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GCE

Geography

Advanced Subsidiary GCE **AS H081**

OCR Report to Centres June 2017

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

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Advanced Subsidiary GCE Geography (H081)

OCR REPORT TO CENTRES

H081/01 Landscape and place

General Comments:

This paper elicited a very wide range of responses. There was no significant difference in performance between the three sections: A, Landscape Systems, B, Changing Spaces; Making Places and C, Fieldwork - nor was there between the three Landscape options: Coastal, Glaciated and Dryland. Approximately 73% of the candidates opted for Coastal Landscapes and 23% for Glaciated Landscapes.

It was most pleasing to read the scripts of a number of candidates who clearly had prepared well for this first examination of the new AS specification. Scripts which were awarded higher marks demonstrated many admirable strengths characterised by:

- consistently good performance throughout the paper for all or most part questions.
- detailed and accurate analysis of the various resources
- thorough knowledge and understanding of processes, both in physical and human topics
- concise responses for the shorter, data-response and medium tariff parts
- well-structured essays, which included a brief introduction, use of paragraphs for each main point and a brief conclusion
- thorough application of place-specific detail in answering essay questions
- appropriate use of geographical terminology
- application of fieldwork experience - often in considerable detail
- appropriate time management and weighting of responses throughout the entire paper

Some scripts were brief with part questions not attempted; a number were limited in knowledge and understanding of processes and in use of place-specific detail. Scripts which achieved marks in the lower or middle mark ranges could have been improved by:

- use of summative comments where description is required
- understanding the term ‘geomorphic process’, and the difference between weathering and erosion
- demonstrating a clearer link between process and landform
- stating OS grid references correctly
- understanding that the essay questions have an evaluative requirement
- producing a brief essay plan; this might help to improve structure / line of argument. It could prove more effective if each factor is identified, discussed in the context of the question and reinforced by selected place-specific detail rather than simply writing out case study knowledge per se without any other commentary
- providing greater depth and breadth of place-specific detail for landforms and landscape systems
- understanding that climate change has also occurred in the past and is not just the product of recent anthropological influence / global warming
- appropriate time allocation; some candidates penalised themselves, producing unnecessarily lengthy responses for the data-response, low tariff questions at the start of the paper.

Comments on Individual Questions:

Section A – Landscape Systems

Option A – Coastal Landscapes

Question No.1

A wide range of responses was possible in describing the climate statistics for **Q1(a)(i).** Many candidates correctly identified the highest wind speeds during the winter months of December and January, giving the mean wind speed figures to support their answer. The high mean wind speed of June was frequently identified as an anomaly during the summer period. The relatively narrow range of mean wind speeds from highest to lowest over the year was frequently cited. The prevailing westerly wind direction was recognised by a high proportion of candidates. A number of responses correctly identified the fluctuations throughout the year in both wind speed and wind direction.

Responses to **Q1(a)(ii)** invariably included processes of wave erosion, often hydraulic action or abrasion, or transportation by longshore drift. The better answers demonstrated understanding of the links between both wind speed and wind direction and the chosen geomorphic process. Explanations included the impact of wind speed on wave energy and the link between wind direction and fetch, although for some candidates understanding of the term fetch was not clear. A number of candidates identified the impact of wind speed only on the geomorphic process and not the effects of wind direction.

For **Q1(b)**, many candidates demonstrated thorough knowledge and understanding of the formation of geos; answers were well-developed, in logical sequence and often supported by appropriate named examples (although this was not essential for full marks). There were some attempts to add diagrams which were credited if they demonstrated understanding not already included in the text. A surprising number of candidates either left this answer blank or had very little knowledge of a geo, other than it is a feature of coastal erosion.

Q1(c)* produced a very wide range of responses. Most candidates appreciated the need to discuss the statement and were able to produce an essay which assessed the relative importance of other factors as well as climate change. The best responses demonstrated very thorough knowledge and understanding of the modification of landforms within coastal landscape systems, supported by detailed and relevant exemplar material. Often the impact of climate change in the past related to glacial and inter-glacial episodes was considered with respect to emergent and submergent coastlines. Ways in which the landforms have been modified subsequently by current processes as a result of increased frequency of storm events or changes in rates of weathering were also characteristic of higher level answers. In addition, these modifications, over longer periods of time, were often evaluated against the shorter term but nonetheless significant impacts of human activity on coastal landforms; these included intended and unintended effects of shoreline management strategies.

Low level responses in **Q1(c)*** were characterised by: brief simplistic comments; limited understanding of the impact of climate change or any other factors on coastal landforms; little if any appreciation that the question required evaluation of the assertion; limited reference to place-specific detail; and quality of extended response in Level 1, lacking structure. Some answers attached more importance to the causes of climate change rather than to its significance in modifying landforms.

Option B – Glaciated Landscapes

Question No. 2

Q2(a)(i) was answered well, with many candidates recognising the seasonal patterns in both mean minimum temperatures and snowfall. Most answers were supported with appropriate statistical evidence from Figure 2. A number of responses correctly identified the inverse relationship between temperature and snowfall. Other frequently cited points included the annual range of mean minimum temperatures and the May to October period of no snowfall.

In **Q2(a)(ii)**, the most commonly chosen geomorphic processes were freeze-thaw weathering, nivation and processes of glacial erosion such as abrasion. There were many sound responses which demonstrated good understanding of the influence of both temperature and snowfall on the chosen geomorphic process. Some candidates did not seem to appreciate the importance of temperature fluctuations above and below zero when attempting to explain freeze-thaw weathering.

Many candidates demonstrated good knowledge and understanding of the formation of roches moutonnées in **Q2(b)** Some well-developed answers included place-specific detail of examples from fieldwork. Although exemplar material is not required for full marks it can help to reinforce explanation. Many candidates included annotated diagrams which again are not essential but can be creditworthy where they confirm understanding or enhance explanation. Responses in the lower levels tended to be simplistic, brief and did not show understanding of the relationship between the glacial processes of abrasion and plucking and the morphology of this landform.

The impact of climate change on landforms within glaciated landscape systems in **Q2(c)*** was, by and large, well understood. Many candidates were able to discuss the impact of glacial periods and interglacials on the development and modification of relevant landforms. Processes and landforms were often very well illustrated with reference to exemplar material, including first-hand knowledge and understanding from fieldwork. There was reference to specific sites / landforms in Snowdonia and the Lake District in particular and various localities in the highlands of Scotland which included features of both upland and lowland glaciation.

Knowledge and understanding of the impact of other factors was less secure. Nevertheless, the effects of human activity on periglacial landscapes were frequently and appropriately referred to, as were the effects dam construction in upland glaciated areas. Examples included the exploitation of oil resources on the North Slope of Alaska and the impact of the Grande Dixence scheme in Switzerland. A number of responses were preceded by a brief essay plan which was a sensible and helpful approach in terms of following a line of reasoning.

Answers to Q2(c)* in the lower levels were characterised by: very limited or no use of exemplar material; brief, simplistic responses with no clear essay structure; little understanding of the impact of climate change, past or present, on landforms; limited use of specialist terminology.

Option C – Dryland Landscapes

Question No.3

Many candidates who chose this option made good use of the data in Figure 3 to describe the annual patterns of temperature and precipitation for **Q3(a)(i)**. There was frequent reference to seasonal contrasts in both mean maximum temperature and monthly precipitation totals. The annual range in mean maximum temperatures was also a frequent and valid response. Some candidates attempted to offer explanation for the variations, giving lengthy answers; this was not required and inevitably would have used up valuable time.

The most frequently cited geomorphic processes in **Q3(a)(ii)** were freeze-thaw weathering, insolation weathering and processes of Aeolian erosion. Most candidates understood the importance of precipitation in freeze-thaw weathering and recognised the dryland environments in which it would be available. The need for temperature fluctuation above and below freezing was less well appreciated even when referring to mountainous areas and / or past conditions in which it was a more frequent process. Explanations of insolation weathering showed limited understanding of rock being a poor conductor of heat causing the outer layers to be most affected by diurnal expansion and contraction.

Some candidates demonstrated thorough knowledge and understanding of the formation of wadis in **Q3(b)**. Nevertheless many responses were at best only 'reasonable' in Level 2; there was limited understanding of the significance of rainfall intensity and the importance of stores of weathered rock debris available for fluvial erosion. Diagrams were attempted by some candidates although annotations might have made them more effective and creditworthy. A surprising number of responses were left blank and others included only a few simplistic comments which showed little knowledge or understanding of this landform.

In **Q3(c)***, apart from a few very good scripts, many responses demonstrated limited knowledge and understanding of climate change and its impact on landforms within dryland landscape systems. Although a number of candidates did refer to more pluvial conditions in the past and the effects of this on weathering and fluvial processes, the relationship between these past processes and current dryland landforms was less securely understood. The idea that many landforms are relicts of past conditions and further modified by current processes was a difficulty for many candidates – as was basic identification of specific types of dryland landform and exemplification using place-specific detail. A frequently made point was that of increasing aridity and its widespread impact on the effectiveness of Aeolian processes. Some of the better responses referred to the significant impact of extreme storm events under these drier conditions.

A high proportion of responses were more secure on the importance of other factors that modify dryland landforms rather than climate change. These included the impact of tourism and recreational activities on dune systems and cryptobiotic crusts, for example in the national parks of southeast Utah. The effects of dam construction on geomorphic processes and landforms such as wadis and dune systems were also frequently referred to, including the impact of the Glen Canyon Dam.

Responses to **Q3(c)*** in the lower mark ranges could have been improved by: more detailed knowledge and understanding of past climate change in drylands and the impact of this change on specific landforms; more secure knowledge and understanding of current dryland landforms and processes; an attempt to address the question 'To what extent..'; the application of place-specific detail; and a clearer essay plan to help provide some structure and line of reasoning.

Section B – Changing Spaces; Making Places

Question No.4

Q4(a) was answered well by many candidates; there was good understanding of 'demographic characteristics' and clear explanation of how these contribute to place identity at local scale. The most frequently cited characteristics were age structure and ethnicity. Development of each point tended to include reference to associated services within the built environment. Some candidates identified two demographic characteristics and no link to place identity; others had no understanding of the term demographic at all.

The OS map extract of Ashford was a well-used resource presenting few problems of interpretation. The main difficulty for a number of candidates in **Q4(b)(i)** was stating eastings and

northings correctly in providing a basic grid reference. The most commonly identified land use was the Outlet Shopping centre (0141). Other appropriately stated land uses included the Business Park, Industrial estate, Cattle Market, Superstore and Hospital, all of which being at edge-of-town locations were reasonably judged to represent recent urban growth.

These same land uses were often given as evidence of the influence of 'players' in recent economic change in Ashford, required in **Q4(b)(ii)**. Many candidates achieved marks here for their identification of possible players such as Ashford local council, the national government, local business investors, local community groups and TNCs. The influence of these players or stakeholders on economic change was, on the whole, well-explained and successfully developed with reference to appropriate map evidence.

Responses which achieved marks in Level 3 for **Q4(c)** identified two clear differences in the informal representations of Dunwich; each difference was supported with specific reference to evidence in the resources. The most frequently stated differences were: the focus of the painting on the physical landscape whereas the extract identified services and possible activities; and the idea that the painting was a personal interpretation whereas the tourist guide had a more precise factual approach specifically designed to attract visitors. Lower level answers tended to be just descriptive with simple analysis at best; often these responses stated the content of the two informal representations in separate paragraphs without specifically identifying the differences.

The extended piece of writing required in **Q4(d)*** produced a very wide range of responses. The better answers included detailed discussion of economic factors plus other social, political and environmental reasons for social inequality. Many of these responses demonstrated thorough application of knowledge and understanding of the relative importance of these factors, achieving high marks in AO2. In addition the better answers supported this evaluation with detailed factual knowledge and understanding of the patterns of inequality using appropriate case study material. Higher level responses also tended to recognise these patterns at different scales including global, national and local inequalities. A number of candidates argued that economic factors are particularly significant since they influence many other factors which contribute to social inequality including housing, education, and health care. Candidates also considered the importance of: government spending; opportunities which arise as a consequence of economic change; demographic characteristics; and physical / environmental factors. There was much effective use of statistical data for example in contrasts between Toxteth in Liverpool and Lympstone, Devon. In addition detailed place-specific material for Northwood in Irvine and Jembatan Besi, Jakarta was often cited. Other evidence was provided by data for contrasting wards in Birmingham, various London Boroughs and named squatter settlements in India and Brazil.

The less effective responses to **Q4(d)*** which achieved marks in the lower levels could have been improved by providing closer attention to the question 'To what extent...'. Many candidates simply wrote all they knew about contrasting places without applying their knowledge and understanding to the requirements of the question. Some candidates did not consider the spatial element suggested by 'patterns' and simply wrote in vague, unsupported terms about people who were wealthy and those who were poor. Some candidates had reasonable understanding of the issues but did not include any place-specific detail at all.

Section C – Fieldwork

Question No.5

There were many sensible ideas suggested in response to **Q5(a)(i)**. These included studies in human geography relating to perception of place, place identity, impact of tourism, service provision, economic change, population change, farming and land use. Physical topics included sediment analysis of river bed load, soil infiltration rates, diversity of plant species, slope and microclimate investigations and impacts of glaciation including till fabric analysis. It was possible

to justify all these topics by reference to evidence in the photograph including practical considerations such as accessibility and scale. It was apparent that many candidates demonstrated their ability to adapt the fieldwork skills and experience they had acquired elsewhere to the novel situation presented by the photograph.

In **Q5(a)(ii)** few candidates had difficulty in stating at least one resource they would use to collect data in the investigation. Examples included resources such as a questionnaire, census data, metre rule, callipers, clinometer, quadrat, and topographical and geological maps. Some candidates erroneously referred to the technique of data collection rather than the actual resources used in the process.

Q5(a)(iii) was the least well answered question on the paper. Some candidates referred appropriately to the online mapping tools of ArcGIS and were aware of its use in plotting data and spatial analysis. There were examples of its application in the creation of wordles and heat maps. Very few candidates scored marks in the highest level; most responses tended to describe a statistical map or graphical technique that could be used to present and analyse the collected data, without reference to GIS. For example there was discussion of line graphs, bar charts, isoline maps, choropleth maps, rose diagrams and proportional symbols. A few candidates were able to demonstrate how these diagrams could be 'geo-located' on a map of the area or how data could be overlaid in layers to enable analysis of geographical patterns. Some candidates referred to the use of latitude and longitude co-ordinates in the field to provide located data, but overall very few had understanding of the use and application of GIS.

Finally, there were some impressive responses to **Q5(b**). These involved evaluation of the effectiveness of fieldwork methodologies often by discussing advantages and limitations of techniques such as sampling design, collection of primary data, accuracy and reliability of the data collected and how the investigation might have been improved. It was clear that candidates had been involved in an array of human and physical fieldwork exercises linked to many different areas of the specification. At the upper end of the mark range there were detailed, thorough and comprehensive accounts of the fieldwork methodologies and their evaluation in the context of the question. In the lower mark ranges, responses tended to be little more than basic description of techniques.

There was a wide and interesting range of valid investigations referred to in **Q5(b)** including topics such as beach sediment analysis, beach morphology, analysis of glacial and glacio-fluvial material, soil infiltration rates, evaluation of areas which had been rebranded, perception studies, environmental quality surveys, and contrasts in place identity and social inequality, and urban land use. These investigations had been conducted in localities as diverse as Exmoor, Snowdonia, the Peak District, a number of glaciated and coastal sites in and around the Lake District, the coastlines of Yorkshire, Lancashire, Norfolk, Suffolk, Essex, Kent and West Sussex plus urban sites in Inverness, Colchester, Ipswich, Birmingham, Exeter, Taunton, Bristol and East London. Much good practice was evident.

H081/02 Geographical debates

General Comments:

This was the first sitting of the Geographical Debates AS paper (02) from the OCR reformed Specification H081. It drew a wide range of responses across the mark range in terms of their quality. The upper quartile scripts were characterised by being precise as regards geographical knowledge and understanding of both processes and patterns. Complementing this positive trait was concise expression with candidates' prose communicating efficiently and effectively. The lower quartile scripts tended to lack a firm grasp of the relevant geographical knowledge and understanding and rarely offered convincing real world exemplification. These scripts were either far too brief to convey anything substantive or wrote at length but without actually saying very much and drifting into descriptive narrative.

Many candidates would benefit from a sharper focus on developing their ability to write with a crisp style which in many cases would be promoted in part by more extensive use of technical vocabulary. Each Option has its set of technical vocabulary that need to become familiar to candidates such as anthropogenic, mitigation strategies or vulnerability.

Responses showed a distinct preference in favour of three Options, Hazardous Earth, Disease Dilemmas and Climate Change with the first mentioned accounting for just over half of all scripts. Exploring Oceans and Future of Food were represented by similar but very small numbers of candidates.

The paper has three sections representing a variety of opportunities for candidates to display their knowledge, understanding, application to data or a resource, analysis and evaluation. Section A consists of five sub-parts of short and medium length questions. Sub-parts (a) and (b) tested candidates knowledge and understanding of aspects of the option. Sub-part (c) is divided into two. (i) Asked candidates to use a skill in the context of some numerical data with (ii) focused on interpreting and analysing the data. Sub-part (d) was a medium length question asking candidates to evaluate an issue.

Section B consists of two questions concentrating on synoptic links between the respective Option and either a landscape System or Changing Spaces; Making Places. In this context, as is made clear in the Specification, it is fundamental in all three Landscape systems, that candidates know and understand how their chosen landscape can be viewed as systems. Once grasped, this way of organising their knowledge and understanding can allow candidates to investigate various influences and interactions, as asked for in Section B.

Section C offered a choice of two questions in each Option which candidates were required to select one. These were extended response questions demanding full prose responses.

The section of the report that follows is organised by Option Topic so that all three examination paper sections for a particular Option are dealt with one after the other.

Candidates should be reminded of the need to consider the specialised concepts which are included in all AS Level Geography specifications such as feedback, inequality, mitigation, resilience and threshold, the full list can be found on page 2 of the specification. Candidates should look for opportunities throughout their course where the application of these concepts can enhance knowledge and understanding of topics. It was often the mark of a particularly effective response that one of other of these concepts was made good use of.

Comments on Individual Questions:

Option 2.1 Climate Change

Section A

Question 1 (a) asked how solar output influences climate change. Candidates divided into two groups, those who were confident in their knowledge and understanding of variations in solar output due to sun spot activity and those who were not. Too many were keen to write about how long wave radiation emitted by the Earth heated the atmosphere.

Question 1 (b) asked candidates to suggest how the natural greenhouse effect is enhanced by the addition of greenhouse gases. Some candidates made clear they understood that the greenhouse effect is a natural phenomenon and that without it, temperatures on earth would be significantly lower than is the case. It was, however, disappointing to read too many scripts where such understanding was absent. While most candidates showed an awareness of anthropogenic greenhouse gas emissions, too few offered authoritative details such as identifying the gasses (beyond carbon dioxide) nor the rates of increase and levels of such gasses in the atmosphere.

Question 1 (c) (i) was answered successfully by the majority of candidates. Some did not show their working or did not give the mean to one decimal place.

Question 1 (c) (ii) asked candidates to analyse reasons for the changes in methane gas emissions from human activities, using evidence from the table. This latter instruction in the question was too often ignored although the more convincing responses made good use of the trends over time and quoted figures directly from the table. The reasons offered for the changes tended to be appropriate such as increase in livestock numbers, emissions from mining and landfill. Responses were particularly successful when these changes were linked to the growth in population globally and in certain world regions in particular. Weaker responses wandered off into general discussions of greenhouse gas emissions.

Question 1 (d) asked for analysis and evaluation of the role of international agreements dealing with the causes of climate change. There were some impressive discussions using the Kyoto and Paris gatherings as evidence of success or not of international agreements. With a topic such as this, it is important that candidates keep up to date with events at the global scale as regards agreements and actions. Examiners were very encouraged to read some discussions in which the idea of the tragedy of the commons was outlined and used effectively to evaluate different approaches to the issue of climate change. It was also good to read as part of evaluations, the significance of regional and local initiatives focused on reducing anthropogenic greenhouse gas emissions. Examples came from the EU, California and local initiatives such as public transport and recycling schemes.

Section B – Synoptic questions

Question 6 (a) used a cartoon about climate change to ask about how climate change can impact the natural characteristics of places. Convincing responses were able to focus on these natural characteristics making references to the possible inundation of coastal locations, the acidification of the oceans leading to the destruction of coral reefs or the reduction in sea ice in the Arctic region. These were, however, in the minority with too many candidates unable to link climate change with natural characteristics of places. There are plenty of links to be made in addition to those outlined above such as the link to higher temperatures and or humidity in some places, the link to changes in the timing and length of seasons and the impacts on ecosystems or the link to an increase in the number and severity of storms.

Question 6 (b) asked candidates to examine how climate change can influence flows of energy and materials in landscape systems. In general, candidates coped more convincingly with flows of materials than energy. For example, increased wave energy and sediment movement at the coast, increased wind energy and sediment movement in dryland areas and increased melting and ice movement in glaciated regions.

Section C

Question 11 asked candidates to consider the degree to which the impacts of climate change will increase global poverty and inequality. Examiners were pleased to read effective discussions from the majority of candidates in which impacts were assessed on countries at different points along the development continuum. Discussions tended to focus on the lack of resources such as technology and funds in LIDCs and some EDCs to offer ways of coping with the impacts of climate change. In this context, the more convincing responses used the concept of 'vulnerability' to good effect. Countries such as Bangladesh and various island states such as Mauritius and islands in the Caribbean were often cited.

Question 12 was answered by a small minority of candidates. The consensus was that the current levels of anthropogenic greenhouse gas emissions arose from ACs but that EDCs such as Brazil, China and India were responsible for vast amounts of gas being released at the present time. The more convincing discussions were able to offer factual details regarding levels of greenhouse gasses through time.

Option 2.2 Disease Dilemmas

Section A

Question 2 (a) asked how contagious and non-contagious diseases spread. The definitions of the two categories were well known by most of the candidates and they strengthened their answers by giving appropriate examples of diseases.

Question 2 (b) asked candidates to suggest why some disease outbreaks are influenced by climatic seasons. Many candidates focused on malaria and did link the peaks and troughs of the disease quite effectively with climatic seasons, for example in Ethiopia. However, the emphasis was primarily on temperature with the role of rains and the availability of stagnant pools of water for breeding given insufficient attention. The more convincing responses tended to offer more than one example, with influenza often discussed as well as malaria.

Question 2 (c) (i) was answered successfully by the majority of candidates. Some did not show their working or did not give the mean to one decimal place.

Question 2 (c) (ii) asked candidates to analyse reasons for contrasts in the % of infants vaccinated against hepatitis B in selected countries using evidence from the table. This latter instruction in the question was too often ignored although the more convincing responses made good use of variations amongst the countries and quoted figures directly from the table. The most common reasons focused on economic resources with the more authoritative candidates able to categorise the countries (AC, EDC, LIDC). Variations in education and availability of medical staff also appeared frequently as explanatory factors.

Question 2 (d) asked candidates to evaluate the suggestion that the spread of a communicable disease is mainly due to environmental factors. Most candidates offered effective discussions with many choosing malaria as a supporting case study. Examiners were pleased to read responses which highlighted the role environmental factors have in aiding the spread of a communicable disease with the more authoritative responses making use of facts and figures. Factors other than environmental ones influencing communicable disease spread included migration, tourism and conflicts / wars. A few discussions indicated their quality with references

to the interaction of environmental factors with human ones. For example, the seasonal migration of workers in connection with patterns of harvesting such as upland to lowland and vice versa and irrigation projects can often aid the spread of diseases such as schistosomiasis (bilharzia).

Section B – Synoptic questions **Question 7 (a)** was based on a table of statistics comparing an inner city ward with a suburban one in a British city. Candidates were asked to suggest how social inequality can influence risks from diseases in places. Too few candidates made effective use of the data and tended to discuss inequality in general. The more convincing responses selected a factor from the table (e.g. population density; unemployment rate) and related this explicitly with higher risks from disease, both communicable and non-communicable. How life-styles can affect disease risk were well explored by some as was the variation in quality and quantity of health care services between inner and outer urban areas.

Question 7 (b) asked candidates to consider how physical factors influencing landscape systems can increase the spread of disease. Those who had secure knowledge and understanding of their chosen landscape system were best placed to make links with disease spread. Relief, climate and flowing water were the most common aspects of landscape systems included with malaria and cholera the two most quoted diseases.

Section C

Question 13 asked candidates to examine the link between levels of economic development and the prevalence of non-communicable diseases. For a good number of candidates this was achieved well through considerations of cancers and heart disease. The spatial settings in which comparisons were placed often focused on UK, India, China and USA. The more convincing accounts looked not only at causes of non-communicable diseases such as diets, living and working conditions, but also the preventative regimes countries are able to exercise. These were linked to economic resources within countries

Question 14 was answered by significantly fewer candidates. Those who did chose to assess the effectiveness of strategies to deal with disease risk and eradication tended to focus on one or other of polio, malaria, tuberculosis or HIV/Aids. The most effective discussions evaluated strategies across the development continuum in particular highlighting contrasts between ACs such as UK with LIDCs, especially those in sub-Saharan Africa.

Option 2.3 Exploring Oceans

Few candidates offered responses in this Option therefore it is difficult to draw generalisations.

Section A

Question 3 (a) asked about the pattern of circulation in the North Atlantic. Most grasped the idea of a surface movement of water from south to north and a return flow at depth. However, too often details were muddled and the relationship between density and temperature poorly understood. Some were unclear regarding the names given to flows such as Gulf Stream and Labrador Current and their precise locations.

Question 3 (b) focused on the impacts on people of ocean acidification. Few candidates were confident in their use of pH values or of how this has changed through time. More were comfortable when discussing the impact on fishing of ocean acidification. There were some effective accounts of how organisms in the lower trophic levels are increasingly unable to make their shells from calcium carbonate due to acidification of ocean water and how this has knock on effects throughout the marine ecosystem. In this way people are affected as fish stocks diminish.

Question 3 (c) (i) was answered successfully by the majority of candidates. Some did not show their working or did not give the mean to one decimal place.

Question 3 (c) (ii) asked candidates to analyse reasons for changes in the number of oil slicks observed in the Baltic Sea. This latter instruction in the question was too often ignored although the more convincing responses made good use of variations amongst the years and quoted figures directly from the table. Most candidates ascribed the reductions in oil spills observed to tightening environmental legislation with the more convincing responses associating this with more intensive enforcement though technology such as satellite tracking. Technology was also credited with preventing spills in terms of improved design of rigs and vessels.

Question 3 (d) asked candidates to discuss the extent to which ocean resources can be managed by governments. There were some sensible comments about the difficulties of policing areas as vast as the oceans. Some candidates chose to focus on one aspect of resource management, namely krill fishing in the Southern Ocean. This offered good opportunities to evaluate which some candidates took advantage of. Few candidates were confident in knowing the facts about the various zones extending out from a country's coastline nor the existence and operation of the United Nations Convention on the Law of the Sea (UNCLOS). Ideas such as the oceans as part of the global commons and the tragedy of the commons would have been of benefit to most of the candidates as would a stronger focus on examples of where countries are in dispute over access to ocean resources such as the Arctic or the South China Sea.

Section B – Synoptic questions

Question 8 (a) looked at the influence of geology on both landscape systems and ocean basins. This was in the context of a world map showing the relief of the ocean floor. Knowledge of ocean floor relief and its geology was noticeable by its absence from the majority of answers. Some candidates were able to write with authority about mid-oceanic ridges and their basaltic rocks. Candidates were not much more confident when dealing with their chosen landscape system and discussing the influence of geology. Geology, including lithology and structure is explicitly mentioned in the Specification sections on each landscape system.

Question 8 (b) asked about how changes in the extent of sea ice might affect place profiles. Candidates tended to spend the majority of their response discussing the effects of sea ice melt on the environment of the Arctic for example, but did not really engage in detail with the idea of place profiles. The implications for indigenous peoples, the potential opening up of trade routes across the high Arctic and possible geo-political tensions in the region were, by and large, ignored by candidates.

Section C

Question 15 focused on the extent to which globalisation has affected the use of oceans and was answered by the majority of candidates. The increase in shipping was a welcome theme in most responses with the more authoritative discussions offering details about the substantial growth in size of vessel such as container and bulk goods carriers. Submarine cables were also referenced as indications of the use of oceans due to globalisation. The use of oceans for tourism as in the growth in the number and size of cruise ships was rarely mentioned and would have offered a useful additional element to most essays.

Question 16 was answered by a small handful of candidates. They focused on the use and management of krill as their example of a renewable biological resource. Responses tended to be sound rather than thorough or comprehensive as they tended to offer too few details about the stakeholders involved in the fishery.

Option 2.4 Future of Food

Few candidates offered responses in this Option therefore it is difficult to draw generalisations.

Section A

Question 4 (a) asked for an explanation of the differences between intensive and extensive methods of food production. Most had some of the key differences such as inputs and scale. There were however, a good number of muddled responses that focused on commercial / non-commercial contrasts.

Question 4 (b) asked candidates to suggest why systems of land ownership impact on food security. Most of these responses offered relevant material but in terms that were too general but candidates were able to define food security. Comments were made that land ownership could be a problem to food production but did not set this in real world contexts.

Question 4 (c) (i) was answered successfully by the majority of candidates. Some did not show their working or did not give the mean to one decimal place.

Question 4 (c) (ii) asked candidates to analyse reasons for contrasts in cereal production in selected countries using evidence from the table. This latter instruction in the question was too often ignored although the more convincing responses made good use of variations amongst the countries and quoted figures directly from the table. Physical factors featured prominently in answers such as climate and soils. Economic factors were also mentioned by many and were based on the contrasting economic resources of the selected countries with the more authoritative candidates able to categorise these (AC, EDC, LIDC).

Question 4 (d) asked candidates to evaluate the extent to which the level of economic development is the key influence of food security of places. Most candidates were able to discuss effectively making the point that there does exist a fundamental correlation between economic development and food security. They recognised that ACs and many EDCs have low levels of food insecurity and that it is amongst the LIDCs where food security remains a serious issue. Evaluation came from some candidates when they discussed contrasts in food security amongst some AC populations. In this context attention was drawn to people living in urban inner areas or peripheral housing estates whose food insecurity can been identified more in terms of quality than quantity. Other factors that were highlighted as influencing food security were disasters such as earthquakes with the Kashmir and Nepal events being quoted.

Section B – Synoptic questions

Question 9 (a) looked at the impact food production methods can have on human characteristics of places using a text extract as the resource. Overall, few candidates made as much as they might of the text's content. Changes highlighted in the text such as the loss of trade in the market town and in declining agricultural employment were not often picked up and related to the human characteristics of places even though the text identified changes to the inhabitants of the valley. Comments about socio-economic or cultural characteristics were rare.

Question 9 (b) asked candidates to examine how physical factors influencing landscape systems can influence food production. Responses tended to focus on climate which offered a wealth of material but too rarely did an answer include detail such as precipitation annual totals and seasonal distribution or temperature and length of growing season.

Section C

Question 17 was answered by very few candidates. Their examinations of the extent to which food security can impact on the physical environment tended to focus on issues to do with soils

such as salinisation, the reduction in biodiversity and effects on water courses such as excess fertiliser run-off and eutrophication.

Question 18 asked to what extent are increased risks to food security from desertification due to human activities. Those answering knew the basics of the process of desertification and were able to discuss both human and physical factors. However, the complexity of the process was not well understood resulting in less than convincing evaluation. In this respect the role of poverty, poor farming practices, civil unrest and war for example were not often considered.

Option 2.5 Hazardous Earth

Section A

Question 5 (a) asked candidates to explain differences between explosive and effusive eruptions. The use of relevant terminology was generally effective but too often responses offered 'mirror' points, for example explosive eruptions tend to be violent while effusive have limited explosive power. Most candidates knew the difference in the chemistry of the magma, explosive acid - effusive basic. However, few recognised the differences in frequency of eruption and it was surprising that more responses did not mention the difference in location, explosive at convergent plate boundaries while effusive at divergent plate boundaries and hot spots.

Question 5 (b) asked for suggestions as to why flooding can result from earthquake activity. Most candidates used coastal flooding resulting from a tsunami in their answers and in addition some referred to liquefaction and or damage to infrastructure such as water pipes. There were also occasional references to flooding resulting from dam failure caused by ground shaking or displacement. There were responses that clearly knew much about the consequences of floods, in particular some wrote at length about the 2004 Boxing Day Indian Ocean or the 2011 Great East Japan events. However, the question asked 'why flooding can result from earthquakes' so the focus for more convincing responses was on the mechanisms that cause flooding.

Question 5 (c) (i) was answered successfully by the majority of candidates. Some did not show their working or did not give the mean to one decimal place.

Question 5 (c) (ii) asked candidates to analyse changes in the distribution of the % of very small ash particles using evidence from the table. This latter instruction in the question was too often ignored although the more convincing responses made good use of variations with increasing distance from the volcano vent and quoted figures directly from the table. It was always encouraging when a candidate began with a simple direct statement as to what the overall pattern was, that is with increasing distance from the volcano vent, the % of very small ash particles increased. Effective responses often offered points such as the force of the eruption would have lifted ash particles to considerable heights in the atmosphere. Winds would then have carried the ash particles away from the vent with the larger and heavier particles settling first and the very small particles being carried further away. Once on the move, these very small particles require little energy to keep them aloft.

Question 5 (d) asked for a discussion as to the extent to which risks posed by tectonic hazards have reduced over time. Candidates were keen to demonstrate that risks have indeed reduced over time, quoting advances in monitoring and prediction due to technology such as satellites and equipment such as tilt meters and seismometers. The benefits of aseismic building design were advanced as being significant and many candidates drew attention to the minimal impacts as regards building collapse during the 2011 Japanese earthquake. Too often, however, candidates were so taken up with giving detailed descriptions of aseismic techniques, especially those concerned with buildings, that the time element in the question was forgotten. Responses were greatly helped in their authority if they contained some comments about what is meant by risk. The risk equation was deployed by only a few candidates and yet if offers a valuable guide to the issues to discuss, such as the magnitude of event and the capacity of a population to

cope. There were those who were explicit in their evaluation that even the most prepared and resilient societies are at risk from high magnitude events. They cited Japan in the context of the 2011 earthquake but also offered some speculation regarding southern California, if or when a high magnitude earthquake were to strike.

Section B – Synoptic questions

Question 10 (a) used a photograph of Haiti in the aftermath of the 2010 earthquake which showed locals assembled outside an aid centre being watched over by an armed UN peacekeeper. Candidates were asked to suggest how tectonic hazards can influence the informal representation of a place. It was encouraging that the vast majority of candidates knew what is meant by an informal representation of a place and many offered well-developed ideas about the various constituent elements in the photograph. These included the graffiti in the background, the need for the arming of the peace-keeper and the nature of the crowd of Haitians. Candidates were, by and large, sensitive in their interpretations of the informal representation the photograph offered.

Question 10 (b) asked for an examination of how volcanic and earthquake activity can influence landscape systems. For some, this was an opportunity to describe the complete destruction of a landscape due to tectonic activity which had potential but required more secure knowledge and understanding than most of these candidates possessed. Generally, candidates were not that convincing in their linking of their landscape system with tectonic activity. Too few mentioned geology such as the influence of resistant igneous rocks on landforms and or processes. Present day volcanic activity can result in 'new' material entering a landscape system such as a lava flow at the coast while eruptions under ice can result in jökulhlaups carrying vast quantities of water and sediment.

Section C

Question 19 asked for an assessment of how effectively hazards from volcanic eruptions are managed in countries with contrasting levels of economic development. Candidates were generally secure in their knowledge and understanding of the range in hazards arising from volcanic eruptions as well as the variety of management techniques which potential could be deployed. The real world examples tended to be Indonesia and Japan although there was some mention of Montserrat, Italy and the USA (Mount Rainier and Yellowstone). There were some very convincing discussions of the effectiveness of management techniques with an appreciation of the great differences in resources available in different countries.

Question 20 which was by far the most popular of the pair in this Option, asked for an assessment of the extent to which impacts from earthquake activity vary across countries with contrasting levels of economic development. Candidates knew in some detail the range of hazards posed by earthquakes and it was encouraging to read descriptions of the different types of ground movement such as horizontal and vertical as well as thorough knowledge and understanding of hazards such as liquefaction, tsunamis and landslides. Exemplification tended to come from case studies of Japan and Nepal although there was also mention of Italy and the USA. Candidates tended to be relatively secure in their appreciation of methods designed to minimise impacts from earthquakes although this was all the more convincing when a clear link was established between particular hazard type and actual method. For example, cross bracing on a building is designed to prevent deformation of the building and possible collapse when ground movements occur. It was also encouraging to read thoughtful evaluations of the efforts being made in countries such as Nepal to minimise the impacts of earthquakes rather than simply dismissing efforts of a LIDC as being 'inconsequential'. It was however, quite appropriate for candidates to emphasis contrasts in social, economic and political impacts across the development continuum such as the costs of both the Nepal and Japanese earthquakes of 2015 and 2011 respectively.

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