CARIBBEAN EXAMINATIONS COUNCIL

REPORT ON CANDIDATES' WORK IN THE CARIBBEAN ADVANCED PROFICIENCY EXAMINATION

MAY/JUNE 2003

INFORMATION TECHNOLOGY

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GENERAL COMMENTS

The examiners were pleased that more candidates entered for the examination this year than for 2002. The overall performance this year was below that of 2002. This was true for Paper 1 and Paper 2. However, there were centres that did quite well with all candidates performing at least at a satisfactory level.

There continued to be a demonstrated weakness in candidates' ability to respond to questions that required the application of knowledge, the synthesis of information and the evaluation of concepts. For example, when the candidates are requested to give a reason, which is worth three or more marks, the examiners were expecting the candidates to provide valid argument(s) to justify the reason. To simply state a reason is not a sufficient response.

The examiners wish to report that for each question, on both Papers 1 and 2, there were candidates who scored full marks. However, there were several candidates who scored zero marks. The examiners would like to continue to encourage schools to pursue the syllabus in an in-depth manner and to ensure that candidates are knowledgeable about a wide range of Information Technology tools. Questions on the papers assessed knowledge and skills in a variety of areas.

INTERNAL ASSESSMENT

Most candidates selected excellent topics. The examiners noted an overall marked improvement on candidates' performance for all modules.

There were a few candidates who selected technologies, which based on their own research, have been around from as far back as the 1960s and for which there is widespread use, and yet these technologies are regarded to be "emerging". The examiners have agreed, however, that if candidates select such technologies, then there must be evidence to show that the technologies are 'emerging ones" in their environment. That is, the technologies were recently introduced (within the past 2 years) in the school, community or country.

A few candidates were unable to distinguish between devices and the concepts or phenomena driving the devices. For example, one candidate selected the latest model of cellular phone as the emerging technology. Except for the description of the device, the remaining segments of the candidate's report, including those pertaining to Module 2, dealt with "wireless communications" in general, rather than the uses, drawbacks and applicability of the latest model of cellular phone.

Candidates should be reminded that they are required to divide their report into two separate sections: one section for Module 1 and the other section for Module 2. Also, the report

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.

The examiners wish to encourage schools to obtain and use the marking scheme provided by Caribbean Examinations Council (CXC). Schools are reminded that diskettes must be submitted for Module III (reports are optional).

PAPER 1

SECTION I - Information Systems

Question 1

This question examined candidates' understanding of information processing. This question was generally done satisfactorily by most candidates.

A few candidates gave responses such as sorting, calculating, searching, and analysing, as the set of tasks. However, these are sub-tasks of the task referred to as PROCESS.

Question 2

This question assessed candidates' knowledge and understanding of components of information processing systems and, in particular, the network (communications) system.

Part (a) was generally well done by most candidates.

In Part (b), most candidates produced the diagram of a topology but with an incorrect label. Based on responses such a LAN, circle, MAN and client-server, it would appear that they were unfamiliar with the concept "topology". A few candidates sketched the diagram of a computer system (CPU, monitor, keyboard and printer) and stated that it was a network topology.

Part (c) was generally poorly done by most candidates. A number of candidates only listed the advantages and disadvantages of the topology without naming any other topology.

Question 3

This question was designed to test candidates' understanding of the impact and implications of Information Technology on an organisation. This question was generally done well by most candidates. Several candidates scored full marks.

Question 4

This item examined candidates' ability to use Data Flow Diagrams to describe the flow of information within a major function, for example, the borrowing of books from the school library.

This question was poorly done by most candidates. The responses suggested a failure by candidates to appreciate the concept of DFDs.

To draw accurate DFDs, it is recommended that candidates should follow the steps below:

- Identify the external entities interfacing with the system or part of the system;
- Identify between one to six major processes;
- Identify the data that flow to and from each process. Each process must have at least one data flow going in and one data flow going out;
- Identify the major data stores involved;
- Determine the sequence of the processes.

Based on the sequence, combine entities, processes, data flows and data stores into ONE DFD.

Question 5

This question assessed candidates' knowledge and understanding of issues relating to specialised hardware and software for specific population groups such as persons with disabilities.

This question was generally poorly done by most candidates. A number of the candidates gave responses such as speakers, voice recognition and microphones. These devices were not designed specifically for "disabled" persons. Examples of appropriate responses are Braille computers, Touch Talker, VirTouch Mouse, Optacon, and Voice Synthesizer.

It was evident that most candidates were not familiar with devices or systems that were specifically designed for persons with disabilities, and how these systems and equipment could benefit their lives – providing employment opportunities and personal independence.

SECTION II - Information Processing and Presentation

Question 6

This question examined candidates' ability to choose the most appropriate user interface for a given situation, and to provide sound reasons to justify their choice.

For Part (a), most candidates viewed the communication as one dimensional, that is, the user telling the computer what to do, rather than as an interaction between the user and the computer system.

For Part (b), most candidates gave the correct response.

For Part (c), most candidates gave two reasons but failed to provide any argument to justify these reasons.

Question 7

The question assessed candidates' ability, based on a scenario, to select the most appropriate software tool to develop a computerised system. The question was satisfactorily done by most candidates.

Part (a) was generally well done by most candidates. However, a few candidates gave responses such as word processor, general-purpose software, application software and "filing cabinet".

Part (b) was generally poorly done by most candidates. The responses were very vague, for example, "makes work easier".

Part (c), several candidates' responses focussed on the benefits of the application identified in Part (a) rather than using a computerised system to store information on books. A response such as "building queries" was specific to a particular software group and hence could not be applied to computerised systems in general. A few candidates interpreted the question to mean that the (actual) contents of the books were stored on the computer system and, therefore gave incorrect responses, for example, "saves money because backup copies can easily be made of CD and diskettes than of books".

Question 8

The question tested candidates' knowledge and understanding of normalisation, and their ability to apply that knowledge to a database structure using standard notation. This question was poorly done by most candidates.

For Part (a), most candidates overlooked the fact that the first normal form (1NF), as the name implies, is the first step of the normalisation process. Several candidates stated, "this is the form in which you receive data". Only a few candidates responded, in this step, that repeating groups of data were removed.

Part (b) posed a great deal of difficulty based on the response in Part (a). Most candidates were unable to split the given data structure into smaller data structures in the 1NF or 2NF. A few candidates produced smaller data structures but failed to:

(i) give a name to each data structure (entity), and
(ii) identify the key field of each data structure.

Question 9

This question assessed candidates' knowledge and understanding of features to be considered in presenting information in print, that is, designing a report layout. A few candidates scored high while most did poorly.

Most candidates seemed to have misunderstood or misread the question. As a result, the responses suggested that the system analyst was asked to design a system rather than a printed report. Responses included "how much will it cost", "which software will be used", "what type of presentation does the company want", and so on.

For those candidates who did not misinterpret the question, Part (a) was generally well done. However, Part (b) was poorly done, as the candidates were only able to state the reasons but could not provide any explanation or justification for the reason.

For example, some candidates wrote that a reason for giving the report a title was "to be able to distinguish this report from others". This was not a sufficient response for three (3) marks. A more appropriate response would be "to be able to distinguish this report from others. An application software is likely to print many reports for different users throughout the day, especially in a networked environment where there is one printer for several users, and therefore some unique identifier (the title) would be required to ensure that the user gets his/her 'right' report".

Question 10

This question examined candidates' knowledge of the problem-solving process.

For Part (a), most candidates performed well. A few candidates included "problem definition" in their response, although this was given at the beginning of the question.

For Part (b), several candidates were unable to describe what happens in each of the stages that they identified in part (a). For example, most candidates knew that "implementation" was one of the stages, but did not respond that it meant, "to put the recommended solution into action …".

A few candidates were confused about what was done in the evaluation and review stages. They described the evaluation stage as if it were the review stage, and vice versa.

SECTION III – Information and Communication Skills

Question 11

This question assessed candidates' understanding of the use of Information Technology tools in communicating information.

Part (a) was generally well done by most candidates. However, a few candidates viewed the Intranet as a local area network (LAN), which is not entirely correct. Most intranets are LANs, but a few are wide area networks especially those within multinational or multi-branch organisations.

Part (b) was generally poorly done by most candidates. The candidates seemed to be unaware that the Intranet uses the infrastructure and standards associated with the Internet (the network of networks). Therefore, any hardware component (NIC, hubs, etc) and software (browser, email, etc) used for the Internet would be applicable for the Intranet.

Part (c) was generally poorly done by most candidates. Several candidates listed advantages in relation to a local area network rather than focussing on the Intranet as a communication vehicle between management and staff.

Question 12

This question was designed to test candidates' ability to select and justify the use of the most appropriate information source for a particular task.

Some candidates interpreted a referred source to mean "someone who writes recommendations for persons seeking jobs". As a result, these candidates could not provide accurate responses to Parts (a) and (b).

For part (c), most candidates repeated the statements in the scenario as the basis for justifying the professor's action of awarding a "C". The candidates who performed well recognised that there were several other criteria that could be used to assess the candidate's work. In addition, these candidates recognised that, although a source may generally be considered to be non-referred, it can contain articles that were evaluated by peers and found to be factual, etcetera.

Question 13

This question examined candidates' knowledge and understanding of information sources, other than television and radio, which may be used to obtain information on a recent election in a foreign country. This item was generally well done.

However, a few candidates ignored the use of the word "recent' in the scenario and, as such, gave a book as one of their responses. A book is likely to take several months or years before it is available to the public. Therefore, it would not be an appropriate source of information on a recent election.

Question 14

This question assessed candidates' understanding of the value of information.

Part (a) was generally well done by most candidates. However, a few candidates gave "one or two-word" responses, for example, "medical information". These responses were very vague. Medical information such as "the outbreak or discovery of SARS in a country" should be shared with the public but not "the personal information of a patient".

Part (b) was done well by the candidates who performed well in part (a). The other candidates were unable to present valid arguments to support why the information should not be shared with the public.

Question 15

The question tested candidates' knowledge of Information Technology tools that may be used to access information remotely. A number of candidates seemed to have ignored the scenario given in this item.

For Part (a), a variety of incorrect responses were supplied, for example, mouse, keyboard, monitor, computer, cable and telephone.

For Part (b), most candidates performed poorly. Only a few candidates were able to:

- make the link between the speed of modem (up to 56 Kbps), the small bandwidth of standard telephone line (typically twisted pair wire) and the size of the file to illustrate how these combined to increase the time taken to transmit the file, and

- show how the characteristics of the twisted pair wire could impact negatively on the quality of transmission.

In Part (c), candidates who performed well in Parts (a) and (b), generally performed satisfactorily in this part of the question.

PAPER 2

SECTION I - Information Systems

Question 1

This question was designed to test candidates' knowledge and understanding of issues relating to telecommunications. The question was attempted by approximately 42.1 per cent percent of the candidates. Only a few candidates performed satisfactorily.

Parts (a) and (b) were satisfactorily done. Most candidates identified and described hardware components that drove the telecommunications industry.

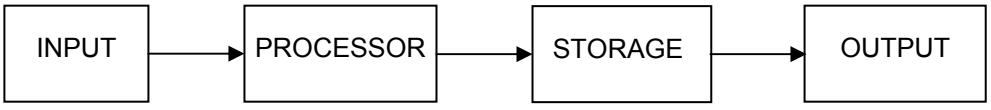
Parts (c) and (d) posed a great deal of difficulty. The telecommunications system was widely interpreted as a computer system within an organisation rather than a telecommunications system (consisting of computers and satellite tower(s)) for handling the transmission of voice/data from one point to another point across a wide expanse. As a result, the candidates' responses focussed only on areas such as the loss and backing up of data.

Most candidates appeared to be unaware of issues facing the telecommunications industry in the Caribbean.

Question 2

This question examined candidates' knowledge and understanding of the components of the automated information processing system, the relationships that exist between the components and the importance of secondary storage in the system. About 57.9 per cent of the candidates attempted this question. A number of candidates scored high while others did poorly.

In Part (c), a few candidates drew a block diagram as follows:



This diagram is incorrect as:

(i) the output should come directly from the processor and not from storage, and

(ii) the arrow between the processor and storage should be bi-directional rather than unidirectional.

In Part (d), some of the candidates failed to provide arguments to support the reasons. They simply stated, for example, "for backup" and "to store data". These responses are very inadequate. A more appropriate response could be "Secondary storage is required for making a copy of a file so that in the event of a disaster, for example, a virus destroying the entire hard drive of the computer system, then the data can be recovered from the secondary storage medium".

SECTION II - Information Processing and Presentation

Question 3

This question assessed candidates' ability to use their knowledge of software tools to explain where these tools may be appropriate. The item was attempted by approximately 41 per cent of the candidates. It was generally well done by most candidates.

A few candidates misinterpreted "integrated software" to mean "general purpose" software and therefore provided responses that were incorrect in Parts (a), (b) and (c).

Part (a) was generally well done, as most candidates were able to correctly identify four applications.

Part (b) was poorly done by most candidates as they described the primary purpose of the applications, for example, "the word processor could be use to create, edit, format and print documents", rather than using an example to demonstrate how someone could use the tool for a particular task.

Part (c) was generally well done by candidates who performed well on Parts (a) and (b).

Part (d) posed a challenge as most candidates could identify and discuss only one reason, but not two reasons.

Question 4

The question examined candidates' ability to, based on a scenario, select the most appropriate software tool and its features to solve a real-life problem. The question was attempted by 59 per cent of the candidates.

Part (a) was generally well done by most candidates. However, a few candidates scored zero.

For Part (b), candidates who selected the desktop publishing package as the more appropriate of the two software packages identified in part (a), could only provide one reason to justify their selection. In the cases where two other software packages were identified, the candidates were unable to give any reason to justify their selection. It appeared that these candidates were either unaware of the differences between the named packages or they felt that both packages performed the same functions.

In Part (c), the majority of the candidates did not discuss the features of the software that made it suitable for producing a graphic-filled newsletter. They simply described any four features.

For Part (d), most candidates could identify only one problem. If the problem was a valid one, the candidates were able to provide an appropriate solution.

SECTION III - Information and Communication Skills

Question 5

This question was designed to test the candidates' knowledge and understanding of Information Technology tools that could be use to communicate information remotely. The item was attempted by one-third of the candidates.

Most candidates performed satisfactorily on Part (d), but poorly on Parts (a), (b) and (c). It is evident that most candidates were not familiar with the terminology "wireless communications" although equipment/concepts such as cellular, microwave, radio and satellite systems, and telecommunication transmission media is listed in the syllabus (see Module 1, Content 2 (viii) – Component for remote information).

Question 6

This question was attempted by approximately two-thirds of the candidates. It assessed candidates' understanding of the characteristics, value and importance of information in the decision-making process. This question was generally satisfactorily done.

Part (a) was generally well done by most candidates.

In part (b), several candidates did not use examples in their responses to illustrate how the characteristics were important in judging information.

Part (c) was generally poorly done by most candidates. The candidates who performed well realised that individuals should evaluate information using several criteria, and that if these criteria are satisfied, then it is highly likely that the information would be appropriate for a given decision.

Part (d) was well done by several candidates.

PAPER 03

Internal Assessment

This project enabled candidates to examine the potential uses and issues related to a particular emerging technology, and to determine it 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.

A small number of candidates submitted a report that had several sub-sections for Module I, but either no or one sub-section for Module II. If a sub-section was submitted, this was the conclusion for the applicability of the emerging technology in the candidate's environment.

SECTION I - Information Systems

Most candidates performed satisfactorily. A number of candidates submitted very good papers demonstrating that they did substantial information gathering on the emerging technology.

However, there were a few candidates who performed poorly. In these instances, the candidates failed to focus on the technology that was identified. For example, one candidate began the report with a description about MP3 – a compression technique for musical format. The remainder of the report dealt with MP3 player (a device) and not the compression technology (the underlying phenomenon). Similarly, some candidates began with a device (e.g., the smart phone) as the emerging technology but then focussed on the underlying phenomenon (wireless communications, in general) in the other sub-sections of the report rather than the specific features, uses and drawbacks of the device.

SECTION II - Information Processing and Presentation

There was a significant improvement in candidates' performance when compared to the previous examination year. A few candidates scored high while others performed poorly, but the overall performance was fair.

The examiners were concerned that most candidates did not show how the technology was applicable to their environment.

The examiners continue to note candidates' confusion regarding data, sources of data/information, and tools used for collecting data. Most candidates identified where the data was coming from (the Internet, books, observation, questionnaires, interviews) as data types. **The Internet and books are examples of information sources; research, observation, questionnaires and interviews are data collection methods or tools. Data types refer to qualitative and quantitative data such as text, memo, date, integer, real, number, currency, and so on.**
In analysing and evaluating the applicability of any emerging technology in an environment, the candidates were expected to provide evidence arising from data gathered. The examiners have noted that the questions (on questionnaires or in interviews) were usually inappropriate. For example, the questions targeted primarily demographic data such as gender and age, which are usually irrelevant in the study. Or, the questions seek to determine whether or not respondents have heard/know about the technology.

A candidate, who performed well, when assessing telecommuting within his community, posed questions to both employees and employers. Some of the questions to employees were as follow.

- Do you use a computer to do your job?
- How many of your tasks require the use of a computer?
- How long does it take you to get from home to your work place?
- Would you prefer to work from home?
- Do you have a computer a home?
- If no, can you afford to purchase a PC?
- If no, would you get a loan to purchase one?

These questions were very appropriate and the responses provided the data which formed the basis of his evaluation and conclusion.

The examiners were also concerned that some candidates collect data but appeared unable to evaluate it and develop logical conclusions. Graphs and charts were included but not used to support their conclusion. There seemed to be weaknesses in the area of instruction and the supervision of candidates.

SECTION III - Information and Communication Skills

In general, candidates demonstrated acceptable skills and competencies. Most candidates performed satisfactorily. A few candidates have taken their report for Modules 1 and 2 and segmented it into web pages. This is unacceptable. Candidates were required to summarise the report for their web pages.

Schools are encouraged to look at web sites that are considered to be well designed and aesthetically pleasing, and advise students to use similar style and techniques in creating their own web pages.

Centres are reminded that candidates must submit diskettes. A report for Module III is optional.