

CARIBBEAN EXAMINATIONS COUNCIL

**REPORT ON CANDIDATES' WORK IN THE
CARIBBEAN ADVANCED PROFICIENCY EXAMINATION
MAY/JUNE 2006**

INFORMATION TECHNOLOGY

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GENERAL COMMENTS

The number of candidates sitting this year's examination increased when compared with the number entered for the examination in 2005. The overall performance for this year was slightly lower than 2005. This was true for both the Internal and External examinations.

As stated in the reports for previous years' examinations, the examiners continue to be concerned about the quality of candidates' responses to questions. A majority of the candidates have completely ignored the scenarios associated with questions and therefore their responses were unacceptable. In addition, it would appear that most schools are focusing on the low order skills (Knowledge and Comprehension) rather than on the high order skills (Application and Analysis, and, Synthesis and Evaluation). This is evidenced by the low scores on questions use such verbs as explain, justify, evaluate, examine and distinguish.

The examiners have also noted that questions on web pages have proven to be challenging for most candidates. It would appear that, due to the removal of the development of web pages from the Internal Assessment, a number of schools were no longer providing an in-depth coverage on the topic.

The examiners wish to report that for each question, on both Paper 01 and Paper 02, a few candidates scored full or very high marks. However, there were several candidates who have attempted questions but failed to score any marks. The examiners would like to encourage teachers to pursue the syllabus in an in-depth manner and to ensure that candidates are knowledgeable about a variety of IT tools, both hardware and software, and their applications within the home, school and office.

To address the concerns regarding the poor quality of responses to questions, which use such verbs as explain, justify, evaluate, examine and distinguish, teachers are encourage to include more of such questions on internal examination papers and for homework assignments.

Internal Assessment

A number of centres produced assignments based on outdated guidelines rather than on the amended syllabus (available on the Council's website). Consequently, there were candidates whose reports contain screenshots of web pages.

A significant number of candidates selected technologies that have been around for several decades, for example, cellular telephones. Whilst new model of these devices emerge daily, cellular technology have been around since 1947 and as such, any reference to cellular technology as emerging must be in relation to the latest generation of the technology, for example, General Packet Radio Services (GPRS), Enhanced 3G and Edge. Additionally, a few candidates chose technologies that are outside the scope of the syllabus.

The examiners suggest that candidates are encouraged to select technologies that:

- (a) Have emerged within the past 36 months;
- (b) Relate to information systems (hardware, software and telecommunications, whether infrastructure, tools and services).

The examiners have seen reports, which indicate that a few candidates were confused about what really constituted the "emerging technology". For example, some of the candidates began with a discussion on GPRS, but then gave details about a GPRS capable device. There was very little reference to the GPRS facilitated features of the devices.

Schools are reminded of the following:

- Reports should not be more than 2000 words, which approximates to eight (8), doubled-spaced pages, excluding appendices, table of contents, bibliography, diagrams, tables and graphs;
- All required forms (IT1-3, etc) should be completed accurately. The failure to pay attention to the addition of marks on each candidate's assignment could adversely affect the selection of samples submitted for moderation.

PAPER 01

Section I - Information Systems

Question 1

The question examined candidates' knowledge and understanding of the sub-processes of information processing as well as to test their ability to distinguish between data and information, and manual versus automated information processing. The question was generally well done by most candidates. A number of candidates scored full marks.

For Parts (a) and (b), a few candidates could not clearly distinguish between data and information, and manual and automated information processing.

Question 2

The question assessed candidates' knowledge and understanding of the uses and impact of information technology in organisations. The question was generally well done by most candidates. A number of candidates scored full marks.

Candidates, who lost marks in Part (b), could only provide partial discussion for the problems identified. For example, the discussion focussed on training of staff to become familiar with the system. There were no mention about the cost of training to the organisation, the lost of productive hours (revenue) while staff is being trained, etc.

Question 3

The question was designed to test candidates' knowledge and understanding of components of automated information systems and the interaction between two of the components. Most candidates generally did this question satisfactorily. A few of candidates scored full marks.

For Part (a), most candidates seemed to be unaware that the hardware constitutes the "**tangible or physical**" component of an automated information system, that is, that part which can be seen or touched by humans.

For Part (b), many candidates gave correct examples of devices for the three operations selected. A few candidates identified a microphone as a communication device rather than as an input device, and some storage devices as input devices

For Part (c), most candidates categorised primary memory as a processing device. This is incorrect. Primary memory **temporarily holds** programs and data the CPU requires for processing and, therefore, primary memory is a storage device.

For Part (d), most candidates provided poorly drawn diagrams, omitting the use of -directional arrows (or a bi-directional arrow) to show the interaction (relationship) between the processing and storage devices.

Question 4

This item examined candidates' ability to assess two systems/tools with regards to communicating information by identifying drawbacks of one when compared with the other, and proposing a feasible solution for one of the drawbacks. This question was generally poorly done by most candidates. A few of candidates scored full marks.

In Part (a), most candidates could only identify ONE task/situation that email systems cannot replace when compared with a post office, for example, the inability of email systems to handle tangible items such as parcels and hard currency or to deliver original documentation on which hand-written signatures are required. In addition, a number of candidates overlooked the words "tasks or situations" and simply made a statement, for example, "Email is limited in the number of functions it can do. Post offices can do more."

In Part (b), as a result of the failure to correctly identify a task in Part (a), most candidates performed poorly. A number of candidates, although not identifying a task for Part (a), cited the lack of storage as a reason why email systems could never replace post offices. It should be noted that this constraint is not true for all email systems. Mail servers can store hundreds of gigabytes of messages.

In Part (c), a number of candidates suggested a method, which subsequent to their own arguments, concluded that their response in Part (b) was flawed.

Question 5

This question assessed candidates' knowledge and understanding of the different types of information systems that could be found in a typical organisation, as well as to examine candidates' ability to identify an information system based on a set of characteristics. The question was generally poorly done by most candidates. A few of candidates scored full marks.

Most candidates could neither state which organisational level is the primary user of the named type of information system, nor clearly distinguish between the named information systems. To distinguish between various types of information systems, candidates should focus on the following areas:

- The primary users of the particular system – organisational level (top/executive or senior management, middle management, junior or supervisory management, or staff);
- The type of problems solved by the system – structured, semi-structured, or unstructured problems;
- The type of input into the system – transaction data, processed transactions, other internal data, external data, questions or queries, etc
- The type of output generated by the system – detailed reports, summarised reports, flexible or ad hoc reports, answers.

In Part (c), as most candidates did not know the unique characteristics of each information system, they were unable to correctly identify the type of information system from the descriptions given.

Section II - Information Processing and Presentation

Question 6

This question assessed candidates' knowledge and understanding of the different categories and types of software. The question was satisfactorily done by most candidates. A few of candidates scored full marks.

Part (a) was generally well done by most candidates. However, a few candidates gave responses that suggested that there is a bit of confusion regarding the division of software into categories, for example, providing responses such as "general purpose and operating systems", "specialised and application software", or "general purpose and application software".

Part (b) was generally poorly done by most candidates as they responded with named applications rather than the type of software for example Microsoft Word instead of word processing, MS Excel instead of spreadsheet, etcetera.

Part (c) was generally well done by most candidates. However, a few candidates ignored the fact that they were required to discuss **distinguishing** features and not just any feature of named type of software.

Question 7

The question assessed candidates' ability to examine a situation and identify appropriate software tools that could be used to in providing the solution. Most candidates performed at an acceptable level. A few of candidates scored full marks.

Most candidates were unable to correctly state what "a productivity software tool" was as their response was applicable to any software – "to enhance efficiency and productivity" or "analyst, print or display data". An excellent response from one candidate was as follows:

A productivity software tool is one generally used by any individual and is used to do a variety of tasks.

A number of candidates performed poorly in Part (b) and Part (c). These candidates listed either geographic instruments such as wind or rain gauge, weather vane, seismograph, and Richter scale, or non- productivity software tools such as antivirus, defrag and statistical package. For part (c), there were candidates who correctly identified productivity tools in Part (b), but were unable to clearly demonstrate how the disaster coordinators could use each tool to assist them in the gathering, manipulating or analysis of data, or with the presentation of their findings.

Question 8

The question tested candidates' knowledge and understanding of normalisation, as well as, their ability to examine tables (entities) in standard notation and to state their normal form, with justification. This question was generally poorly done by most candidates. A few of candidates scored full marks.

Based on the poor response, it would appear that most schools did not adequately cover this topic. Most candidates were unaware that "normalisation of data" is a process, which is guided by a set of rules, to ensure that a database is structured in the most efficient manner by eliminating data redundancies and partial dependencies. Some candidates stated that normalisation had to do with data entry, calculation, sorting, problem solving, etcetera. As a result, these candidates were unable to describe two stages of the normalisation process and could not identify or justify the normal form of given entities (tables).

Question 9

This question assessed candidates' ability to select and justify the most appropriate format to present information to a target audience. Most candidates did poorly on this question. A few of candidates scored full marks.

A number of candidates seemed to be unaware of the various formats that can be used to display or present information/data in print to different target groups. Some candidates gave responses such as landscape, portrait, bold, italics, Excel, Word, softcopy, hardcopy, audio, Braille, numbers, etcetera as formats that could be used. These were inappropriate responses. Correct responses include text, tables, graphs, charts, special purpose notations, and graphics.

For Part (b)(i), to display the income and expenditure data for several years, a company could use a table, chart or graph so that its shareholders can view the financial performance of the company at a glance or be able to quickly compare one year's performance against another.

For Part (b)(ii), the architect could use a plan/diagram (graphics) showing the dimensions, layout and position of each room to the Town Planning Department, as the saying goes, “a picture is worth a thousand words.”

It should be noted that a number of candidates provided correct responses to Part (b) despite inappropriate responses for Part (a), suggesting that these candidates did not have an appreciation of the link between the parts and stem of the question.

Question 10

The question examined candidates’ knowledge and understanding of the stages in problem solving and their ability to select the most appropriate software tool and attendant features to solve a real life problem. Most candidates did this question satisfactorily. A few of candidates scored full marks.

Parts (b) and (d) posed some challenge for a number of candidates. For Part (b), the candidates did not provide an explanation for the named stage but rather gave a definition/description of the stage. In providing an appropriate response, the candidate should clearly give a description of the stage and why there is need to have such a stage, for example, a correct response for problem definition would be “clarifying the problem (1 mark) so that a statement of the problem may be articulated (1 mark)”.

For Part (d), most candidates did not give specific features of the spreadsheet or database management software that would be useful in solving the problem, for example, using SUM to calculate totals, AVERAGE to find the average, add/insert rows for new students, add/insert columns for new scores, etcetera. Instead, they identified features such as rows and columns, and perform calculations.

Section III - Information and Communication Skills

Question 11

This question assessed candidates’ knowledge and understanding of role and importance of information in problem solving. Most students generally performed satisfactorily on the question. A few of candidates scored full marks.

Most candidates scored full marks on Parts (a) and (b). However, there were a few candidates who could not provide an adequate response as to what is meant by “information is essential”. They ignored the stem of the question which, if read carefully, served as a guide to answering Part (a). As stated in the introductory paragraphs of the report, some candidates have had difficulty responding to questions requiring justification for their choices. Therefore, Part (c) was poorly done by a number of candidates.

Question 12

This question was designed to test candidates’ knowledge of the characteristics of information and, in particular, its format – structured, semi-structured and unstructured. It also examined the ability of candidates to compare information sources. Most candidates generally did this item poorly. A few of candidates scored full marks.

For Part (a), most candidates performed very poorly, indicating that they were unfamiliar with the concept of structured, unstructured and semi-structured information. Some responses hinted at “data through a channel in a suitable form to satisfy the needs of the user” or “data that is analysed, processed, accurate and meaningful”.

Appropriate responses should include the following:

Structured information is detailed; requires highly accurate, non-subjective data; records a narrow range of facts; is concerned about current and past events; and covers an organisation's internal activities. Supervisors and junior managers make operational decisions using structured information. Examples include records, transactions, and detailed reports.

Unstructured information is summarised; is concerned about past, current and future events; requires subjective data (such as hunches); records a broad range of facts; and covers activities within and outside the organisation. Unstructured information is the opposite of structured information. Top managers (executives) make strategic decisions using unstructured information. Examples include flexible, ad hoc reports, competitive industry statistics, and ideas.

Semi-structured information includes some unstructured information and some structured information. Middle managers make tactical decisions using semi-structured information. Examples include summarised reports, analytical and forecast reports.

For Part (b), a number of candidates did not provide any justification/explanation for what they perceived to be an advantage or a disadvantage. For example, candidates gave no reason to why "a book is considered to be more reliable than a person". To simply make a statement is not a sufficient response when the question requires that the candidates **discuss** an advantage/disadvantage.

Question 13

This question examined candidates' ability to critically evaluate information from a given source. This item was generally poorly done by most candidates. A few of candidates scored full marks.

Most candidates were unaware of the set of criteria that could be used to assess information from a given source.

In Part (b), most candidates did not correctly identify the information sources – newspaper and person (statistician) – and, therefore, their responses were inadequate. For Part (i), some criteria that could be used for the evaluation of the information source are the reputation of the writer of the article and the newspaper itself, the date of the publication and whether the writer had been in Iraq covering the war or just reporting second-hand information. Reputable journalist and newspapers that have published reliable, unbiased information over the years would continue to do so. Publishing on the Internet would not diminish the authenticity of the information. Similarly, for part (ii), if the author of the statistics is a known football statistician or the data was extracted from a FIFA publication or website, then the information should be reliable and unbiased.

Question 14

The question assessed candidates' ability to construct web pages. This question was generally poorly done by most candidates.

Most candidates generally did well on Part (a). However, many candidates gave incorrect responses for Part (b) and as a result failed to score any marks for Part (c). Incorrect responses include high-level and low-level languages, and human languages such as English and Spanish. Some of the languages that may be used to construct web pages are JavaScript, VBScript, HTML and XML.

Question 15

The question tested candidates' knowledge and understanding of hardware and software tools that could be used to communicate information to remote sites. This question was generally poorly done by most candidates. A few of candidates scored full marks.

Most candidates had difficulty in providing correct responses suggesting that either the schools did not cover the topic in-depth or the candidates did not grasp the essentials of communication between an office and remote sites. Other than computers, the telephone, facsimile, pagers and two-way radios are examples of hardware devices that could be used for communicating with remote sites. Any communicating software and interactive online services are examples of software, other than the email system, that may be used.

For Part (c), most candidates simply stated the advantage/disadvantage of the tool identified in (a) when compared with the computer. No explanation was given to demonstrate why it was considered to be an advantage/disadvantage.

PAPER II

Section I - Information Systems

Question 1

This question was designed to test candidates' knowledge and understanding of the software engineering process, including the participants involved and the tools that could be used in the process. The question was attempted by approximately twenty per cent of the candidates and was generally satisfactorily done by most candidates.

In Parts (a), several candidates had some difficulty to clearly state the role of the users in the software engineering process.

In Part (b), most candidates performed satisfactorily and they were able to identify four of the stages of the software engineering process.

In Part (c), most candidates were able to correctly identify and correct the errors found in the diagram. A few candidates knew where the errors were as evidenced by question marks or some other markings on the answer sheet, but somehow they could not explicitly state what the errors were and as such were unable to correct the errors.

In Part (d), most candidate provided responses that were, by a large extent, vague. Most of the responses focussed primarily on the company itself putting in the infrastructure of a wide area network (WAN), rather than using the infrastructure of telecommunications providers, for example, Cable and Wireless, or a government entity (such as TTST). Some other telecoms concerns are

- Availability of service in rural areas;
- Cost of implementing a WAN;
- The capacity of the network to handle demands and expectations of the company;
- The performance and reliability of the network;
- The security of the network;
- The type of services provided – Internet, IP telephony, VoIP, etc
- The number of players in the industry – one (monopoly) versus many (competition)

Question 2

This question examined candidates' knowledge and understanding of the legal, social and ethical issues that could arise from the use of information technology within organisations and the wider society. Most candidates performed poorly. Less than ten percent of the candidates obtained 20 or more marks.

For Part (a), although most candidates were aware that the storeowner was involved in software piracy, they did not name the law that was violated nor did they establish the link between the software and intellectual property and therefore, as such, the law governing intellectual property – the Copyrights Law – protected the work (the software) of the developer. A few candidates incorrectly referred to the law as the “Software Piracy Law”. Part (a)(ii) posed a challenge for most candidates, as they could not identify two benefits of the copyrights law to the software developer.

For Part (b), most candidates responded with a statement of the concerns rather than an examination of the implications of the issue of organisations relying solely on information technology. For example, most candidates stated that obsolescence was a concern, but failed to explain the financial and economic impact on companies if they wish to respond to changes and remain competitive in the market place.

For Part (c), most candidates described strategies that were inadequate to effectively minimise the concerns raised in Part (b).

Section II - Information Processing and Presentation

Question 3

This question assessed the candidates’ ability to distinguish between a spreadsheet package and a DBMS package in their application to solve real-life problems. The item was attempted by sixty per cent of the candidates. Most candidates performed very poorly. No candidate scored 20 or more marks.

Most candidates correctly identified the similarities between the two software packages. Some candidates gave responses that were unacceptable, for example, “both could be used in mail merge”. A more appropriate response would be “data from the DBMS and SS can be imported into a word processor and used in a mail merge exercise”. A few candidates stated that only Microsoft makes the DBMS and SS software packages. This is incorrect.

The responses of most candidates for Part (b) were extremely limited suggesting that these candidates did not have an-depth understanding and familiarity with the features of the two software packages and therefore were unaware of the advantages and disadvantages of the spreadsheet package when compared with a DBMS package. The candidates who provided good responses examined the following advantages and disadvantages:

Advantages:

- Automatic recalculation of data;
- The use of absolute cell referencing;
- Ability to view data and results of computations in the same worksheet rather than having to another option (report module in DBMS);
- Ability to easily generate a plethora of charts and graphs;
- Ability to not only copy and paste rows but also, cells and columns.

Disadvantages:

- Possess no normalisation (relationships) feature to minimise data redundancy;
- Limited data integrity features;
- Extremely difficult to develop software programs using a spreadsheet.

Most candidates produced a table structure, with data, for the design of input screen in Part (c). Therefore, these candidates could not obtain the full marks as table structures do not lent themselves to good input screen techniques such as appropriate headings, instructions, spacing, the use of icons, combo boxes, radio button, and other navigational aids.

Most candidates seemed to be aware of the concept of validation checks, as they were able to identify the data elements (for example, student identifier, subject score, type – exam or class assignment, and subject) for which validation checks could be applied. Unfortunately, many could not describe the appropriate validation check that should be associated with a particular data element. For example, an appropriate validation check for subject score should be “the number must be greater than or equal to 0, but less than or equal to 100”.

Question 4

The question examined candidates’ knowledge and understanding of the relevant considerations that should be examined in order to select the most appropriate software tool (package) for a given task. The item also tested the ability of candidates to select and justify their selection of the most appropriate tool for a given task. Most candidates performed poorly.

For Parts (a) and (b), most candidates misinterpreted the question and therefore gave responses for the stages of either problem solving or software engineering, rather than issues to be assessed when selecting a tool for a given task. Considerations to be examined are as follow:

- Type of analysis to be done (calculation, statistical, forecasting, trend, etc)
- Type of processing (online, batch, real-time)
- Type of data (text, numeric, audio, graphic, etc)
- Type of storage medium (tape, diskette, paper, etc)
- Type of retrieval (sequential, random, indexed sequential)
- Type of reports (detailed, summarised, ad hoc, etc)

For Part (c), most candidates were able to adequately describe two types of user interface, but many failed to show how the interface guides and directs someone in the use of the tool. An appropriate response for a graphical user interface would be as follows:

Consist of menus, icons and controls, which provide not only instructions or options available to users, but serve to initiate actions to be taken by the computer once a selection is made, for example, printing of a document once the user click on the printer icon.

For Part (d)(i), most candidates performed satisfactorily. For Part (d)(ii), most candidates opted for a media player rather the presentation software with multimedia capabilities.

Section III - Information and Communication Skills

Question 5

This question was designed to test the candidates’ knowledge and understanding of information sources, and the steps involved to create, publish and maintain web pages. The item was attempted by approximately fifty per cent of the candidates. Most candidates performed poorly.

Part (a) was generally well done by most candidates, as they identify several information sources. Candidates should be encouraged to provide generic terms rather than a named publication, for example, newspapers rather than “The Observer”.

Part (b) was very poorly done well as most candidates gave responses which focussed primarily on the steps involved in getting the document into an electronic form, that is, moving from a hardcopy to a softcopy, rather than on the steps of designing, publishing and maintaining the web page(s) that would derived from the document.

Part (c) posed a challenge for most candidates. Some candidates describe the underlying problem associated with the errors, but failed to propose a strategy to solve the problem. As stated in the Introduction of this report, it would seem that some schools were not allowing students to gain hands-on experience in constructing web pages as it was no longer required for the Internal Examination. Schools are encouraged to have their students to build web pages/site.

Question 6

This question was attempted by fifty per cent of the candidates. It assessed candidates' knowledge and understanding of the consequences when a company fails to consider the characteristics of information, and their ability to critically evaluate information coming from certain information sources. This question was generally poorly done.

For Part (a), most candidates understood what was meant by the term "characteristics of information" and were able to make statement regarding the consequences when a firm fails to consider the characteristics of information – poor decisions, inability to successfully solve problems, loss of jobs; loss of reputation/credibility; loss of customers' trust; etcetera. However, only a few candidates used examples to demonstrate how ignoring the timeliness, accuracy, completeness, etcetera of information affected a firm.

For Part (b), most candidates did not critique the information sources but rather the statements (information) from the sources. For example, for Part (i), some candidates spoke of the relevance of the statement, but ignored the fact that any organisation or person can place information on the Net, and as an information source, it is un-refereed. However, there are reputable organisations and persons who will publish information on the Net. In such instances, the statements would be considered to be accurate and reliable.

INTERNALASSESSMENT

This project enabled candidates to examine the potential uses and issues related to a particular emerging technology, and to determine its applicability to their environment (school, community, country or the Caribbean region). Additionally, it enabled the candidates to demonstrate skills and competencies from each of three modules.

The candidates who scored high used the sub-headings in the marking schemes of the modules to structure and organise their report and web pages, thereby, focussing on the areas that were relevant to the study.

Some candidates submitted very good papers, indicating that they:

- (a) carefully selected a topic relevant to the specific objectives of the syllabus;
- (b) conducted a thorough review of the emerging technology;
- (c) collected and analysed data that had relevance to their study.

In addition, these candidates demonstrated mastery of the tools used to process and present their findings, and were able to make recommendations that were supported by data.

Some of the more appropriate topics submitted for moderation include:

- 64-bit processing (Hardware: processor)
- Dual-layered disks (Hardware: storage)
- Biometric passports (Hardware: input device – barcode)
- H.264 (Software: video compression standard)

Very popular topics that were inappropriate due to when the technology emerged include:

- Mobile telephones (emerged in the 1970s)
- Global Positioning Systems (emerged in the 1970s)
- Digital cameras (emerged in the 1980s)
- MP3 playback devices (emerged in the 1990s)

However, it should be noted that, where the latest model or enhancement of any of the technologies listed above has emerged within the past 36 months, then the technology would be appropriate, for example, the Motorola Razor for mobile telephones.

The following topics are outside the scope of the syllabus and as such should not be done:

- Airbus A380 (long range commercial/passenger jets)
- Mitsubishi Evolution and Bentley (high-end motor cars)
- Genetic Cloning

Section I - Review of Emerging Technology

Most candidates failed to describe all the details of the emerging technology. Consequently, it was difficult to establish whether the selected technology could really be categorized as emerging in the candidates' environment. A good response describing the technology should ideally include:

- details of who developed the technology
- when the technology was released (or the proposed release date)
- details of the information systems sub-category in which the technology may be placed
- key features of the technology

A statement including an identification of the user's environment (school, community, country, Caribbean region) should also be included.

Some candidates did not identify a comparable existing technology and as such were not able to provide a complete description of similarities and differences. For example, a digital camera was erroneously identified as comparable existing technology to a web camera. A video camera would have been a much more correct response.

As it relates to **potential uses** of emerging technology, it is not adequate just to state the intended function of the device (if a device is being discussed) but rather:

- a) suggest innovative ways how the technology could be used in the user's environment to solve day-to-day problems;
- b) fully describe the suggested potential uses.

Concerning potential drawbacks, candidates may choose to fully explain drawbacks based either on their literature review or on the proposed uses (in their own environment) of the technology.

Section II - Applicability of Technology

This section was generally poorly done. Many candidates failed to recognize the link between Sections 1 and 3 of the project and as such did not collect data that would help to arrive at a conclusion as to the technology's applicability. In quite a few cases, absolutely no data was collected, however, candidates went on to make recommendations that clearly had no data support.

An increasing number of candidates confused data types with data fields. Data types refer to text, numeric, date/time, currency, Boolean, etc whereas data fields refer to the names given to data elements within a table, for example, in a table called student, some data fields could be name, date of birth, gender, address and telephone. The syllabus guideline clearly indicates that marks will be awarded for **identification and justification of ALL relevant data and sources**. Candidates were therefore required to identify:

- the data item that would be collected, for example. the number of persons in the environment that faced a particular problem that would be suitable for solving by the use of the emerging technology
- the data type of the data being collected, numeric in the above example
- the source from which the data could be collected - potential users in the user's environment in this case.

All relevant data and sources identified must be justified for maximum marks to be awarded.

Some candidates collected and analysed data that has little or no relevance to their study. Also, graphs and tables were included in their reports without any justification for their inclusion.

For Data Processing Methods, many candidates erroneously described how the word processor was used to enter, edit and format text that was obtained from web sites on the Internet. This task refers to how the **data** that was collected from the user's environment was processed. For numeric data, this could include tabulation of the data in a spreadsheet, development of a range of formula to compute meaningful indices or simply finding the average of a set of values or plotting a graph. Teachers are encouraged to use the *Recommended Teaching Activities in the Syllabus* to foster an appreciation of the features provided by software tools that may be used to solve a range of everyday problems.

Section III - Summary of Research

This section was also poorly done. In the absence of data collection and analysis in Section II, very little meaningful work could be accomplished in this section. Very few candidates raised any validity issues worthwhile of mention. Of the few that did so, none of them undertook a comprehensive discussion indicating whether the findings were worthwhile or not.

Many candidates failed to identify possible follow-up projects but rather make suggestions (to the developer) as to how the technology could be improved. The intent here is for candidates to identify a project that could be done in continuation of the current research to assess the applicability of the technology in the environment. As an example, a candidate who discussed *Biometric* Passports and concluded that they were applicable to their country suggested that a follow-up project could be "*to assess the potential health risks associated with the use of Biometric Passports*".