

CARIBBEAN EXAMINATIONS COUNCIL

**REPORT ON CANDIDATES' WORK IN THE
CARIBBEAN SECONDARY EDUCATION CERTIFICATE**

JANUARY 2004

INFORMATION TECHNOLOGY

Copyright © 2004 Caribbean Examinations Council
St Michael, Barbados
All rights reserved

INFORMATION TECHNOLOGY JANUARY 2004

GENERAL COMMENTS

Some 382 candidates registered for the January 2004 Information Technology Examination (Technical Proficiency) compared with 324 in January 2003. Some 289 candidates wrote the examination compared with 266 in January 2003.

DETAILED COMMENTS

Paper 1 – Theory (Structured Essay)

The mean score for this paper was 30.8 out of 90. The range of marks was 0 to 64. The responses of candidates to questions on this paper were indicative of candidates lack of understanding of the fundamental terms and concepts of the subject. The format for the programming section was simplified by having shorter questions and a break-down of marks allocated. The results showed an improvement of candidates who attempted these questions and a consistent number of candidates who did not attempt any programming question.

Question 1

Observations

- a) Too many varying responses for the two main sections of the CPU, which ranged from monitor to modem to processor.
- b) Many candidates confused ROM with RAM.

Suggested Responses

(a) The control unit

Purpose: directs and coordinates most of the operations of the computer,
Arithmetic and logic unit

Purpose: performs arithmetic, logical operations, comparison and logical
Operations.

- (b) Similarity: both can be used to store data Difference: data in ROM cannot be changed while data in the EPROM can be erased and new data written.

Question 2

Observations

- a) Not well answered. Most candidates did not know the terms for the specified hardware devices.
- b) The methods of data capture were clearly not known by many candidates.

Suggested Responses

- (a) (i) Read/write head
 - (ii) Track
 - (iii) Sector
- (b)(i) MICR: Magnetic-ink character recognition
 - (ii) OMR: Optical mark recognition
 - (iii) OCR: optical character recognition

Question 3

Observations

- a) Poorly done. Candidates could not compare the characteristics of secondary storage devices.
- b) (i) Poorly done. Candidates could not find the binary and BCD representation of a decimal number.
 - (ii) Poorly done. Candidates could not find the two's complement of a number.

Suggested Responses

- (a) Capacity: 3, 1, 2
Access Time: 3, 2, 1
Reliability: 3, 2, 1
- (b) (i) Binary: 11101010
BCD: 001000110100
 - (ii) $7 = 0111$
 $-5 = 1011$ (two's complement)
 $7-5 = 0111+1011 = 10010 = 0010$

Question 4

Observations

- a) Parts (i) and (ii) were well done. Part (iii) was poorly done. Candidates had difficulty stating the purpose of utility programs although some were able to give correct examples. Many responses were “performs a specific task.”
- b) Not well done. Several candidates completely omitted this part. The most common answer was “pictures.” Candidates seem not to be familiar with the term graphical user interface.

Suggested Responses

- (a) (i) Coordinates all the activities’ among the computer resources.
 - (ii) Performs a specific task, usually related to managing a computer, its devices, or its program.
 - (iii) Performs a specific task eg. Word processing.
- (b) Icons, window, pull-down menu.

Question 5

Observations

This question was generally well done. It was however observed that some candidates described simplex communications as one in which data can flow in both directions but not simultaneously. The question was attempted by most of the candidates.

Suggested Responses

- (a)(i) LAN: network that connects computers and other devices in a limited geographical area eg. Room

WAN: network that connects LAN’s or computers in a large geographical area eg. Two countries
- (ii) Simplex: allow data to travel in only one direction
Duplex: Allow data to direction simultaneously

- (b) Print appears faded on paper

Question 6

Observations

- a) Candidates were not able to distinguish among MICR, OCR and OMR.
- b) Candidates seem not to understand the term “peripheral device.”
- c) Very limited knowledge shown of the application or benefits of information to a business entity.

Suggested Responses

- (a) (i) Bar code scanner, touchscreen
Printer, keyboard
 - (ii) Computers are networked
- (b) - Complete business activities
- Make decisions
- Develop, create and distribute products and services.

Question 7

Observations

- a) (i) The majority of candidates were unable to distinguish between a web-site and a web server. Many responses stated that a web server was an individual who created websites or an individual who ‘surfed the web’. This question was not well answered.
 - (ii) The majority of candidates did not indicate that e-mail was an electronic process. Many of the responses could have been used to define a non-computer related area. The reference to a ‘personal address for sending and receiving mail’ could be applicable to a postal address. Additionally, the majority of candidates did not indicate knowledge of URL, although a few candidates stated what URL stood for.
- b) This question was fairly well done.

Suggested Responses

- (a) (i) Website: collection of web pages where each web page can contain text, graphics, sound and video and links to other documents.
Web Server: computer on the Internet that stores and delivers web pages.
- (ii) URL: Address of a web page on the Internet.
Email Address: a combination of a user name and a domain name that identifies a user so that he /she can receive Internet email.
- (b) - Sell goods and services
- Get feedback of number of visitors

Question 8

Observations

- a) Well done.
- b) Candidates did not understand the first part of the question. Candidates wrote about the results of infection and not the method of infection. The removal of virus part was well done, although some candidates mentioned biological viruses such as diskettes left in the dust.
- c) Well done. Many candidates did not write about unauthorized use or access, or access through communication means.

Suggested Responses

- (a) - Keep computers in restricted area
- Password protect computer file
- Encrypt file
- (b) Infection
- Download an infected file from the Internet, or
- Open an email attachment, or
- Use infected disk
- Removal:
- Use a virus detection and removal program

- (c) - Software Piracy: unauthorized copying, using or selling of copyrighted software.
- Hacking: unauthorized access to a computer system (through communication means)
- Computer Fraud: changing of information in a computer without authorization for personal benefits or malicious reasons.

Question 9

Observations

- a) Some candidates were very vague in their responses. In some areas, candidates looked at how the computer can help the teacher in presentation of lessons. So responses such as saving children's test scores, preparing lessons, tests, handouts, preparing attendance sheets were given. Some candidates misinterpreted the question as advantages of using the computer in the classroom.
- b) Some candidates confused videoconferencing and telecommuting, although both have the advantages of saving the cost of travel.

Suggested Responses

- (a) - Printouts of course work
- Use of computer-aided instruction software
- Simulations: computer-based models of real life situations
- Distance learning or on-line learning
- (b) (i) Video conferencing: communication between two or more geographically separated people who use a network or the Internet to transmit video and audio signals.
- (ii) Save on travel cost
- Save on communication cost

Question 10

Observations

- a) In most cases candidates' responses implied that the expert system was for storing patient records. Also, some responses suggested that the system was given to doctors and monitor patients.

- b) Most responses indicated that the Database Administrator was responsible for input/process/store of data. Some responses were to create and maintain the database.

Suggested Responses

- (a) - Provide support to medical expert in decision-making
 - Help experts arrive at an accurate solution much faster
- (b) - Creates and maintains the data dictionary
 - Establishes and monitors database security and performance
 - Implements and tests backup and recovery systems

Question 11

Observations

- a) Most responses stated that the dry-run was “checking for errors”, rather than responses expected. Few candidates mentioned manually testing for correctness.
- b) Some responses were to remove viruses or incorrect data rather than errors. Few responses included both locating and converting errors.

Suggested Responses

- (a) Dry Run: manually working through the program using a set of input values
- (b) Debugging: locating and correcting errors which were found in a program

Question 12

Observations

- a) Generally answered well – most answers included “human readable” and ‘easy to understand’.
- b) Generally well done
- c) Little mention was made of the computing executing binary instruction.
- d) Candidates did not seem to recognize that the value is a constant. Most candidates explained in terms of ‘formatting as a decimal rather than a percentage’.

- e) Generally well answered.
- f) Generally well answered. Most candidates did not recognize that -56.95 was a valid numeric value.
- g) Few responses submitted.
- h) Not well answered. Many candidates appeared to misinterpret the purpose of error checking.

Suggested Responses

- (a) High level languages are:
 - 1. easy to understand.
 - 2. Easily written in English type language.
- (b) The term is compiling, interpreting or translating
- (c) It must be converted so that the machine can interpret/understand and execute the code.
- (d) $\text{tax} = 0.15$ shows that it is a constant value
- (e) data type of cost is: number
- (f) 45.50 valid
- (g) high invalid
- (h) -56.95 valid
- (g) if $(\text{Cost} < 0)$ or $(\text{cost} = 0)$ then output ('error')
- (h) Insert this code at below line 2 or newline 3

Question 13

Observations

- a) Fairly well done. Some candidates made use of variable names which did not reflect the problem to be solved, such as num1, a, X.
- b) Not well done. Many answers attempted were to process one student's grades. No attempt at repetition was made other than writing three separate programs. Programming code was not used.

Suggested Responses

- (a) (i) Input: Course and Exam marks
- (ii) Processing: Final course and exam marks
- (iii) Output: Final
- (b) Program calc (input, output);
 Var course, exam, final, x: integer;

```
BEGIN
FOR x:=1 TO 3 DO Begin
Writeln ( \ Enter course mark:');
Readln (course mark:');
writeln ( \ Enter course mark:');
final:= course + exam
writeln('Final mark = ', final);
END
```

Question 14

Observations

- a) Generally well done. Candidates were able to complete the trace table accurately.
- b) The pattern was recognized and explained.

Suggested Responses

14. (a) Recall:

```
READ x

FOR M = 1 to X DO

Y = 2*M

Z = (12- Y)

END FOR

PRINT Z
```

Solution:

X M	Y	Z
5 1	2	10
5 2	4	8
5 3	6	6
5 4	8	4
5 5	10	2

- (b) The pattern is : Y is in ascending order from(2 to 10), while Z is in descending order (from 10 to 2)

Paper 2 - Integrated Practical Paper

General Comments

The mean for this paper was 36.3 out of 90 and the range of marks was 0 to 79. In many cases, the printouts were not properly collated for ease of identification of data for each question.

Some printouts were incomplete – evidence could be seen of data tables being used from the printout of the reports, without the data tables being printed. All tables, queries and reports should be printed as requested.

Detailed Comments

Question 1 - Spreadsheet

Observations

- a) This question was generally done well.
- b) i) This question was done well. Some candidates inserted the text “Total” at the wrong location.
ii) Question generally well done.
- c) Both parts i) and ii) of this question were generally done well.

- d) This question was not done well. The majority of candidates calculated the average using the incorrect range.
 - i) This question was not done well. Candidates used the incorrect range in finding the maximum and minimum values
- e) The majority of candidates inserted the title correctly, however, many were unable to merge the cells and center the title across the columns of data.
- f) Majority of candidates used the date function correctly, however, many inserted the date with an incorrect format
- g) This question was generally done well.
- h) This question was generally done well.
- i) This question was generally done well.
- j) This question was poorly done. Candidates were unable to set up the required criteria for extraction of data. Instructors must ensure that candidates spend more time in practicing the use of the data extraction tools provided in the spreadsheet programs.
- k) This question was generally well done.
- l) This question was done poorly. The majority of candidates were unable to select the required data range for illustrating the chart.
- m) This question was done poorly. The majority of candidates were unable to select the required data range for illustrating the chart.

Question 2 – Database Management

Observations

- a) This question was fairly well done. The majority of candidates successfully imported the data from the spreadsheet provided. Evidence was seen where candidates imported the field headings as data within the database table.
- b) This question was done well – Some students inserted the “Region” field as a text field, which was inappropriate for the use of the field.
- c) This question was generally done well
- d) This question was generally done well. Some candidates however created the “Region” field as a text field.
- e)
 - i) This question was poorly done. Many attempts at the query showed an unsuccessful join between the PERSONEL and RECOMMENDATIONS tables.
 - ii) The majority of candidates did this question incorrectly. Candidates performed this query as a list of doctors from the PERSONEL table, rather than make use of the summary query to display the number of doctors in the table.
 - iii) Very few candidates attempted this question.
- f) The majority of candidates did this question fairly well. Data content for the report was correct in most cases. However, the majority of candidates were unable to format the report title into two separate lines. In some instances, data on the report was not properly formatted so that all data was displayed clearly – some field names and data were not seen in their entirety.

Question 3 – Word Processing

Observations

- a) This question was not done well. Candidates did not realize they were required to set all four margins.
- b) Most candidates inserted the footer. However, in many instances, the text was not italicized. Some candidates used a footnote rather than a footer.
- c) This question was done well. Some candidates separated the text of the heading and thereby lost the mark for accuracy.
- d) This question was done poorly. Some candidates centered the text rather than fully justifying.
- e) The majority of candidates did not attempt this question.
- f) This question was done reasonable well by the majority of candidates. Many candidates did not type the document in its entirety. In some cases, the required punctuation was omitted.
- g) This question was done well by the majority of candidates. In many instances, the spreadsheet data was inserted correctly at the required location.
- h) This question was done well by the majority of candidates. In many instances, the spreadsheet pie chart was inserted correctly at the required location.
- i) This question was done well by the majority of candidates. In many instances, the database report was inserted correctly at the required location.
- j) In most cases, the correct data source was used, however the majority of candidates were unable to successfully complete the mail merge.

Paper 3/2 - SBA Alternative

The mean for this paper was 23.3 out of 60 and the range of marks was 1 to 51.

Question 1 – Spreadsheet

Observations

- a) This question was done poorly. The majority of candidates did not suggest the use of a formulae
- b) This question was done well. Candidates gave the correct formula in the majority of cases.
- c) This question was done poorly. The majority of candidates were unable to explain how to complete the task of computing the FEES, PMT and DUES for other members by using the copy and paste feature.
- d) This question was done well. Candidates were able to suggest the correct text alignment for the numeric column headings.
- e) This question was done well. Candidates were able to suggest the format required for the monetary values of the spreadsheet.
- f) This question was done satisfactorily. Some candidates did not suggest a meaningful field for sorting the data.
- g) This question was poorly done. The majority of candidates were unable to describe the use of simple criteria to extract data.
- h) This question was well done. The majority of candidates were able to correctly suggest the cell to change so that all others would change automatically.
- i) This question was fairly well done. Some candidates were unable to suggest the merging of cells and centering of the heading across the columns.
- j) This question was done satisfactorily. The majority of candidates did not indicate the correct data range required to construct the graph.

Suggested Responses

Question 1

- (a) - E2 = $\text{if}(\text{D2}=\text{"Council"}, 1500, 2500)$
- (b) - G2 = E2-f2 or F2-E2
- F2 = $H2+12$ or $\text{Sum}(H2:I2)$
- (c) - Select range E2:G2
- Copy range to E3:G6
- (d) - Centre or right-aligned numeric columns
- (e) - Decimal
- Currency format with \$ symbol
- Comma separating thousands; 0 dp
- (f) - Sort on last name
- (Sort on last name and then status)
- (g) - Setup criterion and extraction range
- Insert criteria (Due>0)
- Select data range and perform query
- (h) - Change formula in cell E2
- (i) - Insert appropriate blank rows (rows 1 and 2)
- Enter title in cell A1 (and select border)
- Select the range A1:II and choose the merge centre
- (j) - Use chart feature and select Pie
- Data range: the two totals; label range: 2 types of members; format data labels for slice to include name and percentage

Question 2 - Database

Observations

- a) Many students did not write appropriate one-word names for the field names. For example MEDALS is preferred to 'Medals won for each member' as a field name.
- b) Some responses revealed that the students did not understand what 'unique' meant.
- c) Generally well done
- d) Although most students mentioned importing the spreadsheet, there were too many responses simply stated 'cut and paste'.
- e) Many candidates suggested a relationship instead of stating the ID field as the field to link the tables.
- f) The majority of candidates stated ascending and descending instead of sorting and indexing. Possibly poor wording of the question.
- g) Generally well done. Some candidates used <20 for more than 20 goals
- h) Not well answered. Candidates do not know the formula used, although many of them gave the correct answer in a sentence.
- i) Students did not write the field name used to obtain the total result.
- j) Many candidates omitted the selection of the fields for the report. Some candidates included creating a query which showed that they understood report creation.

Suggested Responses

Question 3

- (a)
 - Centre and bold club name
 - Font: different style and larger font
- (b)
 - Import graphic file to document with letterhead or
 - Copy graphic and paste in letterhead
- (c)
 - Insert a footer
 - Text enter with italics font and centred
- (d)
 - Checking status bar for fully justified icon
 - Text aligns to both left and right margins

- (e) - Do a search for 'futball' and replace with 'football' or
 - Perform a spell check

- (f) - Use the cut and paste feature
 - (Cut par 2 and paste below par 5)
 - (Cut par 5 and paste in below par 1)

- (g) - >20 under Home field
 - <5 under the medals field

- (h) - TotGoal: {HOME} + {OVERSEAS}

- (i) - Query the table to display field: Medals
 - Use group by sum

- (j) - Perform query to show required results
 - Create report on query
 - Select fields
 - Enter heading in report

Question 3 – Word Processing

Observations

- a) Well answered. Some candidates even stated WordArt and headers, when bold and font use was preferred.
- b) Copy and paste was the general answer. Many candidates suggested scanning the graphic although the question stated that the graphic file was given.
- c) Generally well done. There was a trend to state how to centre OR italicize the motto, but not both.
- d) Very well done. Candidates showed thorough knowledge of the various ways to verify that the text was fully justified.

- e) Very well done. Candidates not only suggested the search and replace, but as the question was worded, a spell check was also acceptable.
- f) Many candidates simply stated cut and paste, instead of giving at least some detail on how the cut and paste was used to interchange the paragraphs.
- g) Candidates showed good knowledge of the print dialog box. However, some others simply wrote 'I would go to Print Setup and change the necessary things'.
- h) Generally well done. Candidates knew how to manipulate columns.
- i) This was not well answered although many attempted it. Many candidates reversed the number of rows and columns.
- j) Very well done. Many candidates correctly stated to export the report or copy the database report and paste in the word document. However there were still those who simply stated 'copy and paste'.
- k) Too many responses of 'merge them into one'.
- l) Candidates are not explaining explicitly how to indent or change line spacing. Responses are too general and vague. Also too many omitted to state that the text should be blocked first.
- m) Not well answered. Over half of the candidates did not attempt this question. Many candidates did not state that the data source was the database table. Also, too few stated the output of the merge as 15 merged letters.

Suggested Responses

- (a) - Centre and bold club name
- Font: different style and larger font
- (b) - Import graphic file to document with letterhead or
- Copy graphic and paste in letterhead
- (c) - Insert a footer
- Text enter with italics font and centred
- (d) - Checking status bar for fully justified icon
- Text aligns to both left and right margins
- (e) - Do a search for 'futball' or and replace with "football" or
- Perform a spell check
- (f) - Use the cut and paste feature
- (Cut par 2 and paste below par 5)
- (Cut par 5 and paste in below Par 1)

- (g) - Place cursor in page 3. {1}or (Select print current page)
 - set number of copies to 5
- (h) - Block text in third paragraph; select columns and choose 2 columns
or
 - Column break
- (i) - 4/5 rows and 3 columns
- (j) - Export report to word processing and paste
 - Retrieve report in page 5 or -
 - Copy each document and paste in one document
- (k) - Create a new document and retrieve each file in a specific location. Save as one document
 - Copy and paste in one document
- (l) - Block paragraph 4 and select indent
 - Block paragraph 4 and change line spacing to 1.5
- (m) - Type text for letter and insert merge fields
 - Data source: database table created
 - 15 personalized letters