C A R I B B E A N E X A M I N A T I O N S C O U N C I L

REPORT ON CANDIDATES' WORK IN THE SECONDARY EDUCATION CERTIFICATE EXAMINATIONS

MAY/JUNE 2010

INFORMATION TECHNOLOGY

GENERAL PROFICIENCY

GENERAL COMMENTS

May/June 2010 was the first year of examination for the revised CSEC Information Technology syllabus and 25,591 candidates from the participating territories wrote the Information Technology examination. Eighty-one per cent of the candidates achieved grades I–III.

DETAILED COMMENTS

Paper 01 – Multiple-Choice

This paper consisted of 60 multiple-choice questions testing all areas of the syllabus. This paper was fairly well done with an average of 30.44 out of 60.

Paper 02 – Structured Questions

This paper consisted of three sections with a total of 12 compulsory structured questions. Section I which tested the Theory Profile consisted of six short-answer questions worth 60 marks. Section II contained two structured questions worth 15 marks and tested the Productivity Tools profile. Section III consisted of four structured questions worth 45 marks; it tested the Problem-solving and Programming profile.

Section I - Theory

Question 1

This question tested candidates' ability to explain the functions of the major hardware components of a computer system. It was satisfactorily done by the majority of candidates. However, some candidates did not use the names of the components as indicated in the diagram provided. For example, candidates used terms such as 'primary storage' and 'RAM' instead of 'main memory' as indicated in the diagram. For Part (c), candidates provided a variety of responses including PC, CPU, computer hardware and computer cycle instead of 'computer system'.

Question 2

This question tested candidates' ability to distinguish between the types of user interfaces.

The question was well done by the majority of candidates. Some candidates found it difficult to provide another user interface other than those indicated in the two given figures, such as a menu-driven interface. Figure 2 showed, a command driven interface and Figure 3 displayed a graphical user interface. In addition, some candidates did not mention operating system as the name of the system software providing the user interface but gave the names of some operating system software such as Windows, Linux and DOS. Most candidates were able to provide the steps to change the name of a file using the different interfaces.

Question 3

This question tested candidates' ability to match input devices with their appropriate uses and to identify one organization where each of the given input devices was most likely to be used. It was well done by the majority of candidates. However, some candidates were unfamiliar with the usage of Optical Mark Reader (OMR) and Magnetic Ink Character Recognition (MICR) devices. In addition, some candidates had difficulty providing an organization that uses a sensor.

Question 4

This question tested candidates' ability to describe measures to secure data and maintain data integrity. It was satisfactorily done by the majority of candidates. Many candidates did not relate Part (b) of the question with the scenario provided and as such did not mention 'hard drive' and 'important files were missing' as examples of deliberate theft (Part b (i)) and 'water damage to files left on employees' 'desks' and 'power damage to computer equipment' as examples of accidental damage (Part b (ii)). In addition, some candidates did not know what a physical file was.

Question 5

This question tested candidates' ability to explain concepts associated with the Internet. It was well done by the majority of candidates. However, some candidates found it challenging to explain the difference between the terms 'e-learning' and 'e-commerce'.

Question 6

This question tested candidates' ability to explain the characteristics and functions of information processing and to describe various methods of file organization and access.

The majority of candidates performed satisfactorily on the question. However, many candidates could not explain what data was contained in a master file and a transaction file. In addition, many candidates could not state the difference between the serial and sequential methods of file organization.

Section II – Productivity Tools

Question 7

This question tested candidates' knowledge of the basic features of a database management program. It was satisfactorily done by the majority of candidates. Some candidates provided two data types rather than the properties of a field (name, data type, size). In addition, some candidates did not mention the design view or datasheet view when deleting a field from a table. Many candidates were able to provide only one condition for the query (YTD SALES >50000) but the other condition (Type = "D") was missing.

Question 8

This question tested candidates' knowledge of the basic features of a spreadsheet program and was satisfactorily done by the majority of candidates. Some candidates found it difficult to provide the correct formula such as (=SUM(B2:B6) for Part (b) and the correct IF function (=IF(B2<100000.00, "POOR", "GOOD") for Part (d). In addition, for Part (c), some candidates could not indicate that the comma format with two decimal places was used in the spreadsheet provided.

Section III – Problem Solving and Programming

Question 9

This question tested candidates' ability to arrange the five given steps in problem solving in the correct sequence; to identify the input in the given scenario; to compute the average number of storms and to develop an algorithm to solve a problem based on a given scenario.

The question was satisfactorily done by the majority of candidates. Most of the candidates were able to identify the first step in problem solving but were not able to list the remaining steps in order. Some candidates used four years in computing the average number of storms instead of three years. In addition, some candidates provided flowcharts and IPO tables rather than pseudocodes. In some cases, candidates used the actual data rather than the variables in writing the pseudocodes.

Question 10

This question tested candidates' ability to identify and correct errors in three given programming statements; to explain the difference between a variable and a constant; to provide an example of a constant using a PASCAL statement; and to provide an example of each given type of variable.

The question was poorly done by the majority of candidates. Many candidates could not identify and correct the errors in the programming statements given in Part (a). The correct responses are as follows:

(i) IF (X = 3) THEN Y := 8;

(ii) WHILE (X = 3) DO Y := Y + 1; (iii) FOR X := 1 TO 10 DO Writeln(X);

For Part (b), while most candidates provided the difference between a constant and a variable, they could not provide an example of a constant using a PASCAL statement. Most candidates provided assignment statements for the declaration of a constant in PASCAL.

In Part (c), most candidates provided accepted values of an integer and a real variable. However, they could not differentiate between a character and a string variable. Some candidates confused string with arrays data type.

Question 11

This question tested candidates' ability to use control structures and their knowledge of terms and concepts associated with programming. It was poorly done by the majority of candidates. For Part (a), most candidates seemed unfamiliar with the looping constructs of FOR and REPEAT and could not rewrite the given segments of the code using the FOR and REPEAT loops. The correct responses to this part are as follows:

(i) FOR Mark := 1 TO 40 DO Writeln(Mark);

(ii) Mark :=1; REPEAT Writeln(Mark); Mark := Mark + 1; UNTIL Mark = 40;

For Part (b), many candidates were unable to provide the correct terms for the letters A, B, C and D. The correct responses are as follows:

A – Compiler
B – Syntax errors
C – Logic errors
D – Debugging

For Part (c), candidates seemed unfamiliar with program documentation and its purpose. Most candidates mentioned that system documentation was produced by the system while user documentation was produced by the user which is incorrect.

Question 12

This question tested candidates' knowledge of arrays. It was satisfactorily done by the majority of candidates who were able to provide the name of the program, the name of the array and the size of the array. However, many candidates were unable to indicate that the purpose of the array, CSEC, is to store eight integers or to store the value zero in each location of the array.

Paper 03/1 – School-Based Assessment (SBA)

COMMENTS/RECOMMENDATIONS FOR TEACHERS

Generally, the presentation of the SBAs have improved. The following should however be borne in mind.

1. Some teachers failed to adhere to the CXC guidelines and mark scheme.

2. Most projects were well presented however, there were some exceptions in that the organization of printouts were poor.

3. Appropriate paper sizes were not used for letters which should be A4/letter size paper.

4. In a few instances, teachers submitted only soft copies and did not submit hard copy printouts which were required.

5. An individual detailed mark scheme was missing from a number of samples.

6. In some cases there was a lack of uniqueness among SBAs from the same centre.

7. Some projects were not properly or securely bound and sectionalized.

8. In most cases, the description of the project was not submitted.

9. Schools that have more than one teacher did not work cohesively to produce one project and one mark scheme.

10. Computer-generated printouts must match the marks and students on the moderation sheet and samples submitted.

11. It is recommended that teachers familiarize themselves with the CXC mark scheme so that students are allowed a better chance of gaining marks for the tasks.

12. Half marks should not be awarded for tasks.

13. Each project component should be strictly separated and labelled.

14. The sample sent by the school should match that generated by the CXC SIRS system.

Word Processing

1. Most students used headers and footers. No footnotes and endnotes were used.

2. Too few students used columns.

3. Most students inserted tables, however, they seldom used the formatting features for the tables.

4. Most of the formatting features were used by all candidates. However, superscript/subscript, single and double line spacing and page numbers were rarely used.

5. There was evidence that mail merge was done, however, most candidates failed to print the data source and primary document.

6. The majority of students were familiar with and used the spell-check feature.

7. Students imported well, however, graphics/charts were inserted in the wrong position. The size of graphics and charts were sometimes inappropriate.

Spreadsheets

1. About 70 per cent of candidates scored 50 per cent or more of the available marks for the spreadsheet.

2. Overall, the quality of candidates' submissions was good.

3. Widespread lack of formulae sheets worked to the disadvantage of a number of students, leading to a reduction in the marks awarded. Teachers should insist that students submit formulae sheets.

4. Formulae sheets must be legible, printouts should be at default font size or 100 per cent zoom.

5. In some instances, graphs were not printed or where they were printed, axes were not labelled and had no titles.

6. Students need to place greater effort in formatting the spreadsheet in order to limit printouts.

7. Teachers and students need to concentrate more on the quality of work done which are specific to the tasks, rather than on copious quantities of unnecessary printouts.

8. Sorted records should be clearly identified by highlighting or labelling the sorted range.

9. In the event of an insertion or deletion of records, records should be highlighted for easy identification.

10. Many students failed to successfully perform advanced filtering.

11. Students must pay closer attention to the colour scheme of charts which would make charts more legible, especially if printed in black and white.

12. Students need to be able to demonstrate the correct use of absolute cell referencing.

Database Management

General Comments

1. Records should be kept at the recommended amount stipulated by syllabus.

2. Teachers should ensure that structures (design views of tables and queries) are submitted.

3 Every effort should be made to fit tables/queries on one page.

4 Formatting should be properly done in Spreadsheet if data is to be exported to Database.

Specific Comments

Developing Tables

Most samples showed evidence of two or more database tables. Students should provide hard copy evidence of primary keys.

Simultaneous use of Two or More Tables/Files

This was not done as well as was required. Hard copy proof of relationship diagram was not provided by many students.

Modifying Database Tables/Files

There was not much hard copy evidence of addition/deletion/modification of fields or records. Evidence of this activity should be in the form of printed copies of the *before* and *after* modification to table/records. Printing of the structure that initiated the modification can also be done. An example here is the *Delete Query* or the *Make Table action*.

Queries

Simple queries were well done and the majority of students were able to perform at lease one complex query. Additionally, most students were able to comfortably do at least one calculated field. In some instances, an Update Query was seen instead of a Calculated field.

The design views of **all** queries should be included to provide evidence of activities performed.

Sorting a Database File

This activity was performed well by most students.

Generating Reports

This section of the syllabus was done very well by many of the students, with a few samples not showing statistical and/or summary features.

Programming

General Comments

1. In a number of cases, students responses showed an extremely high degree of similarity.

2. Teachers are encouraged to provide sufficient guidance to allow students to complete their assignments and should resist giving them the solution.

3. Many problems were trivial and thus provided little scope for students creativity.

4. Teachers should ensure that the project description fits the requirements detailed in the mark scheme as indicated in pages 27–29 of the syllabus.

5. Program solutions should be confined to the program language specified in the syllabus (Pascal.)

Specific Comments

Problem Statement/Definition

The problem statement was not generally submitted along with the assignment. Students must follow the requirements given in the syllabus as stated on page 29. Some candidates used the IPO chart as a replacement for the problem statement/definition. This should not be done.

Representing the Solution in a Flowchart or Pseudocode

Generally, this area was fairly well done. However, improvements can be made, hence the following areas should be given focus:

1. The start of pseudocode should be clearly indicated with the word START.

2. Variables must be clearly identified, declared and initialized. It would be helpful for students to create a data (variables) dictionary prior to the algorithm. An IPO chart would be useful with this. Some candidates did not declare arrays. The project should be substantive enough to accommodate arrays.

In the processing section, students must clearly indicate where looping and selection controls will be implemented. Control structures in flowcharts were not properly done. For example, Yes/No options were not labelled; there were three or more flow lines going away from the decision box; there was a lack of connectors and the use of inappropriate shapes; the processing box and input/output box; were used interchangeably. There was little difference seen between the pseudocode, and the programming code.

Students showed high proficiency in requesting data for storage and the output of information.

Trace Tables

This section was very poorly done or in some cases not attempted. The following were observed:

1. The variable names used in the algorithm were not identified in the Trace Table. In some cases, the variable names used were not in the algorithm at all.

2. Some projects did not require the creation of trace tables.

3. Students did not correctly show the data flow changes in the table as sequentially defined by the algorithm.

Programme Working to Specification

The effectiveness with which the programme achieved the objective

Generally, this section was fairly well done. Most candidates were able to produce the Pascal code but the majority of candidates did not produce evidence of the program actually running in the form of screen shots — working program and compilation which should be submitted.

Language features used to achieve a working program

This section was generally well done.

Teachers must ensure that the problem design facilitates the use of the IF THEN ELSE construct. Also, teachers must design the problem to facilitate a variety of looping control structures especially with the use and manipulation of arrays.

Most students used two or more data types; however, greater attention must be paid to variable declaration and initialization. In some projects, students used the actual data as variable names: for example, 4407: integer.

Most students performed the IF THEN control appropriately but limited the use of the IF THEN ELSE construct. Some students used many IF THEN and not an ELSE some did not put these IF controls within a looping construct.

Looping controls were moderately done. Students need to properly initialize the looping controls. The following is an example where a student started a WHILE loop without initializing it:

WHILE NAME, <> 'END' DO

READLN NAME

And the NAME variable is not declared before the WHILE or

READLN SCOUNT, NAME

WHILE ID <> 0 DO

Clarity of the program

This section was generally well done. However, the following observations were made:

1. Students in some cases, did not put in the Pascal code, the author of the program, the date created and a simple statement of the task the programme sought to solve.

2. Students did not use indentation of the program code well. Too many students had everything in one margin and no indentation for looping and selection controls.

Most students were awarded the mark for user friendliness, however, some programs did not indicate to the user how and when to input data by messages or prompts and there were no labels to indicate what information was being displayed.