CARIBBEAN EXAMINATIONS COUNCIL

REPORT ON CANDIDATES' WORK IN THE CARIBBEAN ADVANCED PROFICIENCY EXAMINATION

MAY/JUNE 2004

INFORMATION TECHNOLOGY

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GENERAL COMMENTS

The number of candidates sitting this year's examination decreased when compared with the number entered for the examination in 2003. The overall performance of candidates this year was better than 2003. This was apparent in the internal and external examinations.

The quality of the candidates' responses continued to be of major concern to the examiners. Responses, oftentimes, were superficial: lacking depth and reasoning. In addition, some candidates used technical terms inappropriately. For example, pairs of technical terms such as "data and information" and "monitor and screen" were often used interchangeably; however, this ought not to be so in the field of Information Technology. Candidates should be encouraged to have a proper appreciation for technical terms, to know the distinction between certain pairs of technical terms and to use them accurately.

As stated in previous schools' reports, a number of candidates have demonstrated weakness in several areas. For example, candidates were unable to use facts, concepts, principles and procedures in unfamiliar situations, or, to make reasoned judgements and recommendations based on the scenario accompanying questions.

The examiners wish to report that for each question, on both Papers 01 and 02, a few candidates scored full or very high marks. However, there were several candidates who scored zero marks. The examiners would like to encourage schools 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.

INTERNAL ASSESSMENT

The examiners noted an overall marked improvement in candidates' performance for all modules.

There were a few candidates who selected technologies that have been around for several decades these cannot be regarded as emerging technologies. The examiners are suggesting that candidates should be encouraged to select technologies that have been introduced within the past three years.

It was also noted that some candidates are depending solely on material obtained from their texts. Examiners propose that technologies covered in recommended texts were unlikely to be considered as emerging technologies, unless these texts were published or reprinted within the last two years.

The examiners have seen reports which indicate that a few candidates were confused about the emerging technology, for example, distinguishing between the device or the phenomenon? In their reports, candidates stated that a device was the emerging technology but then discussed the phenomenon undergirding the device.

There were also reports that dealt with several technologies. The candidates discussed one emerging technology in Section 1 of their report and then a different technology in Section 2. Candidates should be reminded that they are required to research a single emerging technology for Section I and then show the applicability of this technology in the environment, whether their home, school, community or country for Section 2.

Candidates should be reminded that their report should not be more than 2000 words. This approximates to eight, doubled-spaced pages, excluding appendices, table of contents, bibliography, diagrams, tables and graphs.

Several schools submitted the marking schemes for all modules for each candidate in the sample. However, a few schools did not. The examiners wish to encourage these schools to use the marking scheme outlined in the syllabus.

Schools are reminded of the following:

1. All pieces of work, one for EACH module, must be submitted for ALL candidates in the sample that is sent to CXC for moderation.

2. Only the diskettes should be submitted for Module 3. A report for this module is optional. **All diskettes should be virus-free.**

PAPER 01

Section 1 - Information Systems

Question 1

The question was based on candidates' understanding of differences between three concepts: data, information and knowledge, as well as, their understanding of information processing tasks and manual information systems. This question was generally done satisfactorily by most candidates.

For Part (a), most candidates were able to state the difference between data and information, but only a few were able to distinguish between information and knowledge. They understood that knowledge was the ability to use information in decision making or to solve problems. The candidates, who scored full marks, used examples to reinforce the understanding of the differences.

For Part (b), a number of candidates misinterpreted the question and therefore gave responses, such as., "entering customer records into a computer system" or "inputting data". These responses were incorrect. A correct response would be, for example, "weather forecasting where many calculations are done using hundreds of weather data such as air pressure, temperature and humidity.

For Part (c), a number of candidates gave examples of a manual task such as "searching through filing cabinets", " and "marking a register". Others gave examples such as "a filing cabinet of...." suggesting that the filing cabinet is the manual system rather than the collection of records that the filing cabinet contained. Other examples of a manual information processing system are a telephone

directory, an examination timetable, and a catalogue. The responses seemed to suggest that these candidates did not have a proper understanding of information processing systems and, in particular, manual systems.

Question 2

The question was based on candidates' knowledge and understanding of components of information processing systems. The question was poorly done by most candidates.

In Part (a), several candidates were unable to identify two kinds of devices that are used in an automatic A/C system in a motor vehicle. Some candidates gave incorrect responses such as hardware and software.

In Part (b), most candidates could not accurately describe the function of the device. For example, a number of candidates stated that "the sensor was responsible for changing the temperature" within the mini-van. This response was inaccurate. An appropriate response would be "the sensor checks the temperature within the vehicle and relays this data to the central processor which controls the A/C system."

In Part (c), some candidates' responses focused on a description of the features of computer systems within the vehicle and not on the advantage of having such systems. Candidates who scored full marks were able to state that, for example, computer systems were likely to enable a driver to pay attention to the task of driving and thereby reduce the possibility of accidents. Those candidates who scored low marks simply stated that computer systems control devices automatically. They failed to mention how this could be an advantage.

Question 3

The question was designed to test candidates' understanding of the relationship that exists between named hardware components of a computer system. This question was generally satisfactorily done by most candidates.

In Part (a), the candidates, who scored full marks, gave a description of software (what it is) and its purpose (what it is designed to do).

In Part (b), a few candidates ignored two important requirements of the question: (1) draw a BLOCK diagram and (2) SHOW THE RELATIONSHIP between the components. Each component was to be represented by a block, c, and the relationship between pairs of components by an arrow, either à or ßà. Using a line between components was not sufficient to show the interaction between components.

Question 4

This item examined candidates' ability to identify and discuss appropriate hardware tools to meet a particular need. This question was generally well done by most candidates. Several candidates scored full marks.

Candidates, who scored zero or low marks for Part (b), gave responses, which focused on the uses of the devices rather than on the types of data captured by the named devices. For example, some candidates stated that a scanner is used to scan documents; but a more accurate response would be that a scanner is used to capture text or graphics.

For Part (c), a few candidates discussed a problem that could be viewed as one of a general nature, such as "device being broken" or "users not knowing how to use the device". A more appropriate response would be a problem specific to the data capture device. For example, with a microphone, there could be interference from other sounds in its vicinity; therefore distortion of the data being captured is possible.

Question 5

This question assessed candidates' knowledge and understanding of software engineering process and professional groups that are involved in the process.

This question was poorly done by most candidates. A number of the candidates confused the stages of the software engineering process with those of problem solving. Other candidates, although their responses indicated that they were aware of the software engineer-

ing process, they were unable to identify the major stages or the correct (logical) sequencing of the stages.

In addition, some candidates could not name or gave partial titles of two professional groups involved in the process. Where candidates accurately named the professional groups, they were unable to describe their role in the process.

It was evident that most candidates were not familiar with software engineering process.

Section II - Information Processing and Presentation

Question 6

This question examined candidates' ability to identify and describe the major categories of software tools available to the manager of a company.

For Part (a) a number of candidates did not pose questions that could assist the manager in determining a suitable course of action: whether to buy a software package or to have one developed for his company. For example, responses such as "what are the requirements?" and "who will use the software?", would be asked regardless of the course of action taken. Examples of appropriate questions that could be posed are:

- Is there a suitable "off the shelf" software package available that will meet our requirements?

- Is it relatively free of "bugs"?

- Is it easy to install?

- What is the cost to purchase? To develop/build the software?

- How long will it take to build the software? Can the company afford to wait?

For Part (b), most candidates identified the correct categories of software. However, a few candidates gave “system software” and “application software” as the two major categories of software available to manager. These responses were incorrect as the “buy or build” decision applies only to application software.

Question 7

This question assessed candidates’ ability to justify the use of a particular software tool of an integrated software package for a given task. The question was satisfactorily done by most candidates.

Part (a) was generally well done by most candidates. However, a few candidates simply stated what an integrated software package was and failed to explain the purpose of such a software package.

Part (b) was generally well done by most candidates. Some candidates, however, gave incorrect responses such as “Microsoft” and “Windows”.

Part (c), most candidates scored full marks.

Part (d) was generally poorly done by most candidates. For their responses, these candidates rewrote the statements in Part (c) (i) - (c) (iii). For example, the reason given for the choice of a word processor was the tool could be used “to produce letters”. Candidates, who performed well, identified and explained how a particular feature of the named tool could be used to do the task. For example, “the word processor has a mail merge feature which allowed the user to create a form letter and a list of the names and addresses of its customers. These are then merged to produce personalised letters.”

Question 8

This question tested candidates’ knowledge and understanding of data types, and the importance of data types in constructing databases. This question was poorly done by most candidates.

For Part (a), most candidates responded correctly. A few candidates gave responses such as “MS Excel”, “MS Access” and “graphical

data". Others were confused and interpreted data types to mean primary and secondary data; terms that are not applicable in Information Technology.

Part (b) posed some difficulty to candidates. Candidates either ignored or misinterpreted the phrase "used for storing data" in the question. Most responses described how the named data types were used for entering data. Also, most responses did not include any example, as was requested.

Part (c) was poorly done by most candidates. It appeared that most candidates did not understand the question. Several candidates wrote responses such as " to act as a back up storage".

Some attention must be given in the classroom to the data types that could be used in construction of databases.

Question 9

This question assessed candidates' knowledge and understanding of the use of software tools to develop solution to real-life problems. A few candidates scored full marks while most scored few.

Most candidates seemed to be unaware that simulation software packages can be used to solve problems such as the training of (a) pilots without using expensive aircrafts and (b) doctors to perform complex surgeries without using living human beings, or (c) the testing of new products and techniques to identify harmful outcomes.

Question 10

This question examined candidates' understanding of the distinction between pairs of technical terms (concepts) as they relate to Information Technology. Most candidates performed at an acceptable level.

Most candidates wrote responses that were similar to those of persons who have not studied Information Technology. For example, the desktop was viewed as "the first area that you see when you turn

on the computer", or a pointer "is a *device* that is used to select an icon".

A number of candidates stated that a default value is "a number with a fault" and a report is a "summary of information".

Some attention must be given, in the classroom, to the definitions of popular concepts within Information Technology.

Section 3 - Information and Communication Skills

Question 11

This question assessed candidates' understanding of the value and importance of information. The question was done satisfactorily by most students.

In Part (a), most candidates listed the characteristics of information but did not use any arguments to show how these characteristics made information to be a saleable commodity. The candidates, who scored high marks, recognised the following:

- The importance of information to people and organisations: its value and usefulness in decision making and problem solving;

- Its cost: to gather, manipulate and store information;

- It can be packaged and distributed in a variety of formats and on various media for sale.

In Part (b), most candidates accurately identified pieces of relevant information that a person would require to bake a cake. A few candidates listed pieces of information that were identical and therefore were not awarded full marks. For example, a candidate who wrote "a recipe", "list of ingredients" and "instructions" as three pieces of information scored two rather than full marks since a recipe is the list of ingredients AND the directions (instructions) for preparing the cake.

Question 12

This question was designed to test candidates' knowledge of a tool and associated problems that may arise when constructing web pages. This item was generally poorly done by most candidates.

Most candidates did not know that XML was the abbreviation for e**X**tensible **M**arkup **L**anguage. Some candidates used "extended", "extensive" and "extension" rather than extensible.

Not many candidates were aware of the purpose of this language or the problems that could arise when using particular browsers or versions of browsers to access web pages that contain XML code.

Some attention must be given in the classroom to: the different languages that may be used in constructing web pages, the benefits and limitations of these languages, and problems that may arise in accessing web pages with different browsers and versions.

Question 13

This question examined candidates' ability to critique information sources such as the Internet. This item was generally well done.

However, a few candidates simply listed two reasons to refute the statement for Part (b) and two criteria used to evaluate information found on the Internet for Part (c). These candidates did not provide any argument to justify their stated reasons or criteria.

Candidates should be reminded to pay particular attention to the use of some verbs such as "to give" and "to suggest". For example, when requested to give a reason, and the question is worth two or more marks, the candidate is expected to provide at least one valid argument to justify the reason. To only state the reason is not a sufficient response.

Question 14

The question assessed candidates' understanding of concepts that relate to the Internet.

Most candidates did not state the similarity between the named pair and therefore responded only with regards to the difference.

In their responses, several candidates explained what one item in the pair was and ignored the second item. Candidates should be encouraged to respond as follow:

> URL and username are both identifiers. URL is an address that points to a specific resource on the Internet whereas the username is the identifier of a person using the computer system.

Candidates should be encouraged to use terms such as “while”, “but” and “whereas” when responding to questions that require them to discuss or explain the difference between pairs of devices or concepts. Candidates should refrain from writing that one item “is...” and the other “is not.”

Question 15

The question tested candidates’ knowledge of IT tools that may be used to access information remotely. This question was satisfactorily done by a few candidates.

A number of candidates seemed to have ignored the scenario given in this item, in particular, that “*there is no electricity*” and therefore the method to recharge the device would be crucial.

These candidates named a device that was inappropriate for part (a). In addition, the candidates could not state and discuss any benefit of the named device.

Some attention must be given, in the classroom, to both wired and wireless communication devices that may be used to access information remotely.

PAPER 02

Section 1 - Information Systems

Question 1

This question was designed to test candidates' knowledge and understanding of the ethical, legal and other considerations associated with the use of information technology. The question was attempted by fifty-nine percent of the candidates.

Parts (a) to (c) were done satisfactorily by most candidates. A few candidates scored full marks.

Most candidates were able to explain the term "copyright" and two benefits of copyrights to the copyright holder. They were also able to provide valid arguments to show why the manager should not illegally reproduce the software.

A few candidates misinterpreted the question and responded with benefits to the persons or organisations that purchased legal copies of the product rather than to the copyrights holder. Some candidates listed three reasons but provide no arguments to support them.

For Part (d), most candidates did not use the information stated in the scenario. Therefore, their plans were financially infeasible and/or impractical.

Question 2

This question examined candidates' knowledge and understanding of the components of information systems and the impact of technology on organisations. Forty-one percent of the candidates attempted this question. Most candidates performed satisfactorily.

A number of candidates did not use appropriate terminologies such as server, clients, workstations and databases in their responses. Several candidates incorrectly used terminal and computer interchangeably.

In Part (b), most candidates demonstrated an understanding of how a network could facilitate the sharing of devices, e.g., the sharing of

a printer, but could not for the sharing of data. A number of candidates interpreted the sharing of data as the "sending and receiving of files" rather than data that resides in one location (such as, on a server) but is accessible to all permitted users (clients/workstations).

In Part (c), most candidates were knowledgeable regarding problems that could arise when sharing data on a network.

In Part (d), most candidates seemed to be unaware of strategies which could be employed to ensure that a network operates smoothly. The candidates who scored high marks displayed ability to write clear and concise statements dealing with strategies to secure and enhance the performance of each major component of the network - hardware, software and users. For example, their plan included the use of a Network Management Software to monitor the performance of resources on the network and which would issue warnings or report potential problems; to perform preventative maintenance routines; to restrict access to computer resources both physically and logically, etc.

Section 2 - Information Processing and Presentation

Question 3

This question assessed candidates' understanding of the features and functions of spreadsheets and the ways in which a manager could use this and other software tools to improve the productivity of his company. The item was attempted by eight-five percent of the candidates. Most candidates performed at an acceptable level.

For Part (a), most candidates stated the main purpose of the spreadsheet application – to manipulate numerical data. However, many failed to describe what it is (a grid of cells or, is made up of rows and columns), and its uses (to generate financial reports or schedules, graphs, charts ....).

For Part (b), most candidates performed satisfactorily. Some candidates misinterpreted the question and discussed the uses of the spreadsheet rather than its features.

For Parts (c) and (d), most candidates seemed to recognise the usefulness of the tools but they failed to carry through with logical arguments to show their usefulness or how productivity would be improved.

Question 4

The question examined candidates' knowledge and understanding of certain concepts as they relate to constructing databases. The question was attempted by fifteen percent of the candidates. Most candidates performed at an acceptable level.

Part (a)(i) and Part (b)(i) were generally done well by most candidates. However, Part (a)(ii) and Part (b)(ii) posed some difficulty. Most candidates identified the key field as CUSTOMER. It seemed that because the word "customer" appeared in several field names, then it was named as the key field. Also, most candidates could not show how the sort key could provide useful information to the company. This demonstrated that, whereas, they could define the terms, key field and sort key, they did not fully understand these concepts and their purposes.

Part (c) was generally poorly done by most candidates. From their responses, it was evident that most candidates were unaware of the guidelines to be used in designing forms. The form was not structured (no title or headings, no logical order of data); no meaningful or self-explanatory labelling; no instructions to assist persons in completing the form; not complete (could not capture all relevant data); no spacing (to avoid cluttering); lack ease of use – no indication of field length or input mask, etc.

Some candidates scored high marks. An example of a good design is as follows:

ABC LIMITED
KINGSTON, JAMAICA
CUSTOMER ORDER

ORDER NO: 99999 DATE: __/__/_____

CUSTOMER NO: _____

CUSTOMER NAME:
_____

CUSTOMER ADDRESS:
_____

ITEM
DESCRIPTION
QUANTITY
UNIT COST
EXTENDED PRICE
TOTAL

Part (d) was also generally poorly done by most candidates. Candidates listed advantages, but no attempts were made to support or explain how the advantages were achieved. For example, several candidates stated that automated systems were faster than manual systems but failed to provide arguments to justify this claim.

Section 3 - Information and Communication Skills

Question 5

This question was designed to test the candidates' knowledge and understanding of the Internet as a tool to communicate information. The item was attempted by twenty-three percent of the candidates. Most candidates performed at an acceptable level.

Part (a) was poorly done by most candidates, as they could not define an interactive service.

Part (b) was generally done well by those candidates who performed well in Part (a). Since most candidates could not define an interactive service, they were therefore unable to explain the difference between this and a regular email.

Part (c) was generally done satisfactorily by most candidates. Some candidates failed to discuss each benefit, and simply stated the benefit; for example, the Internet is available on a 24/7 basis. They provided no arguments to show why this could be seen as a benefit.

Part (d) was generally done at an acceptable level by most candidates. Candidates wrote clear and concise statements for each problem. However, as stated in Part (c), most candidates failed to provide arguments to justify why these could be viewed as problems. The solutions to problems lacked depth and analysis.

Question 6

This question was attempted by seventy-seven percent of the candidates. It assessed candidates' understanding of information sources and criteria that could be used to critically evaluate information sources. This question was generally satisfactorily done.

A few candidates, however, scored low marks as they failed to provide arguments to justify their position, or demonstrate how the named criterion would be useful in identifying the most appropriate source for a given task. Some candidates confused the criteria to evaluate information sources with those to evaluate information.

INTERNAL ASSESSMENT

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 the three modules.

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

Section 1 - Information Systems

Most candidates performed well. Several candidates submitted very good papers demonstrating that they did substantial information gathering on the emerging technology.

A few candidates failed to show the potential uses of the technology. They have confused the uses with the functions of the emerging technology. The functions of any technology usually determine how persons would use the technology. For example, camera phones in the hands of police officers could be used to apprehend suspected criminals. If a police detective sees someone who/he/she believes to be a suspect, this person's picture could be "snapped" and a search made against a database. If a match is found, then the person could be arrested and taken to jail.

Some candidates only examined the technical implications of the technology. Other implications such as legal, ethical, social and political issues should be considered.

Section 2 - Information Processing and Presentation

Most candidates performed well. Several candidates scored very high or full marks. However, there were a few candidates who performed poorly. These candidates confused data types with those used in Communication Study: primary and secondary data. The data types in Information Technology are as follow:

Text; character; number; date; currency; integer; and so on.

Some candidates did not ask questions that would have assisted them in determining whether the technology was applicable to their environment. Therefore, the data gathered could not support their conclusion.

Section 3 - Information and Communication Skills

In general, candidates demonstrated acceptable skills and competencies. Most candidates performed well. Weaker candidates have failed 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 3 is optional.