by the resistance of rock types.

(b)   There were some excellent examples of coasts where erosion processes were causing management problems. The Holderness coast of eastern England was prominent amongst these with good geographical knowledge exhibited. It was good to see examples from around the world, such as the coast of West Africa, Florida, Zanzibar, Mauritius, New Zealand, and many more. Candidates with such knowledge and understanding produced good examples. Many candidates simply produced generic examples of hard and soft engineering approaches to management without reference to a specific stretch of coast. The emphasis needed to be on erosion processes, but it was possible to relate erosion processes to other processes such as a reduction in longshore drift.

Question 4

(a)   The features shown on the figure caused problems for some candidates. Most were able to interpret A as a pocket or bay head beach and most were able to provide a convincing explanation involving wave refraction around the headland followed by deposition of sediment in the bay. Landform A caused a few problems. Most identified it as a type of tombola but then had difficulty in explaining it by the more normal process of longshore drift. Very few were able to provide a satisfactory explanation. For landform C, most candidates identified it as a bar but then tried to explain it by longshore drift, whereas an easier explanation would have been onshore movement of material with a rising sea level, such as Chesil Beach. The last part of the question produced a better response.

(b)   Candidates appear to be fixated on the current rise in sea level as a response to global warming. Few realised that the question was also referring to the two main mechanisms of sea level change, namely eustasy and isostasy, and their significance in the development of coral reefs from fringing reefs to atolls. In addition, very few candidates realised that the current rate of sea level rise is too slow to affect the growth of corals very much. Answers to the second part were much better and this was where most candidates obtained their marks.

Hazardous Environments

Question 5

(a)   It was clear that candidates would have preferred a question about hurricanes. In fact, many candidates answered as if the question was about hurricanes, arguing for the formation of tornadoes over the sea. Only a small number were really familiar with the nature and formation of tornadoes. Their hazardous effects were discussed essentially in terms of wind speed; other hazards, such as intense hailstorms, torrential rainfall, pressure changes and possibly lightning, were ignored. Many gained a few marks by using the images in the two photographs.

(b) This was a straightforward question and many candidates obtained good marks. However, the understanding of some of the volcanic products was poor. Pyroclastic flows were a case in point. They were variously described as lava flows, ash clouds and even lahars. Very few candidates really understood the nature of pyroclastic flows. Also, the nature of lava was often confused and was even confused with lahars. Candidates were more familiar with the nature and hazardous effect of ash clouds, using the eruption of Eyjafjallajokul in Iceland as an example. Some candidates overstressed the significance of acid rain. Responses to the second demand mostly consisted of a general description of prediction accounts and evacuation. Only a very few candidates were able to provide any relevant detail for protective measures as outlined in the mark scheme.

Question 6

(a) Few candidates were able to provide information on different types of avalanches. Even when slab and powder avalanches were differentiated, the description and understanding were limited.

(b) There were some excellent answers to this part of the question, but the majority of answers were disappointing. Candidates needed to appreciate that it was *physical* hazards that required discussion. Thus the focus of their answers should have been landslides, tsunamis, soil liquefaction, avalanches and other physical hazards. Candidates needed to note that it was the shaking of the ground that was the main initial cause of the hazards. Thus there was very little introduction in the answers. The second demand produced quite detailed discussion of building design and very general statements about education and drills. There was usually little discussion of detail about management techniques for the physical hazards.

Arid and Semi-arid Environments

Question 7

(a) As mentioned in the introductory comments, the majority of candidates misinterpreted the question and wrote about hot arid areas, namely deserts. Thus, description of the climatic characteristics was often wrong and explanation of the distribution of such areas was essentially about the distribution of hot deserts. Thus the Sahara and Kalahari Deserts were quite frequently analysed. Knowledge of the location of semi-arid areas, apart from brief mention of the Sahel, was weak.

(b) Answers were equally split between accounts of hot arid and semi-arid environments. For semi-arid areas, most understood that deforestation, overgrazing, overcultivation and population growth were serious problems for the sustainable management of these areas. The fragility of semi-arid environments as a function of lack of rainfall and poor soils was noted by many. Thus the first part of the question received a good response. The same could not be said for the second part. Few candidates knew specific examples in sufficient detail to provide a valid assessment of attempts to manage sustainably such areas, although some of the description and analysis of management schemes in the Eastern Cape were an exception. Answers considering hot arid areas were also quite disappointing with little knowledge of valid sustainable management schemes.

Question 8

(a) Answers on biodiversity were better than those considering the soils. Most candidates were able to provide some meaningful information of the type and nature of vegetation, and there were good accounts of fauna as well. It is a pity that soils receive so little attention. Answers varied in quality from the excellent to the very poor with the former being in the minority.

(b) Answers were generally weak, although there were notable exceptions. The photograph did not require a detailed analysis because of the phrase 'such as'. But answers describing and explaining sand dunes were a little off the main focus. The second demand did allow candidates to write about hot desert landforms in general. The response to this demand was generally of a higher standard than that for the first demand.

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General Comments

The overall quality of responses to this paper was marginally lower than that of past examinations. Many candidates displayed a good knowledge of physical processes but they need to demonstrate a clearer understanding of how these processes lead to the development and formation of landforms.

Candidates have clearly been encouraged to name examples in order to illustrate their ideas; however, a more detailed use of appropriate case studies which are integrated into the response would gain more credit and lift the answer to a higher level.

Although some candidates used diagrams and sketch maps, more candidates should be encouraged to do so in order to increase clarity and geographical perspective. Good labelling and effective annotation would then provide the basis for a strong response.

Once again the paper provided a variety of stimulus materials. It is important that candidates do not merely repeat or describe these figures but interpret and elaborate on them in order to develop their ideas and commentary.

Comments on Specific Questions

Tropical Environments

Question 1

(a)   Most candidates successfully described the main characteristics of the heavy rainfall in humid tropics and its seasonal nature in adjacent areas. Greater use of specific amounts and its annual distribution would have improved some answers. There was a wide range in quality of explanation in this question. Some merely discussed low pressure systems and their development, whereas the better responses explained the movement of the ITCZ and its associated weather systems within a specific geographical context.

(b)   Most successful responses used **Figure 1** as the basis of their answer and applied it to the ecosystem of their choice. A sound reproduction, appropriately scaled, gave the candidate considerable scope for illustration and elaboration. Many candidates limited their human activities to deforestation and the reasons for it. Better responses considered the impact of this on the nutrient stores and transfers. There was the opportunity to use more sustainable human activities and to evaluate them in comparison to more damaging practices.

Question 2

(a)   This question focused on the different types of savanna ecosystem and their location relative to an area of tropical rainforest. Basic responses tended to describe a very generalised area with a mixture of vegetation. However, the clearer and more detailed answers not only considered the changes in the more dominant vegetation but also explained its geographical location relative to tropical rainforest. The best answers gave consideration to changes in soil conditions related to both climatic conditions and nutrient cycling.

(b)   Most candidates provided a sound description of some weathering processes in both tropical environments. Better responses indicated how the relationship between physical and chemical processes changes from the humid tropics to the seasonally humid tropics. Again, many candidates successfully described an appropriate granite or limestone landform but few managed to evaluate the relative importance of the different processes in the development of the feature. The best responses used a range of landforms in specific geographical locations.

Coastal Environments

Question 3

(a)   This was a straightforward question but it required accuracy and detail throughout. Some candidates failed to consider the importance of frictional drag between the wind and water in the generation of waves as well as a full range of factors that determine wave energy. The better responses could clearly and accurately distinguish between constructive and destructive waves, illustrating their ideas with reference to specific reasons for their differences.

(b)   **Figure 2** was aimed at providing a stimulus for the candidates, but far too many simply described it or agreed with it. The focus of the question was cliff profiles and other erosional features, but some responses used inappropriate coastal environments. However, those answers that evaluated the relative importance of the factors and processes in **Figure 2** with reference to specific erosional features and coastlines gained considerable credit.

Question 4

(a)   The large majority of responses indicated a reasonable knowledge of the conditions required for the growth and development of coral. However, only the more successful answers used this information to describe the detailed characteristics of coral atolls. Many candidates showed an awareness of the theories of Darwin, Daly and Murray; however, there was a wide range in the detail and accuracy included in the explanations.

(b)   Most candidates could describe the development of both coastal spits and dune systems. However, few responses included a clear explanation of the role of onshore winds. The strongest answers explained how wind direction, swash and backwash directions, along with wave energy, contributed to longshore drift and the formation of spits. In addition, the best responses made reference to a large tidal range and stabilising vegetation in the development of a series of dune ridges. This question offered the opportunity to include clearly labelled and annotated diagrams, but few candidates took that opportunity.

Hazardous Environments

Question 5

(a)   The vast majority of candidates had a sound knowledge of the main techniques used in the prediction of volcanic eruptions. Many explained how the observation and measurement of various precursors can be used to evacuate endangered populations. Although some responses vastly exaggerated the development and accuracy of seismic prediction, many answers highlighted the difficulties and failures in the prediction of earthquakes.

(b)   This part of the question proved more demanding and there was a tendency to make vague and generalised statements about mass movements, some of which were not hazardous. The better responses clearly distinguished between their chosen movements, and an impressive proportion used specific events and locations to illustrate their points. Hazard management was often limited to evacuation and tree planting, although the better answers included a range of innovative schemes used in Europe, Japan and the United States.

Question 6

(a) Most candidates correctly focused on the differences in scale, both spatial and temporal. However, a significant number of candidates concentrated on the conditions required to generate tropical storms rather than explaining their full hazardous impact. Detailed understanding of tornadoes was less secure overall but most managed to make some basic points based on events in 'Tornado Alley'.

(b) Clearly there was the danger of simply describing certain locations on **Figure 3** without relating them to specific plate boundaries. The better responses managed to do this through reference to certain types of tectonic margin. Most candidates were clear in their knowledge of the various impacts of large magnitude earthquakes, but the better responses highlighted both physical and human factors which might affect the scale of devastation through accurate reference to specific seismic events.

Arid and Semi-arid Environments

Question 7

(a) The focus for this response was a thorough explanation of exfoliation. However, the more comprehensive answers included a recognition of the significance of chemical weathering at certain times.

(b) Again, this question gave candidates a considerable opportunity to show their understanding of a range of hot desert landforms. The desert piedmont model could have provided a structure for the response and offered the chance to evaluate the relative importance of wind and running water in the evolution of desert landscapes.

Question 8

(a) The use of accurate statistical data provided an important illustration of the climatic characteristics in hot arid environments. Most candidates could supply a location of these areas but only very few could give reasons for their spatial distribution in one continent. The chosen continent was often Africa and this gave the stronger candidates the opportunity to consider the influence of ocean currents, wind direction, continentality and orographic effects.

(b) **Photographs A** and **B** provided a useful stimulus for this question. There was a tendency, however, to describe the consequences of desertification rather than the causes. The stronger responses considered both physical and human factors, although many restricted themselves to problems associated with population pressure. Detailed knowledge and understanding of a sustainable management scheme were major discriminators in this question. The best answers integrated several schemes in order to evaluate their effectiveness, often recognising that finding solutions to desertification was a monumental task.

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| **Paper 9696/31** |
| **Advanced Human Options** |

Key Messages

- Examples and, in parts **(b)**, case studies are needed as evidence to support points made and to develop an argument.

- Writing about what actually happened (past) or is done (present) is creditable. Responses which are loose and speculative, or hypothetical, expressed in words such as 'would', 'could', 'might' and 'maybe' are better avoided. The one exception to this is where a legitimate question is asked about the future, such as **Question 3(b)**, where an element of informed prediction is expected.

- Evaluation is key to response quality in all parts **(b)**, as evidenced in the way the descriptors are written in the levels mark schemes. The whole response should be approached in an evaluative and analytical way. It is not sufficient to open the essay with a simple evaluative statement, perhaps repeating it at the end.

General Comments

As in previous series, the Options *Environmental management* and *Global interdependence* remain the most popular. Responses to **Questions 3** and **6**, followed by **Question 4**, and **Question 1** on agriculture from *Production, location and change* dominated the entry.

The full range of response quality was seen. Time was managed appropriately by almost all candidates and there were very few rubric errors. When rubric errors do occur it is because a candidate answers more than the two questions required.

The Insert contained four resources, one per Option. Fig. 1 was interpreted robustly by most candidates. More attention could have been paid to the detail of the key, in order to achieve more of the marks for describing changes, and to the words in the heading 'in cities'. This would have avoided the error of interpreting Fig. 1A as in the city and Fig. 1B as spread to rural or peripheral areas. Fig. 2 was used well by almost all candidates who selected **Question 4**. Worldmapper images are useful in delivering 9696 and maps of a number of relevant topics can be accessed at http://www.worldmapper.org/. Fig. 3, a schematic map of commodities and trade flows, was used satisfactorily, although many candidates found 'pattern' difficult to identify in the first part of the question. **Question 7** was answered by a few candidates who seemed to understand Fig. 4 readily. Teachers are encouraged to use the resources accompanying the other time zoned paper (Paper 33) this series to help develop candidates' skills in interpreting and using resources. From 2018 and the first examination of the revised syllabus, candidates will have to answer a compulsory resource-based question on each of the two Options they take.

Comments on Specific Questions

Production, location and change

One of the key words showing the focus of demands in both these questions was 'changes'. It was found in **Question 1(b)** and **Question 2(a)** and showed that answers needed to be dynamic, rather than static.

Question 1

The identification of a specific named agricultural system in **(a)** and of one or more actual examples of agricultural change, perhaps using a case study, would have enhanced most responses.

(a) (i) Outputs tended to be described more effectively than inputs. Often the inputs of land and climate (temperature and precipitation) were left out. Description involved more than a list. It was, for example, creditable to describe the character of the inputs and outputs in some way, for example, "large amounts of capital (finance) used to buy hybrid seeds and artificial fertilisers", and "the rice itself (two crops a year), wastes, mainly stalks, ploughed back in as fertiliser, and fish raised in the padi fields as a source of protein in the diet". Choosing 'arable' or 'pastoral' as the named system was inadequate and led to descriptions that were very general. It was better to be specific, such as identifying 'intensive wet rice' or 'plantation' (bananas) for arable, or 'cattle ranching' for pastoral. Some candidates named a farm rather than an agricultural system; the specificity, however, made it possible to describe inputs and outputs effectively.

(ii) Few candidates recognised the significance of the phrase 'in this system' and some produced general responses about physical influences on agriculture. Others wrote about agricultural production, such as how weather and soil fertility affect harvests and productivity, rather than about the 'land use and practices' in the question. An effective response remained focused on the agricultural system chosen in **(i)** and explained how physical factors affect land use, for example, the effect of slopes, and practices, for example, the need for irrigation because of aridity or seasonal drought. In a pastoral system, land use included paddocking, and practices included inoculation and dipping because of pests (a physical factor).

(b) The invitation in this part-question to use the case study from the syllabus was recognised by only a few candidates. They exploited the question, using case-specific detail to establish extent in an effective way. Most responses consisted of a general explanation of economic factors, such as market price or food demand, and how they influence agriculture, followed by some consideration of other factors, i.e. political, social and, sometimes, physical. Quality would have been enhanced in three ways. Firstly, by the use of real examples, as responses tended to be general or use a country in name only, or to be hypothetical, expressed in what could or might happen. A second way to enhance response quality was by maintaining an explicit focus on agricultural **change**, rather than agriculture or agricultural production. Thirdly, responses could be enhanced by careful analysis of factors. For example, the Green Revolution in India and changes to production in Jamaica were often given as contexts, with government involvement described, yet the assessment often simply agreed that economic factors were responsible for change, without identifying the linked political factor (i.e. the role of government) in the concluding analysis. At the most basic, assessment was simply stated 'I agree that …' or asserted without evidence.

Question 2

Interpreting Figs. 1A and 1B effectively involved recognising that it was two stages of location for the same manufacturing industry (initial concentration and later decentralisation) and that both were 'in cities', meaning within the city.

(a) A full description comprised three types of changes between Figs. 1A and 1B: spatial scale, as production was spread and dispersed; the separation of production from control (the small circles); and the increasing complexity of flows (the solid and broken lines). Of these, it was the second which most candidates observed. The reasons suggested needed to relate to why these changes had occurred. Instead, some candidates explained why an industry might locate as shown in Fig. 1A, and why another industry might locate as shown in Fig. 1B. Examiners were looking for reasons for decentralisation. These could be both the disadvantages for production of central location in a city and the advantages of what could be interpreted as suburban locations, or ones near peripheral routes such as urban ring roads or expressways.

(b) This part-question contained two demands. The explanatory one was of lower order than the assessment which it led to. The explanation of the concept of functional linkages was straightforward. Most candidates used different kinds of linkages, such as forward and backward, to develop the concept. Some used small sketch-diagrams, which probably saved some time, and some provided examples. These examples were creditable where they helped to explain the concept. Some recall was faulty, for example, of which type of linkage was which, and there was some confusion between industrial agglomeration and spatial proximity and functional linkages. Functional linkages are, as it says, functional, based on needs and supplies, and may not involve spatial proximity. For the assessment, the main significance of functional linkages is that they enable efficient production and cost-minimisation, or cost savings, in manufacturing. Where components and/or raw materials are involved, as in complex assembly operations such as vehicles, functional linkages allow efficient and highly productive 'just-in-time' working. In some industries, such as the processing of agricultural products on the farm or holding, functional linkages can, by contrast, be of limited significance.

Environmental management

Question 3

(a) An effective response was carefully focused on two things: on demand, avoiding all aspects of supply, and on the word 'increasing' rather than simply high. Examples were needed to support the explanation. These examples could be of named countries; activities, such as tourism; sectors, such as manufacturing; locations, such as a China's EPZs on the east coast; or data (wattages, percentage data, etc.). A response about domestic demand alone, for example, linked to population growth and house building, and to increasing affluence leading to a greater proportion of people owning and using technology and gadgets from refrigerators to iPads, could only be part of the explanation. It was important to explain the increasing demand from manufacturing through industrialisation in many LEDCs and NICs, notably China. Some candidates made good use of local factors, such as rural electrification in Zimbabwe, as part of the explanation. Cost needed care as an explanatory factor, as there is no simple link between cost and demand globally.

The best responses were broadly based and built up an explanation comprising a number of strands, such as economic development, increasing affluence and an increasingly globalised world enabled by transport technologies, communications technologies and newer production technologies in which machines have replaced manufacturing labour. Credit was given to the few candidates who picked up on the word 'most' in the question and wrote about energy saving and energy efficiency in MEDCs working to reduce demand or to keep demand steady. This was not necessary for a full response. Many candidates muddled supply with demand and so wrote about schemes such as Kariba, or types of energy, such as wind power and solar energy, their potential and problems. All this material was better left for part **(b)**.

(b) Sometimes it is legitimate for geography to consider the future, and important to do so, and one such concern is that of energy. The statement and the assessment it invited allowed candidates to develop their own responses. Examiners expected no particular position, given the potential and limitations of renewable sources; the distinctive and controversial nature of nuclear power; and current dependency on fossil fuels despite concerns about their depletion, about pollution and about energy security. The best responses had three main features. Firstly, they were well structured and benefited from time spent planning. This planning not only involved organising content, but also involved planning the argument and working out how far to agree (the assessment) **before** starting to write. Secondly, the best responses did not seek to be comprehensive, which, given the number of types of renewable resources and non-renewable resources, was not possible in the time. Instead they developed an argument and analysis, supporting it by the selective use of detailed knowledge of energy and specific understanding, for example, of the global context as evidence. Thirdly, the best responses were carefully directed to the future, based on the contemporary scene and looking ahead, perhaps in the context of rising demand, as in **(a)**, or in a government's commitment to increase the percentage of renewable sources used by a certain year.

One Examiner commented that candidates who were challenged to frame a response under examination conditions tended to "throw knowledge" at the question, writing down all that they could remember from their studies of energy, for example, about the Three Gorges Dam, and then "left the Examiner to do the work" of sorting out what was creditable. Credit can only be given for material which is relevant to the question set, and not simply that which is factually true. Those who struggled to answer the question often omitted any evaluation or just stated it, for example, "I agree that the future of energy (production) is in renewable resources" without linking the rest of their response to this. Both these approaches sat within the descriptors for Level 1, as evaluation is an important skill in extended writing at A Level and forms Assessment Objective 4 (AO4). (See page 13 of the 2015 syllabus.)

Question 4

(a)   Fig. 2, a Worldmapper image, appeared as a stimulus and as the context for considering deforestation. There was no expectation that candidates would describe the pattern of loss of forested area shown, and there was no credit for such attempts. Examples could be derived from the map, such as naming a country or countries within Africa, or identifying Brazil within South America, if country names were known. Examples from the candidates' own knowledge (of countries, locations, activities, named forests or policies) were equally acceptable in order to satisfy the question's demand 'With the help of examples'. An effective response built up a number of developed reasons with evidence, was carefully focused on the idea of variation (i.e. differences in amount), and appropriately global. In some responses the home country or world region of the candidate featured too highly to explain variation sufficiently. Some started with a definition of deforestation as being the removal of trees without replacement. This was not necessary but indicated helpfully that knowledge of the question's key term was secure.

Most responses were based around causes, needs and activities, such as the need for fuelwood, or the activity of clearing land for agriculture to meet rising food demand, but this could limit the attention to global variation if not handled carefully. Better quality responses made valid points of a higher order, such as the lack of alternative sources of fuel in rural areas in LEDCs, or the presence of measures to protect forest environments in some locations, along with the variation in effectiveness of enforcing such measures.

(b)   The only link between **(a)** and **(b)** was the subject of environmental degradation. There was no expectation that in **(b)** a forest environment would be selected, although if a forest environment had been studied as the case study in the syllabus, **2.4**, it was fully acceptable. Deconstructing the question shows that it was '**one** attempt' that was needed. Most candidates did write about one attempt, such as an initiative, policy or programme. Where candidates wrote about two or more attempts in the same environment (or different ones), Examiners marked each separately and credited the best. This limited outcomes for responses in which candidates took a big location as the degraded environment, such as China, Mexico City or the atmosphere, and covered several different things that were done to improve environmental quality. Further deconstruction of the question into its key elements shows that the focus of the question is on the success of the attempt. As such, knowledge needed to be used selectively and directed towards the assessment.

Having both the skill and the discipline to not use learned material which is not relevant, for example, about the causes of environmental degradation here, is highly creditable. It helps to produce a well focused response and saves valuable time which is better used to develop the assessment needed for higher level achievement. The best responses used a detailed case study effectively; provided some specific information, such as named locations, dates of projects, data indicating how success criteria were met; and provided a realistic assessment of (relative) success, or of success/failure and the difficulties and constraints operative. It was not necessary to comment on the future, but some candidates made astute observations about pressures from increasing population, the lack of finance to maintain the environment and its protection, or the positive effect of educating the next generation about sustainability and what it means in caring for an environment.

Global interdependence

Question 5

Responses to **(b)** tended to be more secure, through knowledge and understanding, than to **(a)** which was skills based.

(a) (i) An effective response described the pattern of the fastest growing trade flows in terms of direction, distance and scale, and provided evidence for the elements of pattern identified. It was important to select the correct flows (blue) on Fig. 3, avoiding the fastest growing trade flows (pink) and not simply to rewrite each one in words as the description.

(ii) Resource endowment means what resources a location has, in this case a country, such as Brazil, or a world region, such as the Middle East. It suggests a geography of 'haves' and 'have nots', for example, in relation to where the world's oil is located. A full response comprised one or more elements where resource endowment does help to explain the largest trade flows (blue) on Fig. 3 and one or more elements where it does not. For example, flows from Australia to China comprise minerals such as iron ore and coal to supply its manufacturing industry and power production. However, resource endowment alone cannot be fully explanatory and a number of other factors, such as cost and trade agreements, also help explain the largest trade flows. Comprehensive answers were not expected or required; what was needed was to show understanding of the complexity of trade flows in the 21st century linked to reading Fig. 3 accurately.

(b) Any view was acceptable for full marks if argued and supported with evidence. This could have been the one in the question, that trade is preferable to tourism; the opposite, that tourism is preferable to trade; or, as some candidates proposed, that both are needed for the most secure basis on which a country can develop. In too many responses the approach taken was about the advantages and disadvantages of trade and tourism rather than considering the idea of their security as a basis for economic development.

Four ways to enhance the quality of responses would have been, firstly, to use located and/or named examples, rather than pursue a general discussion. Secondly, a higher skills approach to the discussion would have been to integrate content about trade and tourism throughout, rather than providing two separate accounts one after the other. Given the nature of the two sectors in terms of demand issues, seasonality, stability, competition, the global market, etc., separate accounts involved a good deal of repetition and did not promote the discussion required. This leads to the third way to improve responses, which was to follow the command word and discuss and evaluate, rather than only describe and explain. Discussion involves being able to look at something in more than one way and to consider alternative aspects or ideas. In this case, the relative strengths and relative weaknesses of each sector were pertinent. Lastly, the best responses made secure links to 'a country's economic development', for example, contrasting the potential problem of primary product dependency in trade with the potential of the tourism multiplier, especially if a country manages the development of tourism carefully and sustainably.

Question 6

(a) An effective account combined a number of factors of three types. These could be known as demand factors, such as increased time, increased affluence, fashion, interest; supply factors, such as the availability of package holidays, internet booking and governments promoting tourism in different ways; and, lastly, facilitating factors, such as improvements in transport and media coverage. Of these three types of factors, some candidates focused too much on demand, and others omitted supply factors completely. The best responses were supported with examples of locations, activities, events or data. They were also contemporary, for example, observing growth in new markets such as middle income families in China, or the significance of tourism associated with events such as the London Olympics in 2012. As the command was 'Account for' there was no credit for describing the growth of international tourism in terms of tourist arrivals or total receipts.

(b)   Deconstructing the question revealed that the context was 'for tourist destinations'. Some candidates' writing drifted into the experience of the tourists themselves rather than the places they visited. The second key element to this question was 'benefits' and 'costs'. The ability to provide cost/benefit analysis was a key differentiator of performance. Some candidates interpreted this too narrowly as meaning only financial (economic) costs and financial benefits. This could only be part of a full response. The syllabus content is expressed in terms of economies, societies and environments of tourist destinations. A full response comprised some attention to benefits (positive effects) and costs (negative effects) in each of these three dimensions, without needing to be comprehensive. One good way to answer was to contrast one tourist destination in which the costs could be seen to be greater than the benefits, for example, a mass tourism destination such as Goa, with a destination where, usually through careful management, benefits can be judged greater than the costs. This could be true of an ecotourism destination or one where there was a planned approach to make tourism sustainable, for example, in a government scheme.

Another effective approach was to consider the costs and benefits in an evaluative manner, weighing each one for an element of tourism. Take employment, for example. Tourism creates many jobs, both directly and indirectly, helping to overcome unemployment and poverty in LEDCs and to raise skills levels and standard of living. Many of these jobs are, however, low skilled, can be seen as menial, and are seasonal, with management posts being occupied by expatriate workers rather than local ones. This examination technique of putting the benefits and costs side-by-side (juxtaposition) showed good awareness of the complexity of tourism's impacts and helped an overall assessment to be made without too much repetition. In a potentially big subject like this one, handling material can be a challenge in the time available, which is one reason why spending a few minutes planning a response, before starting to write, is good.

Economic transition

Response quality seemed to be either good to very good, or poor.

Question 7

(a) (i)   Describing the relationship between the measures shown in Fig. 4 differentiated performance effectively. Some candidates could clearly see something here but found it a challenge to express it. Examiners are trained to give the benefit-of-doubt (BOD) in such circumstances and to credit sound graphical interpretation.

(ii)   The strengths and limitations of the two measures were explored simply by most candidates. More sophisticated points, such as that happiness is difficult to define and may be determined by culture or mood, were rare. GNI was recognised as a 'hard' economic statistic that is easy to understand and compare. Many observed that any national measure hides variation, both spatially and socially, when studying wellbeing.

(b)   To answer this question well and to make an effective assessment, secure knowledge and understanding of both globalisation and global inequalities in development were needed. The best responses answered 'to some extent' whether it was expressed that way or not. For example, on the one hand, globalisation involves the development of the world economy, the emergence of many NICs, the action of TNCs and FDI worth millions of US dollars. It produces a geography of countries which benefit greatly (the 'winners') and others which are marginalised (the 'losers') and has reinforced the development gap. On the other hand, global inequalities in development predate the relatively recent phenomenon of globalisation. They are rooted in many factors which interact, from locational advantage and resource endowment to the historical legacy of imperialism and colonialism and issues of political stability and instability. Comprehensive answers were not required; what the Examiner was looking for was the ability to provide an evidence-based argument and analysis, framed as or leading to an assessment.

Question 8

Amongst the small number of responses seen, there were some of the highest-scoring in the entry. Some candidates used home country well, showing familiarity with the subject content, secure cultural understanding and a contemporary approach.

(a)   The best responses were carefully descriptive and avoided explanation. They also covered more than the core and one peripheral area and addressed both social development (such as education) and economic development (such as economic structure and activities). A sketch map could locate the regions named but was not in itself creditable given the wording of the question.

(b)   This higher order demand followed on naturally from **(a)**. This caused some difficulty for the few candidates who decided to answer **(b)** first. The best responses were planned as assessments and identified the main reasons or key reasons for the persistence of regional disparities, i.e. 'why the country's regional development remains uneven'. Some combined theoretical ideas from regional studies, such as of regional convergence following divergence, or from core-periphery theory, with analysis of contemporary realities. These realities could be the failure of government schemes or the absence of them. It could include reasons why the core is favoured by economic activities, for example, because of prestige, potential for profit, accessibility, etc. It could also include explanatory factors such as political instability, corruption or the advantaging of certain peoples or tribes over others, so that the regions where they live are systematically favoured or left out. Some candidates pointed out that little can be done to overcome the issues of remoteness or extreme environments, unless, perhaps, places have potential for tourism development or minerals are discovered.

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Key Messages

- Examples and, in parts **(b)**, case studies are needed as evidence to support points made and to develop an argument.

- Writing about what actually happened (past) or is done (present) is creditable. Responses which are loose and speculative, or hypothetical, expressed in words such as 'would', 'could', 'might' and 'maybe' are better avoided. The one exception to this is where a legitimate question is asked about the future, such as **Question 3(b)**, where an element of informed prediction is expected.

- Evaluation is key to response quality in all parts **(b)**, as evidenced in the way the descriptors are written in the levels mark schemes. The whole response should be approached in an evaluative and analytical way. It is not sufficient to open the essay with a simple evaluative statement, perhaps repeating it at the end.

General Comments

As in previous series, the Options *Environmental management* and *Global interdependence* remain the most popular. Responses to **Questions 3** and **6**, followed by **Question 4**, and **Question 1** on agriculture from *Production, location and change* dominated the entry.

The full range of response quality was seen. Time was managed appropriately by almost all candidates and there were very few rubric errors. When rubric errors do occur it is because a candidate answers more than the two questions required.

The Insert contained four resources, one per Option. Fig. 1 was interpreted robustly by most candidates. More attention could have been paid to the detail of the key, in order to achieve more of the marks for describing changes, and to the words in the heading 'in cities'. This would have avoided the error of interpreting Fig. 1A as in the city and Fig. 1B as spread to rural or peripheral areas. Fig. 2 was used well by almost all candidates who selected **Question 4**. Worldmapper images are useful in delivering 9696 and maps of a number of relevant topics can be accessed at http://www.worldmapper.org/. Fig. 3, a schematic map of commodities and trade flows, was used satisfactorily, although many candidates found 'pattern' difficult to identify in the first part of the question. **Question 7** was answered by a few candidates who seemed to understand Fig. 4 readily. Teachers are encouraged to use the resources accompanying the other time zoned paper (Paper 33) this series to help develop candidates' skills in interpreting and using resources. From 2018 and the first examination of the revised syllabus, candidates will have to answer a compulsory resource-based question on each of the two Options they take.

Comments on Specific Questions

Production, location and change

One of the key words showing the focus of demands in both these questions was 'changes'. It was found in **Question 1(b)** and **Question 2(a)** and showed that answers needed to be dynamic, rather than static.

Question 1

The identification of a specific named agricultural system in **(a)** and of one or more actual examples of agricultural change, perhaps using a case study, would have enhanced most responses.

(a) (i) Outputs tended to be described more effectively than inputs. Often the inputs of land and climate (temperature and precipitation) were left out. Description involved more than a list. It was, for example, creditable to describe the character of the inputs and outputs in some way, for example, "large amounts of capital (finance) used to buy hybrid seeds and artificial fertilisers", and "the rice itself (two crops a year), wastes, mainly stalks, ploughed back in as fertiliser, and fish raised in the padi fields as a source of protein in the diet". Choosing 'arable' or 'pastoral' as the named system was inadequate and led to descriptions that were very general. It was better to be specific, such as identifying 'intensive wet rice' or 'plantation' (bananas) for arable, or 'cattle ranching' for pastoral. Some candidates named a farm rather than an agricultural system; the specificity, however, made it possible to describe inputs and outputs effectively.

(ii) Few candidates recognised the significance of the phrase 'in this system' and some produced general responses about physical influences on agriculture. Others wrote about agricultural production, such as how weather and soil fertility affect harvests and productivity, rather than about the 'land use and practices' in the question. An effective response remained focused on the agricultural system chosen in **(i)** and explained how physical factors affect land use, for example, the effect of slopes, and practices, for example, the need for irrigation because of aridity or seasonal drought. In a pastoral system, land use included paddocking, and practices included inoculation and dipping because of pests (a physical factor).

(b) The invitation in this part-question to use the case study from the syllabus was recognised by only a few candidates. They exploited the question, using case-specific detail to establish extent in an effective way. Most responses consisted of a general explanation of economic factors, such as market price or food demand, and how they influence agriculture, followed by some consideration of other factors, i.e. political, social and, sometimes, physical. Quality would have been enhanced in three ways. Firstly, by the use of real examples, as responses tended to be general or use a country in name only, or to be hypothetical, expressed in what could or might happen. A second way to enhance response quality was by maintaining an explicit focus on agricultural **change**, rather than agriculture or agricultural production. Thirdly, responses could be enhanced by careful analysis of factors. For example, the Green Revolution in India and changes to production in Jamaica were often given as contexts, with government involvement described, yet the assessment often simply agreed that economic factors were responsible for change, without identifying the linked political factor (i.e. the role of government) in the concluding analysis. At the most basic, assessment was simply stated 'I agree that ...' or asserted without evidence.

Question 2

Interpreting Figs. 1A and 1B effectively involved recognising that it was two stages of location for the same manufacturing industry (initial concentration and later decentralisation) and that both were 'in cities', meaning within the city.

(a) A full description comprised three types of changes between Figs. 1A and 1B: spatial scale, as production was spread and dispersed; the separation of production from control (the small circles); and the increasing complexity of flows (the solid and broken lines). Of these, it was the second which most candidates observed. The reasons suggested needed to relate to why these changes had occurred. Instead, some candidates explained why an industry might locate as shown in Fig. 1A, and why another industry might locate as shown in Fig. 1B. Examiners were looking for reasons for decentralisation. These could be both the disadvantages for production of central location in a city and the advantages of what could be interpreted as suburban locations, or ones near peripheral routes such as urban ring roads or expressways.

(b) This part-question contained two demands. The explanatory one was of lower order than the assessment which it led to. The explanation of the concept of functional linkages was straightforward. Most candidates used different kinds of linkages, such as forward and backward, to develop the concept. Some used small sketch-diagrams, which probably saved some time, and some provided examples. These examples were creditable where they helped to explain the concept. Some recall was faulty, for example, of which type of linkage was which, and there was some confusion between industrial agglomeration and spatial proximity and functional linkages. Functional linkages are, as it says, functional, based on needs and supplies, and may not involve spatial proximity. For the assessment, the main significance of functional linkages is that they enable efficient production and cost-minimisation, or cost savings, in manufacturing. Where components and/or raw materials are involved, as in complex assembly operations such as vehicles, functional linkages allow efficient and highly productive 'just-in-time' working. In some industries, such as the processing of agricultural products on the farm or holding, functional linkages can, by contrast, be of limited significance.

Environmental management

Question 3

(a) An effective response was carefully focused on two things: on demand, avoiding all aspects of supply, and on the word 'increasing' rather than simply high. Examples were needed to support the explanation. These examples could be of named countries; activities, such as tourism; sectors, such as manufacturing; locations, such as a China's EPZs on the east coast; or data (wattages, percentage data, etc.). A response about domestic demand alone, for example, linked to population growth and house building, and to increasing affluence leading to a greater proportion of people owning and using technology and gadgets from refrigerators to iPads, could only be part of the explanation. It was important to explain the increasing demand from manufacturing through industrialisation in many LEDCs and NICs, notably China. Some candidates made good use of local factors, such as rural electrification in Zimbabwe, as part of the explanation. Cost needed care as an explanatory factor, as there is no simple link between cost and demand globally.

The best responses were broadly based and built up an explanation comprising a number of strands, such as economic development, increasing affluence and an increasingly globalised world enabled by transport technologies, communications technologies and newer production technologies in which machines have replaced manufacturing labour. Credit was given to the few candidates who picked up on the word 'most' in the question and wrote about energy saving and energy efficiency in MEDCs working to reduce demand or to keep demand steady. This was not necessary for a full response. Many candidates muddled supply with demand and so wrote about schemes such as Kariba, or types of energy, such as wind power and solar energy, their potential and problems. All this material was better left for part **(b)**.

(b) Sometimes it is legitimate for geography to consider the future, and important to do so, and one such concern is that of energy. The statement and the assessment it invited allowed candidates to develop their own responses. Examiners expected no particular position, given the potential and limitations of renewable sources; the distinctive and controversial nature of nuclear power; and current dependency on fossil fuels despite concerns about their depletion, about pollution and about energy security. The best responses had three main features. Firstly, they were well structured and benefited from time spent planning. This planning not only involved organising content, but also involved planning the argument and working out how far to agree (the assessment) **before** starting to write. Secondly, the best responses did not seek to be comprehensive, which, given the number of types of renewable resources and non-renewable resources, was not possible in the time. Instead they developed an argument and analysis, supporting it by the selective use of detailed knowledge of energy and specific understanding, for example, of the global context as evidence. Thirdly, the best responses were carefully directed to the future, based on the contemporary scene and looking ahead, perhaps in the context of rising demand, as in **(a)**, or in a government's commitment to increase the percentage of renewable sources used by a certain year.

One Examiner commented that candidates who were challenged to frame a response under examination conditions tended to "throw knowledge" at the question, writing down all that they could remember from their studies of energy, for example, about the Three Gorges Dam, and then "left the Examiner to do the work" of sorting out what was creditable. Credit can only be given for material which is relevant to the question set, and not simply that which is factually true. Those who struggled to answer the question often omitted any evaluation or just stated it, for example, "I agree that the future of energy (production) is in renewable resources" without linking the rest of their response to this. Both these approaches sat within the descriptors for Level 1, as evaluation is an important skill in extended writing at A Level and forms Assessment Objective 4 (AO4). (See page 13 of the 2015 syllabus.)

Question 4

(a)   Fig. 2, a Worldmapper image, appeared as a stimulus and as the context for considering deforestation. There was no expectation that candidates would describe the pattern of loss of forested area shown, and there was no credit for such attempts. Examples could be derived from the map, such as naming a country or countries within Africa, or identifying Brazil within South America, if country names were known. Examples from the candidates' own knowledge (of countries, locations, activities, named forests or policies) were equally acceptable in order to satisfy the question's demand 'With the help of examples'. An effective response built up a number of developed reasons with evidence, was carefully focused on the idea of variation (i.e. differences in amount), and appropriately global. In some responses the home country or world region of the candidate featured too highly to explain variation sufficiently. Some started with a definition of deforestation as being the removal of trees without replacement. This was not necessary but indicated helpfully that knowledge of the question's key term was secure.

Most responses were based around causes, needs and activities, such as the need for fuelwood, or the activity of clearing land for agriculture to meet rising food demand, but this could limit the attention to global variation if not handled carefully. Better quality responses made valid points of a higher order, such as the lack of alternative sources of fuel in rural areas in LEDCs, or the presence of measures to protect forest environments in some locations, along with the variation in effectiveness of enforcing such measures.

(b)   The only link between **(a)** and **(b)** was the subject of environmental degradation. There was no expectation that in **(b)** a forest environment would be selected, although if a forest environment had been studied as the case study in the syllabus, **2.4**, it was fully acceptable. Deconstructing the question shows that it was '**one** attempt' that was needed. Most candidates did write about one attempt, such as an initiative, policy or programme. Where candidates wrote about two or more attempts in the same environment (or different ones), Examiners marked each separately and credited the best. This limited outcomes for responses in which candidates took a big location as the degraded environment, such as China, Mexico City or the atmosphere, and covered several different things that were done to improve environmental quality. Further deconstruction of the question into its key elements shows that the focus of the question is on the success of the attempt. As such, knowledge needed to be used selectively and directed towards the assessment.

Having both the skill and the discipline to not use learned material which is not relevant, for example, about the causes of environmental degradation here, is highly creditable. It helps to produce a well focused response and saves valuable time which is better used to develop the assessment needed for higher level achievement. The best responses used a detailed case study effectively; provided some specific information, such as named locations, dates of projects, data indicating how success criteria were met; and provided a realistic assessment of (relative) success, or of success/failure and the difficulties and constraints operative. It was not necessary to comment on the future, but some candidates made astute observations about pressures from increasing population, the lack of finance to maintain the environment and its protection, or the positive effect of educating the next generation about sustainability and what it means in caring for an environment.

Global interdependence

Question 5

Responses to **(b)** tended to be more secure, through knowledge and understanding, than to **(a)** which was skills based.

(a) (i) An effective response described the pattern of the fastest growing trade flows in terms of direction, distance and scale, and provided evidence for the elements of pattern identified. It was important to select the correct flows (blue) on Fig. 3, avoiding the fastest growing trade flows (pink) and not simply to rewrite each one in words as the description.

(ii) Resource endowment means what resources a location has, in this case a country, such as Brazil, or a world region, such as the Middle East. It suggests a geography of 'haves' and 'have nots', for example, in relation to where the world's oil is located. A full response comprised one or more elements where resource endowment does help to explain the largest trade flows (blue) on Fig. 3 and one or more elements where it does not. For example, flows from Australia to China comprise minerals such as iron ore and coal to supply its manufacturing industry and power production. However, resource endowment alone cannot be fully explanatory and a number of other factors, such as cost and trade agreements, also help explain the largest trade flows. Comprehensive answers were not expected or required; what was needed was to show understanding of the complexity of trade flows in the 21st century linked to reading Fig. 3 accurately.

(b) Any view was acceptable for full marks if argued and supported with evidence. This could have been the one in the question, that trade is preferable to tourism; the opposite, that tourism is preferable to trade; or, as some candidates proposed, that both are needed for the most secure basis on which a country can develop. In too many responses the approach taken was about the advantages and disadvantages of trade and tourism rather than considering the idea of their security as a basis for economic development.

Four ways to enhance the quality of responses would have been, firstly, to use located and/or named examples, rather than pursue a general discussion. Secondly, a higher skills approach to the discussion would have been to integrate content about trade and tourism throughout, rather than providing two separate accounts one after the other. Given the nature of the two sectors in terms of demand issues, seasonality, stability, competition, the global market, etc., separate accounts involved a good deal of repetition and did not promote the discussion required. This leads to the third way to improve responses, which was to follow the command word and discuss and evaluate, rather than only describe and explain. Discussion involves being able to look at something in more than one way and to consider alternative aspects or ideas. In this case, the relative strengths and relative weaknesses of each sector were pertinent. Lastly, the best responses made secure links to 'a country's economic development', for example, contrasting the potential problem of primary product dependency in trade with the potential of the tourism multiplier, especially if a country manages the development of tourism carefully and sustainably.

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Economic transition

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(b) To answer this question well and to make an effective assessment, secure knowledge and understanding of both globalisation and global inequalities in development were needed. The best responses answered 'to some extent' whether it was expressed that way or not. For example, on the one hand, globalisation involves the development of the world economy, the emergence of many NICs, the action of TNCs and FDI worth millions of US dollars. It produces a geography of countries which benefit greatly (the 'winners') and others which are marginalised (the 'losers') and has reinforced the development gap. On the other hand, global inequalities in development predate the relatively recent phenomenon of globalisation. They are rooted in many factors which interact, from locational advantage and resource endowment to the historical legacy of imperialism and colonialism and issues of political stability and instability. Comprehensive answers were not required; what the Examiner was looking for was the ability to provide an evidence-based argument and analysis, framed as or leading to an assessment.

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Key Messages

- Basic examination technique helps. Careful selection of which question to answer, after reading and thinking about both parts, **(a)** and **(b)**, and then planning a response before starting to write, are encouraged.

- Candidates need to answer the question, i.e. the actual question set, and to pick up on its wording and/or focus.

- Recall knowledge is only creditable when pertinent. This means that it needs to be relevant to the question and/or directed and applied to it. Pruning knowledge is a useful skill – and a discipline.

General Comments

Of the four options, **Environmental management** and **Global interdependence** remain the more popular. The majority of the candidates provided two full responses in satisfactory to good English. Many candidates across the ability range provided well organised and carefully structured responses. These suggested effective training in examination technique and essay writing. There were very few rubric errors.

Geography should develop and enhance a global perspective. It was noticeable that some candidates' understanding of contexts other than their own home country was weak.

The resources in the Insert represented different ways of being used as stimulus materials, with **Fig. 1** and **Fig. 2** being used as data response exercises, whilst **Fig. 3** and **Fig. 4** are used for general stimulus for the question. The data response use was satisfactorily interpreted by almost all candidates. The trends needed to be identified from **Fig. 1** with some candidates not realising that the world includes the other two: MEDCs and LEDCs. **Fig. 2** was the most heavily referenced and the data were read with reasonable to very great accuracy. There was a tendency in **Question 6(b)** for some candidates to heavily describe the stages shown as if it were a data response exercise. These candidates, however, had little to add in terms of the focus of the question. For **Fig. 4**, candidates could make use of the map but this was not a requirement.

Comments on Specific Questions

Production, location and change

Question 1

(a) (i) Most candidates provided three separate descriptions of the graphs in words, rather than providing a supported overview of the main features. Some candidates did not recognise that 'trends' referred to change over time.

(ii) Candidates had an open door for their approach to this question, though reference to intensification and/or extension of cultivation are covered in the syllabus. Some referred to food imports which was a valid approach but needed other aspects as well.

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(b) Better accounts addressed both 'environments' and 'people' and recognised that evaluation can have both positive and negative elements. The positive aspects of intensification on the environment were the weakest element for most candidates. They could have looked at irrigation to overcome water supply issues and the use of chemicals to combat pests, both of which could be linked to the people aspect by increases in food production and less damage to crops. The most secure exemplar context was the Green Revolution in India, and evaluative comment about the variation of effects both spatially and between different groups of people, such as richer farmers and poorer ones (who became indebted and landless), was highly creditable. Some weaker responses provided a very general response with the nature of farming/locations either vague or, occasionally, inaccurate or they strayed into extensive farming.

Question 2

(a) For both parts **(a)(i)** and **(a)(ii)** definitions varied from the precise to the confused. Some got economies of scale correct, but diseconomies wrong. The idea of unit costs is key to both.

(i) Sound definitions referred to how average costs are lower in large-scale operations than in small-scale ones, such that an increase in the scale of the business will lead to a reduction in unit costs. Good explanations demonstrated an understanding of internal and external economies and could link these to saving costs or spreading cost over increased output. References to agglomeration often led candidates to a different question because they do not appreciate that agglomeration economies are part of economies of scale but are not the same thing.

(ii) A definition along the lines of making costs per unit higher in large-scale operations was a reasonable statement. There needed to be an explanation of the way that costs increase as companies become larger and inefficiencies develop in terms of communication and decision making and/or the loss of former economies of scale through growth or expansion.

(b) The path to a good response was the clear identification of 'main issues limiting growth', such as lack of raw materials, isolation from global economy, political instability, and then an assessment of the extent to which each had been overcome. Some candidates focus their response on service industries in general and do not identify that they have to be related to manufacturing industry such as providers of finance or office functions associated with the running of a manufacturing business. A narrative approach made it difficult to identify the issues. Therefore assessment was limited to that of overall relative success or failure of manufacturing.

Environmental management

Question 3

(a) Better responses either integrated data from **Fig. 2** with their own knowledge or dealt with reading the figure in some detail, being careful to express it as 'advantages' before describing other advantages which were known. Ideally advantages were discerned from both axes. Other advantages included relative costs, relative ease of production, energy security, efficiency of use of waste products from agriculture, potential to mix biofuels with conventional fuels to reduce demand/emissions, etc. Weaker answers tended to produce a partial response, such as ignoring or only commenting on **Fig. 2** or only discussing biofuels (including limitations which were not needed).

(b)   Success in answering this question was based on secure knowledge of a strategy for supplying electricity for one named country and the examination skill to deconstruct the question and to clearly outline the aims of the strategy. Sometimes these were implicit rather than stated as aims, such as increased efficiency, the need to produce much more energy, energy security, desire to 'go green', etc. This approach made an evaluation of success less easy to demonstrate. Where candidates did not use their own country as the example, many selected China. These responses varied from almost being about China in name only to being almost wholly about the Three Gorges Dam. Better responses displayed more knowledge about the dilemma of using cheap but dirty coal and factors behind the choice of other renewable sources of energy.

The learning of data to support this topic is not easy because of differences in units such as megawatts or gigawatts and differences between capacity and production. Claims as to what percentage of power the Three Gorges Dam or other sources contribute varied wildly. The percentage from coal was usually about right. Candidates might wish to consider the relative importance of the sources and use qualifying statements such as: by far the largest, twice as much as the next, third in order but quite small as a percentage, however, particularly important in some areas because…, etc. Candidates sometimes considered other aspects of supply such as difficulties faced in more remote areas or the importation of electrical energy at peak times and were able to further their response.

Question 4

(a)   A question with two commands: describe and explain, a factor – population increase – and an impact – environmental degradation. The best responses were able to take an element of population increase, such as the need for a place to live, for resources, for food, to describe how this happens, to explain its effect and to elaborate as to how the environment becomes degraded as a result. A less successful approach was frequently seen where the focus was on pollution, with first water pollution, then air pollution and finally land pollution. Candidates who took a more analytical approach did well. For instance, deforestation is a consequence of many of the activities related to population increase, and there are many consequences of deforestation which lead to different aspects of environmental degradation such as soil erosion, pollution of water, habitat loss. Examples supporting and developing the ideas were welcome: 'In Kalimantan …'.

(b)   Most did freshwater and mentioned saltwater because of oil spills. The key to success was to recognise in the question the phrase: 'difficult to reduce'. This could quite easily start with the idea that water is a fluid with a boundless character, following up with ideas such as 'the tragedy of the commons' in terms of the oceans and the need for transborder agreements in the case of rivers such as the Rhine. Other key elements of difficulty were cost, timescale (when groundwater is involved, for example), multiple sources, and unavoidable accidents. A large number of responses focused on the river Ganges but content was quite thin and focused on aspects such as ritual washing and burning of corpses, without taking a wider view of agricultural or industrial pollution or the difficulties of dealing with waste from large urban populations. There was little knowledge of broader attempts to deal with these sources of pollution at any scale.

Global interdependence

Question 5

(a) (i)   Most candidates know what visible and invisible mean, but some referred to invisible as both goods and services, which illustrates that they are unable to define a term with precision. Few remembered to define *import* and *export* in terms of direction of flows.

(ii)   Almost all candidates knew that the key function of the WTO is to ensure that trade flows as freely as possible. Fewer were able to develop its role further into acting as the regulator of disputes, promoting the liberalisation of trade and removal of tariff barriers, especially to help LEDCs, and the negotiation of trade agreements. Anything which was not about its role, such as where it is located, or that it used to be GATT, or a discussion about its unfairness towards LEDCs or favouring of MEDCs, was not creditable.

(b) The better answers were able to focus on why MEDCs dominate global trade and not why MEDCs dominate in a broad sense. They were able to consider concepts such as terms of trade and balance of trade, as well as historical ties and relationships such as colonialism with some making reference to a negative perception of WTO, G8, etc., the outworking of power relationships at the global scale – and a changing world order with BRIC, etc. They were able to address both volume and value of trade and consider both MEDCs and other countries. Very few tried to assess the reasons or consider the importance of TNCs. Less successful responses often focused on debt and aid.

Question 6

(a) Good responses attempted some positive impacts as well as negative ones and these were clearly related to impacts on the environment. They went beyond simple statements such as: 'tourists use up much of the local water supply' or 'air travel causes pollution.' They were specific about environments, either generically, for example, TRF or coral, or used named locations. The best responses were able to include specifics and to develop simple ideas such as land pollution, for instance litter, to types of waste produced by tourists and actual problems created such as in landfill sites or to the costs, for example, the aesthetics of settlements or beaches, impacts on wildlife, expenses involved with collection and disposal, etc. Some used conceptual content, such as carrying capacity; or linked impact to stages of the life cycle (challenging to do well); or considered the relative fragility/robustness of environments and/or types of tourism, such as ecotourism, wilderness tourism and mass tourism. They also had elements of management/ mismanagement and environmental protection, in terms of presence, absence and effectiveness. Weaker responses tended to speak generally about impacts on the environment without specific links to the tourist industry. Some responses on the urban environment were relevant but on the whole this question required impacts on the physical environment. Positive impacts were sometimes seen as simply ecotourism, without clearly relating this to benefits for the environment.

(b) The model was often not fully understood. Most candidates recognised the changing volume of tourists but not the likely character of each stage or the reasons for changes. For a classic kind of question, most candidates struggled to find an effective approach. Few were sufficiently evaluative, most being narrative of a resort's development or asserting that the model fits the experience of a destination such as Goa or the Costa del Sol, describing it stage by stage. Some were very vague, others had time- and place-specific detail.

An approach with more potential stood back from the narrative approach and focused on the usefulness of this model. They might have developed the idea that it only suits certain types of destination or tourism such as mass tourism, sand and sea destinations, along with creditable comment on examples of where the model is not so helpful for understanding, such as true ecotourism which is usually based on low impact and small numbers and most unlikely to follow such a pattern. Some of the best responses considered disruptions to the smooth curve, such as by terrorism, whether the Bali bombing (2002) or the downing of a flight from Sharm el-Sheikh in Egypt (2015). It was good to see candidates using recent events rather than only what is in text books. Very few candidates were able to reflect more widely on what models are and are not or can and cannot do.

Economic transition

Question 7

(a) Sound responses had a thorough understanding of measuring inequality, GNP per person PPP and usually HDI as an example of a multiple criteria index. Few were able to compare the measures rather than stating the benefits and limitations of each. Weaker responses misinterpreted the need for a multiple criteria index and instead discussed such measures as life expectancy.

(b) Good responses identified TNCs as the source of foreign direct investment and the role of government in attracting such investments. The best combined ideas about TNCs, such as cost-minimisation, profit-maximisation, market penetration and the careful exploitation of comparative advantage, with some content about countries' strategies to attract FDI through EPZs, incentives, infrastructure, etc. Exemplar support improved these good responses further. Weaker responses were characterised by commenting on only one side of the 'some' or 'others' from the question. They used China for an attractive location or Africa as an example of a non-attractive location, citing everything that is bad. So they ignored the rest of the globe and the significance of MEDCs attracting FDI, not just LEDCs and NICs.

Question 8

(a) Specific knowledge of the core and periphery of one country was limited. Those candidates with a reasonable knowledge often did not note that the question asked them to describe the characteristics of both the core and the periphery and did not ask for an explanation of the growth of the core at the expense of the periphery. Although some candidates usually had a reasonable idea of the core area, they often only knew of one, sometimes rather limited, area of periphery.

(b) Few reasonable attempts at this question were seen. A good response would be characterised by a description of some specific attempts made by a government at some scale but not necessarily at the national level. The evaluation of success would focus on whether the attempt was a success or failure in narrowing the development gap or brought about economic and social convergence between the core and periphery. Other criteria could also be used such as cost/benefit or unseen benefits or problems, etc. Additionally, the response would be supported with current examples or examples from within the timescale of the syllabus.