

CARIBBEAN EXAMINATIONS COUNCIL

**REPORT ON CANDIDATES' WORK IN THE
CARRIBEAN ADVANCED PROFICIENCY EXAMINATION®**

MAY/JUNE 2014

GEOGRAPHY

**Copyright © 2014 Caribbean Examinations Council
St Michael, Barbados
All rights reserved.**

GENERAL COMMENTS

There were 2134 candidates writing the May/June CAPE Geography examination in 2014. The number writing Unit 1 was 1126 while 1008 wrote Unit 2. Overall, performance on Unit 1 was better than Unit 2, particularly in Paper 02.

Performance in the compulsory map reading section improved in 2014. Also this year there were considerable improvements in the responses given in the modules on Hydrological, Fluvial, Coastal and Limestone Environments as well as on the Development and Disparities in Development. There was also a small but noticeable increase in the marks earned in the analytical parts of the questions. However some candidates, who were less well-prepared, persisted in writing descriptions where explanations were required or they did not supply adequate elaborations after correctly identifying the factors required in the response.

DETAILED COMMENTS

UNIT 1

Paper 01 – Multiple Choice

Paper 01 comprised 45 multiple-choice items with 15 items assessing each module across the three cognitive levels — Knowledge and Comprehension, Application of Knowledge and Practical Skills.

For Unit 1, the mean percentage score was 60 with a standard deviation of 6.6. For Unit 2, the mean percentage score was 60 and the standard deviation was 6.1.

Paper 02 – Free Response

Section A

Question 1

Specific Objectives: Module 1 – 13; Module 2 – 7; Module 3 - 8 - 9

Candidates were presented with a map extract of the island of Nevis on a scale of 1:25 000. In Parts (a) (i) and (ii), they were required to describe the distribution of population on the island and to outline reasons for the distribution. Most candidates earned marks for describing the uneven distribution. The main town of Charleston had the densest concentration of population while other linear settlements were arranged along the roads connecting outlying villages such as Cotton Ground (3398) in the north and Market Shop (3993) in the east. The south of the island was sparsely settled. Candidates also earned marks for describing the sparsely populated interior and giving examples of the isolated farmsteads. Responses could have been better formulated if candidates had reflected on the fact that describing the distribution of the populations (even, uneven, sparse, clustered) is not exactly the same as describing settlement patterns (linear, nucleated or dispersed).

The reasons for the population distribution were varied and included relief, accessibility, transport, economic activity, administrative function and the presence of the volcanic hazard in the central

highlands. Candidates were to outline any three of these reasons. There is concern that too much time was spent in long descriptions rather than stating and giving one elaboration on each of the three reasons. The command word *outline* suggests that not many details should be provided. Candidates are advised to read the entire question before attempting a response. They must use the mark scheme as a guide to how much is required for an adequate response.

Part (b) required candidates to draw a sketch map of the area indicated by the values on the grid provided. Highest marks were awarded to candidates paying attention to details such as using the grid to estimate the position of the coastline and the course of the Camp River. Additional points were awarded for including a key and title. Inserting the stream order for the tributaries in the Camp River proved to be challenging as a few candidates were unfamiliar with the concept of stream ordering. Most of the successful candidates ordered the stream utilizing the more familiar Strahler model and points were also awarded to the few candidates who accurately utilized the Shreve model. A major concern arising from this assessment is that some candidates were not able to accurately orient the sketch of the river as they indicated that the Camp River was flowing south rather than north to the sea. They erroneously explained that the river was flowing south from the sea into the mountains into an internal drainage system in the island. This was clearly a failed concept as no river flows from the sea to the mountains.

Part (c) required candidates to describe the drainage pattern evident on the entire island of Nevis. They earned high marks on this question as the overall radial pattern was most evident on this island where outward flowing rivers flow down the steep slopes of Nevis Peak which is located in the central mountainous region. This answer could have been enhanced by naming specific rivers and giving their directions of flow. More discerning candidates described the incised upper reaches and correctly described these simple narrow valleys as examples of parallel drainage. There were also manifestations of dendritic drainage in some lower river valleys such as Camp River, Kitt Ghut and Grandee Ghut where the tributaries joined at acute angles. Candidates obtained no marks when they identified and described river patterns that were not present on the map.

In Part (d), candidates were required to prepare a hazard assessment for a proposed housing development in the flat coastal area south of Charleston. Part (d) (i) asked candidates to identify three hazards that could possibly affect this low coastal area. *Flooding, storm surges, tsunamis and volcanic hazards* were all acceptable answers. Part (d) (ii) required the description of effects of any one of the hazards identified in Part (d) (i). These effects included health and environmental problems affecting the proposed housing development. Candidates lost marks for not elaborating on the effects of the hazard. Part (d) (iii) required candidates to suggest strategies for hazard preparedness and mitigation for the area. This was done successfully by candidates who cited strategies such as *geophysical surveys, building codes, sea-wall, regular maintenance of drainage channels, educating residents, and developing evacuation routes*, as well as *maintaining regulatory oversight of the area*. Better responses elaborated by including an explanation of how the strategies prepared the future residents for or mitigated against the hazard.

Section B

Module 1: Population and Settlement

Question 2

Specific Objectives: Module 1– 5, 8

Part (a) (i) required candidates to respond to questions relating the Demographic Transition Model (DTM) to components of population change, namely the birth and death rates of selected countries. Most were able to read the axes on the graph and correctly identify the demographic stage for the countries listed.

Part (b), which required candidates to distinguish between the terms *non-renewable* and *renewable* resources using appropriate examples, was well done by most candidates. However, less prepared candidates seemed unfamiliar with the definition of the terms.

Part (c) required candidates to critically assess the usefulness of applying the DTM to less developed countries (LDCs). The examiners expected candidates to provide a balanced debate on the positive and negative aspects of applying the model when attempting to describe changes in population in developing countries. Better prepared candidates stated that *the underlying assumptions of this and other models have changed, namely, there is the change in world economic conditions, the New International Division of Labour and the influence of globalization which create pressures on the population within developing countries causing differences compared to the eurocentric DTM model. Improvements in medicine and hygiene as well as urbanization* were also cited as possible reasons why the underlying assumptions of the model no longer apply and it is therefore less useful for predicting population change. Several responses only indicated the uses of the DTM to developing countries. Still other candidates simply described in detail the characteristic of the model and did not relate it to the question. They therefore scored low marks.

Part (d) proved to be very challenging. Many candidates were not able to make the link between population and resources based on the quotation given. The quotation was a reference to Ester Boserup's optimistic view that innovation would allow for increased food production for a growing population.

Question 3

Specific Objectives: Module 1– 4, 11

Parts (a) (i) and (ii) asked candidates to show working as they calculated the percentage of the population in the economically active age group (45.2 per cent) and the youthful age group (51.8 per cent). A few candidates did not add the required age groups presented in the table to create the overall percentage for these groups. Otherwise, the response to this question was good.

Part (b) required candidates to describe two ways in which the patterns of land use in the cities of LDCs do not usually conform to Burgess' Concentric Model. Better constructed answers first gave an outline of the Burgess Model as one that describes a city growing outwards in a series of concentric rings with the innermost part representing the oldest, heritage and poorly developed segments while

the outer edges represent the newest suburbs and outlying developments. Candidates were then expected to compare this pattern with what obtains in cities in the developing world including that the underlying assumption of a featureless plain may be absent; the wealthy prefer to live in the mountains while in some countries these spaces are captured by the poor; the distorting influence of transportation corridors; as well as the fact that many cities are multifunctional resulting in specialized zones favouring the multiple nuclei theory. Some candidates were able to compare the South American city model with the Burgess model.

In Part (c), candidates were asked to analyse factors that account for the greying population in Japan. They correctly described changes in the structure of the population of Japan because of the low and declining birth rates, the low death rate and the high life expectancy. However, they did not always provide reasons such as: improvements in health care causing the ageing population and growth in dependency ratios; greater education and career opportunities for women as well as access to birth control; the expense of raising children in cities; and the cultural shift away from the agrarian to urban households which require less labour and fewer children. Some responses strayed from the question which lowered the overall marks earned.

Module 2: Hydrological, Fluvial, Coastal and Limestone Environments

Question 4

Specific Objectives: Module 2 – 1, 3, 5, 6

This was the more popular question in Module 2; 75 per cent of the candidates attempted a response.

In Part (a), candidates were presented with a compound line graph of the average water budget for a location in South America. They were asked to (i) identify one month with a negative water balance, that is, where evapotranspiration exceeds precipitation; any of June, July, August or September would have sufficed. In Part (a) (ii), candidates correctly stated that *recharge occurs in October or November*. Part (a) (iii) required a description of the water budget during January to May. Candidates were expected to state that storage or runoff increased as precipitation exceeds evapotranspiration from January to May.

In Part (b) (i), candidates were asked to outline ways in which a fall in sea level would affect rivers in their (i) longitudinal and (ii) cross-sectional profiles. Most of the responses were unacceptable. Expected responses for the change in the longitudinal profile were as follows:

rejuvenation would occur and cause disruption of the equilibrium state of the graded profile resulting in steeper gradient causing greater vertical erosion and deposition in lakes;

the development of knickpoints marked by waterfalls with gorges and canyons; and

the possibility of deltas with the increased sediments from erosion, existing deltas could be extended. The changes to the cross-profile were expected to include deeper channel beds in the lower course, steeper banks, removal of deposited bedload, incised meanders and the development of river terraces in the flood plain.

In Part (c), candidates were expected to discuss the factors that affect the volume of river discharge. These factors included variations in climate, shape and size of the basin, geology of the basin and human land use. This was relatively well answered. Candidates were also rewarded for including well annotated diagrams.

In Parts (d) (i) and (ii), candidates were asked to explain the changes to coastal landforms by wave action and weathering. The processes of wave erosion were well addressed with change to the cliff resulting in the development of bevel notches, caves, arches and stacks. Well-labelled diagrams added clarity to the responses. There appeared to be some hesitation with the idea that weathering occurs on the coast. Sub-aerial weathering on the coast include: salt crystallization as haloclasts develop in the cracks, adding stresses to the rocks; carbonation in limestone cliffs; and soil forming process on the top of the cliff weathering its surface and making it prone to further action by the waves and mass wasting such as rockfalls and landslides, which would lower the surface.

Question 5

Specific Objectives: Module 2 – 2, 5, 6

In Part (a) candidates were asked to respond to the sketch of a geological map which showed coastal landforms along an irregular coastline. They were asked to (i) name the features formed on resistant rocks and (ii) state the names of less resistant rocks. The expected responses were the stack and headland/point which were projecting out to sea. The rocks in the bays were less resistant and included shale, millstone grit and alluvium.

Part (b) required a discussion on how the rise and fall of sea level influences the formation of submergent coastlines and emergent coastal features. Candidates explained the formation of the dalmatian (Pacific or concordant), the Atlantic (transverse), fjords and fjards, estuaries and rias. Raised or fossil beaches, abandoned cliffs and sand dunes, raised reefs and wave cut platforms, mud and tidal flats were features found on emergent coastlines. The performance was poor as this part of the syllabus appears to be little known or understood.

Candidates were required to describe surface features found in limestone regions for Part (c) (i), (ii) and (iii). These were well described with commendable diagrams included. The better responses described rather than explained the formation of the features, as required in the question. Limestone pavements are flat and sometimes devoid of vegetation but the presence of micro features such as runnels and larger features such as clints and grikes makes this a treacherous landscape. The gorges were narrow steep sided valleys marking the sites of deep incisions in the landscape. The floor of the gorge could retain evidence of roof collapse and the presence of a river or dry valley. Resurgent streams appear where underground rivers reappear on the surface. They could mark the limestone boundary with less permeable rocks.

Part (d) required candidates to fully explain why swallow holes develop in limestone regions. First the candidate were to define swallow holes as vertical or near vertical shafts which appear to be sites where joints were widened allowing the surface water to flow underground. Chemical solution, limestone structure, fluvial activity and subsidence are all responsible for the formation of this feature. A few candidates cited the lowering of the water table due to prolonged drought, fall in sea level or rise of the land as other possible explanations. Adequately labelled diagrams were credited.

Module 3: Natural Events and Hazards

Question 6

Specific Objectives: Module 3 – 3, 4, 5, 6

Part (a) (i), (ii) and (iii). Generally the better prepared candidates identified the earthquake waves as Primary waves (Y) and Secondary waves (X). However many could not identify the waves as there appeared to be a lack of understanding of the diagram provided. Candidates were to interpret the diagram rather than rely on previous knowledge to figure this practical segment of the question. The expected response was that the Primary waves (Y) would arrive first because the particles move in the same direction as the movement of the wave.

Part (b). Candidates were to describe the processes responsible for the formation of oceanic crust. They could have written about the fracture of existing crust due to divergent tensions above the ascending limb of mantle convection currents or of a hot spot in the mantle. The crust is spread apart at divergent zones such as mid-ocean ridges and new semi-molten rock material from the mantle – magma - ascends, cools and solidifies to form new ocean crust.

Part (c) asked candidates to explain why some tectonic plates subduct and others do not. Better responses began with a definition of tectonic plates as segments of the earth's crust which move relative to each other. The response then addressed the chemical composition of the plates and their direction of movement. The plates are classified as oceanic or continental based on their chemical composition with continental plates having greater silica content (sial). Oceanic plates have less silica and contain denser minerals from the mantle, such as magnesium. One of these denser plates will always sink when convergence occurs between oceanic plates or between ocean and continental plates. When convergence occurs between continental plates there is no subduction instead the less dense silica -aluminium compounds (sial) will be distorted and folded upwards to create fold mountains. No subduction occurs at divergent and transform zones because the plates are moving along or away from each other.

In Part (d) the candidates were asked to write on the value of fold mountains. Expected responses were that these are regions of high relief that are usually the sources of large rivers providing fresh water and HEP. Their mountain passes would shorten journeys facilitating transport networks. The cooler, wetter climate and steeper slopes in these regions have been developed for tourism as well as farming in cooler temperatures because of altitudinal zoning of the climate. Minerals such as gold and silver ores and semi-precious stones are usually found in the interior of these mountains. They usually demarcate important international boundaries which mark the limit of the natural and physical resources of a country. Most candidates were able to score well on this question.

Question 7

Specific Objectives: Module 3 – 2, 3, 5, 6, 7

Responses to this question were not as good as those provided for Question 6. The stimulus for Part (a) was a flow diagram illustrating the cycle of waste resulting from the distribution and consumption of manufactured products. Some waste is generated during production and go directly to final disposal. Along the chain of product distribution and consumption more waste is generated but some

of these materials are re-used, recycled, or re-purposed which may return the materials to the distribution and consumption chain. Finally all materials used in the manufacture and consumption of products will be taken to final disposal.

In Part (b), the candidates described causes of global sea level rise. The expected responses were the melting of glaciers and polar ice caps as well as the thermal expansion of warmer sea water. While the first factor was well known the second was not. Candidates did not elaborate in their answers. Poorer and ill-informed answers related isostatic changes which are localized and not global sea level changes.

In Part (c) candidates were required to assess measures that occurred before and after a major disaster such as flood, earthquake or volcanic eruption in a named country with reference to the five stages in the disaster management cycle. Only few candidates appear to have prepared case studies on this topic, as required in the syllabus. They were able to describe the disaster and then relate the case to the stages in the hazard management cycle before and after the occurrence. They earned full marks. Marks were not awarded to those ignoring the request to write on floods, earthquake or volcanic eruptions and instead presented cases on hurricanes which is not a hazard listed in the Unit 1 syllabus.

Part (d) required the candidates to suggest possible reasons why there is a critical period of 48 to 72 hours after a severe earthquake event. The majority of candidates were able to give reasons but did not provide elaboration to earn maximum points.

Paper 031 – School-Based Assessment (SBA)

Overall, candidates made more informed choices of research topics. Most studies were rightly selected from among the specific objectives in the CAPE Geography syllabus of 2010. However a few studies strayed off the syllabus, for example, a study on the causes, impacts and solution to flooding is much too broad a study and in particular, the section on the solution to flooding is not on the syllabus, as are studies on the impact of hurricanes, oil spills as hazards and measures for coastal management practices. Please read the syllabus for the specific objectives, content areas and the recommended activities on a topic of interest before finalizing the study.

There was an improvement as most studies prevented the unnecessary loss of points through presenting cover pages that contained the name of candidate, candidate number, date and title of the study. Only a few candidates lost points for not presenting a cover page. The pages were generally well stapled together.

Of concern is that some titles of the studies are still written as only a phrase that lists the topic rather than writing the entire name of the study. Take the time to write a coherent title which includes a specific study, the name of the territory and the chief method used in the analysis of the study. The best titles of studies were written in the form of a question and included the name of the specific town, river or beach, etc., and the country/ territory where the study was conducted. For example - An investigation of how the population structure in the village of Belair, Trinidad has changed during 2000 to 2011, using population pyramids.

The Statement of Purpose was done satisfactorily when it included the specific skills from among those listed on Page 37 of the syllabus. The purpose sets the frame for all further work on the study

and care must be taken to develop these paragraphs adequately. An introduction that states the background for the study such as a significant event or an interesting feature on the topic that occupies national attention such as residential flooding or problems of urbanization or migration are all topical issues. A reference to the geographical treatment of the topic such as a theory or model should follow with guidance from CAPE level text and methods books. Finally determine the research questions that this study will try to find out.

It is not sufficient to write data collection as the Purpose of the study. For example, some candidates stated that the purpose of the study is to conduct a questionnaire survey of the population in a village. This is not a purpose but a method employed to answer a research question. The candidate is studying a research question such as, 'Were there changes to the population structure between 2000 and 2011 in Town A in Country Y using survey and census data' or 'Why has the population structure changed during 2000 to 2011 in Town A in Country Y'? They may relate this research question to the Demographic Transition Model which analyses the impact of such changes on birth rates and dependency ratios. In order to answer the research question and achieve the purpose of the study candidates will collect data that includes collecting primary data in a questionnaire survey and secondary data from the Statistical Offices or the World Population Bureau database. They may then display the resulting data on population pyramids to compare the time periods, or changes within sections of Town A or apply statistical techniques to calculate for example, dependency ratios or correlate variables on scattergrams. They may even present information on triangular graphs or proportional circles divided into pie charts that are placed on base maps. The possibilities are endless.

Selecting the methods for the study is crucial for achieving maximum marks. For each of these research questions consider what type of primary and secondary data should be collected. Include a picture of the candidate in the field using equipment to collect the data. If using a questionnaire, it must be well designed and a copy placed in the Appendix. Sections of the Questionnaire should reflect specific aspects of the study. About 5 questions could help to establish information for each of the three or four research questions. For example, perception of flooding should include sections on personal, community or government responses to the hazard based on the hazard management cycle, that is, what was done before and after the flooding. Too many studies on perception are not using rating scales or not cross referencing the perceptions with facts. For example, the perception of the survey population may be that flooding occurs four times for the year but compared to secondary data in the form of official records at the Regional Corporations there may have been only 2 serious flooding events in the last five years.

Some successful candidates write the specific methods used to assess each of the research questions. They may even include a reason why these methods were chosen. They might also state why the sample locations were chosen.

Limitations of the study should best be placed at the end of the methods section.

Illustrations were neatly drawn but too many lacked complete titles, labels or appropriate scales on the Y-axis. Also include the source of data or of the illustration under the graphic. While there was a noticeable improvement in the choice of graphs there were still candidates who inappropriately used line graphs to illustrate discontinuous data that were better presented on bar graphs. More of the photographs were labelled or annotated but most maps were still included only to display location of the study area. Remember that maps may also be used to identify sample locations in the Methods section and to present the results of the study such as bar graphs, divided circles or proportional

circles on the sites of the data collection which would facilitate spatial analysis of the findings. Aerial photographs and satellite imagery (including from Google Earth) could be used in description and analysis especially when the relevant parts are labelled to illustrate study information. Please note that photocopied maps and charts are not given credit. Vary the techniques used to present data such as table, chart, graph or picture. Many of the topics at CAPE level include specialized graphs or charts and these should be included. Remember to include the basic conventions of title, scale, key and arrow to orient the directions on maps.

Many candidates rightfully made the effort to integrate the maps and diagrams within the text and referred to them before and after they appeared in the text. Generally, Description of Findings was satisfactorily done by those using primary data. The description of secondary data was often not thorough and at times there appeared to be a lack of understanding of the concepts being presented.

Analyses and Discussions remain the weakest parts of most studies or were absent entirely from the reports. As with former years, when Data Presentation was combined with Analyses and Discussion there was a tendency for the weaker candidate to describe the data only and not provide analysis and discussion. Superior candidates were able to combine these sections but for other candidates it is considered wise to separate these sections or provide clear subheadings and to give equal treatment to these sections as they carry the most marks.

When analysing the data several candidates did not make inferences, show connections, give reasons for the patterns formed or for any changes or deviations in an expected phenomenon described in the textbooks, theories or models. This section could be improved if they related the specific research questions and objectives presented in the Purpose of the study section to the findings and the literature that they had read on the topic.

There were fewer candidates who were not making use of relevant geographical terms. Their performance in this regard reflects an absence of reading on the topic and was shown in the scant bibliographies that contained only newspaper articles, wikis or CSEC level textbooks.

Candidates are required to read Advanced level textbooks, journal articles, and consult authorized websites for example, CDEMA, the Meteorological Office, Statistical Office or the World Population Bureau for information in support of a study of flooding or population change. CSEC level textbooks do not provide the theories, models, illustrations or discussions that would help to inform a CAPE study and should not be used. Consult the bibliographies in the CAPE Geography syllabus for lists of relevant reading material. The bibliography should include reference to at least three CAPE level textbooks, a geographical methods book, authorized websites and other specialized information.

The CAPE syllabus contains reading lists that are written in the accepted format for the bibliography. Candidates are also advised to review the APA and MLA websites for information on acceptable bibliography formats, and further information on how to list maps, atlases and internet sources. Note that the bibliography lists are presented in alphabetical order and are not bulleted or numbered. They contain specific author information by last name and first initial only. Also provided are year of publication, title and publisher information. The titles of books, newspapers and magazines are underlined or written in italics. The entries in the bibliography must follow a consistent format.

The conclusions were generally fair with the best making reference to the Purpose of the study to determine if each research questions was answered satisfactorily. Remember that this is a small scale

study so do not generalize the findings to conclude that national level changes are evident or that a theory was disproved when there may well be extenuating circumstances that would have produced the results obtained. The conclusions should not be generalized beyond what was found for that particular area and time of the study.

Too many recommendations were unsatisfactory. Recommendations should be based on the conclusions of the study and suggest improvements on the methods used to collect and present data.

Paper 032 – Alternative to School-Based Assessment (SBA)

Private candidates write this paper instead of submitting an SBA. They are required to respond to three structured questions which parallel the skills required in the SBA. Six of the ten registered candidates wrote the examination. They performed better this year as the mean score was 30 per cent in 2014 compared to 20 per cent in 2013. There is room for improvement.

Question 1 required the candidates to prepare a table showing the calculation of cumulative income over quintiles of a population and use the information to construct a Lorenz curve. This was not done. In Part 1 the candidates seemed not to know that the income must be added to create the cumulative distribution of income needed for construction a Lorenz curve. In Part (ii) the candidates could not construct a Lorenz curve because of the incorrect response generated in the previous Part (a) (i). Finally in (a) (iii) the candidates were asked that state that the term used to describe the distribution used in constructing the Lorenz curve for the quintile incomes as a cumulative distribution.

Part (b) required the candidates to calculate the year in which the world's population would double assuming the growth rate remains the same. This is calculated by dividing 70 by the growth rate (1.3) and then adding to the date (2011) = $3.8 \text{ years} + 2011 = 2065$.

Part (c). Candidates were expected to state that the largest age group in the Afro-Caribbean population in Britain in 2007 was the 35 - 49 group of males and females. There is a relatively narrow base indicating few children and small numbers are found in the 60 – 74 age groups. While the population is balanced between males and females there is a tendency towards an ageing population with a high proportion in the 65+ age group. This was well described as the candidates seemed very familiar with population pyramids.

Candidates generally scored lowest on Question 2. Part (a) required them to describe measurements they would take along a stretch of the coastline. Describing measurements such as wave period, wave frequency and wave height were acceptable.

Part (b) (i), (ii) and (iii) required a definition of the term stream discharge, stating the formula for measuring stream discharge and identifying two measurements used in calculating the hydraulic radius.

Candidates did not earn marks in this question. Clearly there was under preparation of this topic.

In Part (c), candidates were asked to identify the karst landscape with evidence such as the swallow hole depicted with the adjacent jointing in the rocks, the clearly defined bedding planes, the sparse vegetation and the small cave in the background. Most of the candidates were not able to identify this landscape.

Question 3 focused on hazards. Candidates were expected to classify and then calculate the disasters occurring as a result of tectonic and atmospheric conditions. They were then to describe the steps taken in preparing a flood hazard map. Most candidates only described the first step of collecting data and did not supply other information such as hazard mapping, vulnerability assessment and risk assessment to assign values to the risk map. In Part (c) the strategies that government should adopt to mitigate the effects of river flooding in high risk areas was a better attempt.

UNIT 2

Paper 02 – Free Response

Section A

Question 1

Specific Objectives: Module 1 – 4, 11 Module 2 – 9; Module 3 –9

This question was compulsory and assessed practical and map-reading skills. Generally the performance of the majority of candidates writing this unit was fair.

Part (a) was set on a map extract of Sauters, Grenada at 1: 25,000. It was well done. Many candidates could state types of economic activity and locate these activities utilizing grid references. They were also able to suggest reasons for the development occurring at Sauters and outline ways that the water from the Antoine river may be used. The area seems to support farming at 3945 and 4045 as well as industry with the rum distillery at 4542 and the Nutmeg station at 3945. Limited economic development in the southwest area results from the rugged nature of the land making the steep slopes and dissected terrain difficult for construction and for laying a road. This region is difficult to access and its isolation means that there are few services to support a population.

Sauters is developed in a wide sheltered bay that could be used to promote external trade. Little St Patrick and St Patrick rivers could have provided fresh water and the high promontory could have provided a defensible position led to the development of a road network and for construction of homes.

The water from the Antoine River could be used for domestic purposes, irrigation and agro-processing. Full marks were earned for including map evidence such as naming a specific area of use in the river basin.

Part (b) provided candidates with an incomplete map and asked them to use an appropriate technique for displaying variation in temperatures. Candidates performed poorly on the part of the question. They seemed not know what to do. The data were to be interpolated to produce isotherms – lines joining places of equal temperature. This interpolation introduces some inaccuracy to the finished map as patterns may vary somewhat. Isolines can be used to show other elements of weather including rainfall, pressure, sunshine and cloud cover. The isopleths map of the temperature can be used to infer reasons why the temperatures of Settlements A and B are different. Possible factors include: urban heat island effect around Settlement A as heat retention from concrete, smoke and heat

from households and industry may generate higher temperatures compared to Settlement B which appears to be relatively cooler and located in a wind corridor, open plain or rural settlement.

In Part (c) (i) candidates were to insert the values on the axes of a triangular diagram illustrating the position of LEDCs, EU and MEDCs. Part (c) (ii) asked the candidates to read the diagram and insert the values for these regions in a Table. There was much success as candidates were able to read the graph accurately. Part (iii) was less successful. Some candidates seemed unfamiliar with the use of triangular graphs. There were commendable efforts with the more successful candidates stating that these graphs can illustrate data for three sets of variables. These variables are easily recognized and dominant characteristics are easy to discern but it is sometimes difficult to read the three sets of information and there is the possibility of confusion.

Teachers should note that Question 1 is a practical question and not strictly a mapwork question, therefore candidates may be tested on any practical exercise included in the syllabus.

Section B

Module 1: Climate, Vegetation and Soils

Question 2

Specific Objectives: Module 1 – 1, 4, 5, 9.

The stimulus for Part (a) was a schematic model of a Mid Latitude Low Pressure Depression weather system. There were three fronts present: the cold front – X, the warm front – Y and the occluded/quasi stationary front at Z. Many candidates were not able to identify the weather symbols in this schematic.

Candidates were required to describe the global heat budget in Part (b). They were expected to state that insolation from the sun and re-radiation from the earth changes on a daily basis because of the rotation of the earth and the seasons however there is a general global average of energy that does not vary significantly from one year to the next. There is a surplus of energy at the equator as the insolation is intense whilst at the poles there is a deficit because the insolation is seasonal and dispersed. The high albedo of white ice caps also reflects much of the insolation. Better prepared candidates included that the uneven receipt of the insolation sets up the conditions for the vertical and horizontal transfer of heat energy from the equator to the poles creating the planetary winds and ocean currents.

In Part (c) (i) candidates explained ways in which climate change may be caused. While they were able to explain the impact of human activity causing the release of greenhouse gases, they were less able to explain the variation in receipt of insolation because of the changing solar constant as well as the influence of plate tectonics and mountain building which may obstruct the flow of the planetary winds and ocean currents causing prolonged changes similar to the El Nino and La Nina effects. The plate tectonics could also cause super volcanoes to erupt which would release copious amounts of greenhouse gases to trap more heat or volcanic dust that could cool the planet by blocking out insolation.

In Part (c) (ii) candidates were expected to explain ways in which forest may be used to reduce the effects of global warming. Better candidates stated the importance of afforestation for carbon sinks, development of reserves and national parks as well as the trading of carbon credits. Some difficulty arose as candidates focused their responses only on the function of trees in removing carbon dioxide from the atmosphere.

Question 3

Specific Objectives: Module 1 – 9.

Candidates were presented with a model of the nutrient cycle for a tropical rainforest. They were asked to identify the nutrient store labelled X which represents trees in rainforests, the largest store, the processes indicated by Arrows 1 and 2 were leaching and weathering. The nutrients were lost from the system at Arrow 1 and 6.

In Part (b) many candidates accurately defined soil structure as the way in which soil particles of sand, silt and clay are bonded together to form peds which are then arranged into platy, blocky, prism-like or granular structures. They described one of the sandy, clayey or silty textured soils as one in which that component dominated to affect the movement of water, and hence the amount of leaching of nutrients. Clayey soils are sticky and heavy because of the water retention. The sandy soils feel gritty and are usually dry because of the high porosity. Silty soils feel smooth with intermediate water retention.

In Part (c) (i), candidates were to write an essay explaining ways in which vegetation in temperate grasslands contributes to the characteristics of their soils. The expected answers included that the dominant prairie grasses are perennials which contribute humus to the soil annually. They decay and add nutrients which are stored in the soil as mull. The high organic content gives the soil its black colour, and crumb structure and prevents over drying because of the mulching effect of the humus. The organic content also provides a source of food for soil organisms which aerate, drain and pulverise the soil resulting in ill- defined horizons. Note that an essay must include an introduction and a conclusion.

In Part (d) the candidates described the characteristics of the trees in coniferous forests but were not always able to explain how they were adapted to the harsh environmental conditions in this biome. The conical shape is influenced by the heavy snows and strong breezes. The shallow spreading roots use meltwater on the surface as ground water may be frozen. Evergreen leaves trap sunlight whenever it becomes available in the early growing season and needle-shaped leaves reduce extreme transpiration.

Module 2: Economic Activity

Question 4

Specific Objectives: Module 2 – 1. 7. 8

Overall candidates scored high marks on this question. Part (a) (i) and (ii) required candidates to define the term locational rent and use information provided to calculate the locational rents for two farms. The better candidates stated that location rents were the net profits received from the sale of crops from a unit of land after the costs of production and transport were subtracted. They would have found that farm Z, located at the market, realized a locational rent of \$80 while Farm Z located 30 km from the market received a locational rent of \$20. Less well prepared candidates seem never to have read or calculated the location rent.

Part (b) focused on industrial development from 1800 to 2000. Better prepared candidates suggested reasons for the changes depicted by the primary and tertiary sectors present in a compound line graph. The tertiary sector began the period with only 10% of the workers and this gradually increased but has stabilized in the post-industrial era. The opposite was the case for the primary sector which accounted for 70% of workers but declined to approximately 10% by the post-industrial period. The two curves seem to exhibit an inverse relationship with any displacement being accounted for by the secondary sector.

In Part (c) the candidates were required to define the carrying capacity of a tourist resort and of sustainable tourism while in Part (d) they were asked to examine the effects of tourism in the built and physical environment. This was well done.

Question 5

Specific Objectives: Module 2 – 1, 5.

Question 5 (a), (b) and (c) required candidates to define the terms outsourcing and offshoring. They were asked to complete a flow chart of an industrial system and to explain why manufacturing industries may contribute to pollution of the environment. While there were few who could define the terms adequately, most candidates earned the marks for completing the flow chart and explaining why manufacturing contributes to pollution of the air, land and sea.

In Part (d) candidates earned full marks for correctly explaining why quaternary industries do not cause major industrial pollution. They do not engage in the production and distribution of goods.

Part (e) required candidates to describe the relationship between the functional linkages and agglomeration economies. Marks were lost for not elaborating on these points.

Module 3: Development and Disparities in Development

Question 6

Specific Objectives: Module 3 – 2, 4.

As in previous years the performance on this question was weak. The majority of candidates scored fewer than 30 per cent of the maximum marks. They were not sufficiently prepared for responding to this topic. The concepts appeared unread and therefore unfamiliar. Where they had prepared by reading on this module they were rewarded with very good marks.

Most candidates earned full marks for constructing the compound line graph to represent the data provided in the stimulus material in Figure 6, Part (a).

In Part (b), candidates were asked to classify economic and non-economic indicators. Many were able to identify these accurately.

In Part (c) the candidates wrote an essay to explain why LEDCs are not usually located beyond the second stage of Rostow's model of economic development. Many of the candidates earned low marks because they appeared unfamiliar with the model.

Part (d) was similarly affected as several candidates were unable to adequately discuss the likely impacts of backwash effects on industrial development in the absence of government intervention.

Question 7

Specific Objectives: Module 3 – 4.

The response to this question was unsatisfactory as most candidates earned less than 30 per cent of the available marks.

Candidates were required to compare the amounts of remittances and overseas development assistance as presented in a compound line graph illustrating trends in external financing in less developed countries.

In Part (b) candidates were asked to describe environmental factors that challenge the sustainable development of small island developing states. Many ignored stating the factors and wrote only the challenges of small island states.

Part (c) required the candidates to explain why many LEDCs are slow to adopt appropriate technologies. They seemed unaware of the concept of appropriate technology.

In Part (d) the candidates wrote an essay discussing the merits and demerits of debt relief to Highly Indebted Poor countries (HIPC). The responses were weak as candidates appeared to be short on time. Only the last few paragraphs were relevant suggesting that little time was taken to think through the response before writing.

Paper 031 – School-Based Assessment (SBA)

See the comments made in the section on SBAs under Unit 1 above.

Paper 032 – Alternative to School-Based Assessment (SBA)

This paper is taken by private candidates instead of Paper 031 (SBA). They are required to respond to three structured questions which parallel the skills required in the SBA. There were four candidates registered but only 2 wrote the examination. A candidate scored 40 per cent of the available marks which was an improvement over the previous year but still unsatisfactory. Most of the marks earned related to preparing graphs and charts to present data and in interpreting the charts. However the sections on field and laboratory work continue to elude the best efforts of the candidates. Future candidates can best prepare for this paper by reviewing the textbooks on fieldwork, starting with those listed in the syllabus.

Question 1 focused on the techniques used in planning and recording a soil study as well as the definitions of measurements taken in a vegetation study. Part (a) (i) required candidates to outline the steps for conducting a study of the relationship between soil moisture content and soil texture. Part (a) (ii) required the candidates to prepare a booking sheet for recording the data obtained in the field and laboratory. The candidates either seemed not to know about data recording sheets or gave vague references to any vegetation study, completely overlooking the requirement for a soil study for (a) (i) and (ii). In Part (b) candidates could not adequately define the terms species density, frequency and cover.

The responses to Question 2 were better. In Part (a) the candidates successfully utilized the information provided to draw a line graph of all visitor arrivals in Barbados from July to December in 2010 and 2011. They were able to devise an appropriate scale for the Y- axis and plot the points accurately. In Part (b) the candidates were asked to calculate von Thunen's Locational Rent for three farms given farm data. This was not done satisfactorily and reflects inadequate preparation. Part (c) asked the candidates to name two indicators used to measure gender disparities in education. This could have been related to the percentage enrolment in primary, secondary or tertiary institutions. In Part (d) the better candidate was able to relate pictorial information to the concept of appropriate technology while explaining the use of solar cookers in rural tropical regions. Expected responses included that this is appropriate technology as it is relatively cheap, does not rely on imported fuel oils, avoids the use of charcoal which would further degrade the environment and that it does not pollute the homes with heat and smoke.

The responses to Question 3 (a) were the best of the three questions as the candidates scored over 50 percent. In Part (a) (i) one of the candidates had difficulty working with the key on the map to calculate the average income per capita for Saint Lucia. The other added the range provided which indicated the highest to the lowest per capita and divided by two. In Part (a) (ii) candidates were asked to convert the visual data into tabular format by stating which Parishes were above or below two of the categories. This was not done satisfactorily by one of the candidates. For Part (c) the candidates were asked to describe characteristics of the distribution of income shown in the choropleth map. Expected answers included: the uneven distribution (state where more and where less), highest income around the capital region (state the amounts there and elsewhere), and the lowest income was in the south (below the national average).