

FORM TP 2014014



TEST CODE **01229020**

JANUARY 2014

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®
EXAMINATION

INFORMATION TECHNOLOGY

Paper 02 – General Proficiency

2 hours 15 minutes

13 JANUARY 2014 (a.m.)

4
COPIES

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of THREE sections and a total of TWELVE questions. Candidates MUST answer ALL questions in all THREE sections.
2. Number EACH answer correctly in the answer booklet.
3. Code is to be written in the programming language, Pascal.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

Copyright © 2012 Caribbean Examinations Council
All rights reserved.

01229020/JANUARY/F 2014



SECTION I

THEORY – 60 marks

Answer ALL questions.

1. (a) (i) Name ONE example of an operating system software for personal computers. (1 mark)
 - (ii) State TWO functions of an operating system. (2 marks)
 - (b) A graphical user interface (GUI) displays applications using icons. List THREE other features of a GUI. (3 marks)
 - (c) State ONE example of a software user interface **other than** graphical user interface. (1 mark)
 - (d) State ONE example of a hardware user interface. (1 mark)
 - (e) State ONE example of an application that uses EACH of the following:
 - (i) Batch processing (1 mark)
 - (ii) Real-time processing (1 mark)
- Total 10 marks

GO ON TO THE NEXT PAGE

2. (a) State the technical term for EACH of the following descriptions:
- (i) Network of computers within a small area
 - (ii) Network of computers within a wide geographical area
 - (iii) Data transmission in one direction at a time
 - (iv) Data transmission in both directions at the same time
 - (v) Electronic service for the posting and reading of public messages (5 marks)
- (b) State the technical term for EACH of the following examples:
- (i) A teacher uses a website to share his/her personal comments on school issues
 - (ii) An audio file containing the Prime Minister's speech on Independence Day has been placed on the Internet for downloading and listening
 - (iii) CXC sends results to each candidate electronically
 - (iv) Adam uses the Internet to purchase his textbooks from Amazon
 - (v) Kim is doing a degree in nursing using the Internet (5 marks)

Total 10 marks

3. The principal of a high school has recently acquired ten computer systems and related hardware, and software to be used by teachers for teaching and learning activities.
- (a) (i) Other than computers and power protection devices, list THREE hardware devices which could be used with the computer systems. (3 marks)
- (ii) Give ONE example of an appropriate use by the teacher of EACH of the three additional hardware devices that you have listed in 3 (a) (i) above. (3 marks)
- (b) Each computer system was pre-loaded with the following types of software. Give a suitable example of how EACH type of software could be used by the subject teacher mentioned below:
- (i) Pascal compiler: IT teacher
 - (ii) Spreadsheet: Accounting teacher
 - (iii) Presentation software: English teacher
 - (iv) CD/DVD burning software: Social Studies teacher (4 marks)

Total 10 marks

GO ON TO THE NEXT PAGE

4. Classify the following as examples of EITHER verification OR validation.

For EACH verification activity, state the purpose.

For EACH validation activity, state the name of the check.

- (a) You are asked to enter a new password twice.
- (b) Check to verify that letters have been entered instead of digits on a form.
- (c) Check to see if the date entered for April is between 1 and 30 inclusive.
- (d) Check that the gender of a person is "M", if the title is "Mr".
- (e) Check to see if the year(yy) is entered as 68 instead of 86.

Total 10 marks

5. (a) Find the decimal representation of a SIGNED number represented by BCD, 1011 0110 0101 0100. Show all working. **(3 marks)**

(b) Find the two's complement eight-bit representation of the decimal number, -42. Show all working. **(3 marks)**

(c) Copy and complete the table below by indicating the type of storage media and the method used to access data.

Storage Media	Type of Storage Media	Access Method
DVD-ROM		
Data tape		

(4 marks)

Total 10 marks

GO ON TO THE NEXT PAGE

6. Column X in the table below gives the descriptions of some special names used in information technology and Column Y gives names of these descriptions.

You are required to match Column X with Column Y as follows. Write the numbers, 1 to 10, in your answer booklet. Next to EACH number, write the letter that corresponds to your choice from the list given in Column Y of the table.

X	Y
1. Scans fingerprint	A. Network administrator
2. Stores programs and data temporarily	B. OMR
3. Upgrades computer hardware and software	C. MICR
4. Prints multiple copies with carbon paper	D. Firewall
5. Grants access to network resources	E. RAM
6. Prevents unauthorized access to a computer network	F. Computer technician
7. Used by banks to read codes on a cheque	G. Dot-matrix printer
8. Turns on the light when someone approaches the door	H. Biometric system
9. Used to print a building plan	I. Plotter
10. Marks multiple-choice responses	J. Sensor

Total 10 marks

SECTION II

PRODUCTIVITY TOOLS – 15 marks

Answer ALL questions.

7. The Softball Association keeps details of all monies collected in a spreadsheet. Part of the spreadsheet is shown below for all revenues collected for the first six months of the year.

	A	B	C	D	E	F	G	H
1	Revenue (\$)	Jan	Feb	March	April	May	June	TOTAL COLLECTIONS
2	Sale of souvenir items	1,800	1,500	1,700	1,200	900	1,000	8,100
3	Fundraising	5,800	3,500	2,500	8,500	6,500	3,800	30,600
4	Sponsors	6,500	8,000	5,000	25,000	12,500	7,500	64,500
5	Membership fees	1,000	400	1,400	600	800	1,200	5,400
6	Tournament	1,000	4,000	9,000	3,000	4,500	6,500	28,000
7	TOTAL	16,100	17,400	19,600	38,300	25,200	20,000	136,600

- (a) State the cell address and the function required in the cell to compute the total revenue collected from sponsors. **(3 marks)**
- (b) What format has been applied to the numeric data in the spreadsheet? **(1 mark)**
- (c) A pie chart was created for the data in the spreadsheet. Each slice of the pie indicates the month, the total for the month and the percentage of the total revenue collected. State the ranges for the category name and the data used in the creation of the pie chart. **(2 marks)**
- (d) The table below shows the criteria range of a filter to extract all revenue items with a TOTAL greater than 25 000 for the six-month period

Revenue (\$)	Jan	Feb	March	April	May	June	TOTAL COLLECTIONS

- (i) State the criterion to implement the filter above. (Indicate the column heading and the criterion to be inserted under the column heading.) **(1 mark)**
- (ii) How many revenue items will be extracted? **(1 mark)**

Total 8 marks

8. The Softball Association uses a database table to store details of members of the association. Part of the database is shown below.

Member					
Lastname	Firstname	Specialization	Gender	Membership_No.	Date_of_Membership
Smith	Andy	All-rounder	M	082	6/19/2010
Khan	Aliyah	Spin Bowler	F	102	8/22/2012
Etwaroo	Rosalind	Wicket Keeper	F	108	1/22/2011
Roberts	Andy	Fast Bowler	M	112	9/17/2010
Thakur	Anil	Batsman	M	115	3/17/2011
Ali	Bibi	Fast Bowler	F	124	4/12/2011
Best	Monroe	Fast Bowler	M	130	5/11/2013
Setall	Alicia	All-rounder	F	104	3/20/2012
Mangar	Charran	Fast Bowler	M	113	12/30/2011

- (a) State the name of the table used to store data in the database. **(1 mark)**
- (b) Which field in the table can be used as the primary key? **(1 mark)**
- (c) If the records in the table are sorted from the newest to the oldest member, what will be the Membership_No. of the member who would be at the TOP of the sorted list? **(1 mark)**
- (d) The following query is performed on the data in the table.

Field:	[Specialization]	[Gender]	[Lastname]	[Firstname]
Table:	member	member	member	member
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria	"Fast Bowler"	"M"		
or:				

- (i) How many fields will be displayed when the query is executed? **(1 mark)**
- (ii) How many records will be displayed when the query is executed? **(1 mark)**
- (e) A report is generated from the database table. State TWO fields which could be used to group the data. **(2 marks)**

Total 7 marks

GO ON TO THE NEXT PAGE

SECTION III

PROBLEM SOLVING AND PROGRAMMING – 45 marks

Answer ALL questions.

9. The scores obtained by five students in two tests are given in the arrays below.

TEST1: 25 15 20 28 18

TEST2: 20 15 17 22 16

- (a) Write codes in PASCAL to declare the array TEST1. **(5 marks)**

- (b) A third array DIFF is created by subtracting TEST2 scores from TEST1 scores. Assuming that all three arrays begin at index 1, write the content of the array DIFF when the following fragment of code is executed:

```
FOR x := 1 to 5 DO  
  DIFF[x] := TEST1[x] - TEST2[x];
```

(5 marks)

Total 10 marks

10. (a) Using the following program, copy and complete the trace table below.

```
Program trace;
var x,y,z :integer;
begin
writeln('x y z');
y := 3;
z := 2;
For x := 1 to 4 do
begin
y := y + x;
z := y * 2;
writeln(x, ' ', y, ' ', z);
end;
writeln('At end of program y = ',y, 'z = ',z);
end.
```

x	y	z

(6 marks)

(b) A water company uses the following conditions to award a waiver of monthly water charges:

- (i) Applicant must be 65 years or older, AND
- (ii) Applicant must NOT be working.

Copy and complete the following truth table.

65 years or older	Working	Waiver
Y	Y	
Y	N	
N	Y	
N	N	

(4 marks)

Total 10 marks

GO ON TO THE NEXT PAGE

11. State ONE difference between EACH of the following pairs of terms used in programming:
- (a) Variable and a constant (2 marks)
 - (b) Conditional branching and looping control structures (2 marks)
 - (c) Syntax and logic errors (2 marks)
 - (d) Testing and debugging (2 marks)
 - (e) Source code and object code (2 marks)

Total 10 marks

12. The Customs Department uses a program to compute the duties and taxes to be paid on used cars imported into the country.
- All cars pay a duty of 40% of the landed value of the car (cost of vehicle plus shipping charges)
 - All cars with an engine capacity of 1800 cc and above pay a luxury tax of 10% of the landed value of the car.
 - Cars with an engine capacity below 1800 cc are not charged any luxury tax.

For each car, the program will compute the customs duties to be paid, luxury tax to be paid and the total duties and taxes.

- (a) Write PASCAL code to declare the duties rate and luxury tax rate. (2 marks)
- (b) Draw a flow chart to check the engine size of a car and compute the luxury tax to be paid. Use the variable `car_val` to store the value of the car and the variable `engine` to store the size of the car engine. (5 marks)
- (c) Write PASCAL code to declare THREE variables with meaningful names to be used in the program. (3 marks)
- (d) Write PASCAL code to initialize the variable that will contain the total duties and taxes to 0. (2 marks)
- (e) Write PASCAL code to calculate the duty to be paid on a car. Use the variables you declared. (3 marks)

Total 15 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.