FORM TP 2017080

TEST CODE **01229020**

MAY/JUNE 2017

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

INFORMATION TECHNOLOGY

Paper 02 – General Proficiency

2 hours 15 minutes

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. Write your answers in the spaces provided in this booklet.
3. Do NOT write in the margins.
4. Code is to be written in Pascal.
5. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra lined page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
6. **If you use the extra page(s) you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**

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

Copyright © 2016 Caribbean Examinations Council
All rights reserved.

"*"Barcode Area"*"
Sequential Bar Code

SECTION I

THEORY – 60 marks

Answer ALL questions.

1. (a) The following are devices used with computers.

Keyboard	Plotter	Light pen	Optical character reader
Inkjet	Speaker	Microfilm	Headphones

From the table above, list

(i) the input devices

.....

.....

.....

.....

(3 marks)

(ii) the devices that are printers.

.....

.....

.....

.....

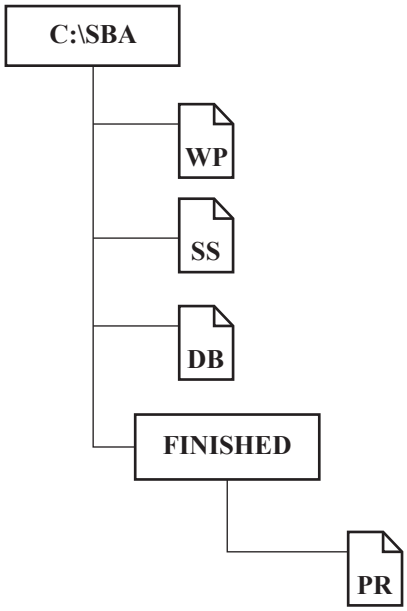
(2 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

“*”Barcode Area”*”
Sequential Bar Code

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(b) Consider the file structure below that contains folders and files on a device, and answer the questions that follow.



(i) State the name of a folder found in SBA.

.....

(1 mark)

(ii) Write the path required to locate PR.

.....

.....

(3 marks)

(iii) State the number of files that would be located in FINISHED, if PR was copied to SBA.

.....

(1 mark)

Total 10 marks

“*”Barcode Area”*”
Sequential Bar Code

2. (a) Storage and manipulation of data can occur in different ways within a computer system. Complete the following table by stating the correct term for EACH example of data manipulation and storage method. An example has been done for you.

Data Manipulation and Storage Method	**Term**
<table><tr><td>Representation</td><td>Character</td></tr><tr><td>0100 0001</td><td>A</td></tr><tr><td>0100 0010</td><td>B</td></tr></table>	ASCII representation
(i) AC5 is represented as 1010 1100 0101	
(ii) This method converts the number to binary, inverts the digits, and adds one to the result.	
(iii) 1 + 1 is represented as 10_2	
(iv) 8_{10} is stored as 10_8	

(4 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(b) The following ASCII code represents some of the keys on a computer keyboard.

Character	Representation
A	0100 0001
B	0100 0010
C	0100 0011

(i) Write the representation of the character 'D'.

.....

.....

(2 marks)

(ii) Using the code for 'C', calculate the ASCII code for the letter 'H'. Show all steps.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(4 marks)

Total 10 marks

"*"Barcode Area"*"
Sequential Bar Code

3. Reyna is a film student who has created a series of video recordings for her project. The following table describes her specific use of the Internet and data communications regarding her project work.

(a) Reyna created another episode of her video so that viewers can automatically download the video episodes over the Internet and watch them from their computer or mobile device.	
(b) She also created a webpage as a journal to share her experiences while creating each video.	
(c) She used a program on the Internet to call her aunt in another country to tell her about her progress at school.	
(d) Reyna had to submit a script to the school's online course page for her teacher to grade.	
(e) Her school's network is private and restricted to students and teachers.	
(f) On weekends, she communicates over the Internet with her family and friends via instant text messages.	
(g) She purchased a new camera lens from an online store and paid for it with her credit card.	
(h) Reyna followed rules and procedures to transmit some files over the Internet to the server at school.	
(i) She read the messages about her films that were posted by others on a central system on the Internet.	
(j) Reyna's brother wrote a short note using a computer and sent it to her via an Internet connection.	

Complete the table above by writing the term **from the list below** that is MOST suitable for EACH description. Each description may be used once, more than once, or not at all.

Blog	Bulletin board	E-commerce	E-learning
E-mail	File transfer protocol (FTP)	Instant messaging	Intranet
Local area network (LAN)	Podcast	Upload	Voice over Internet Protocol (VoIP)
Web browser			

Total 10 marks

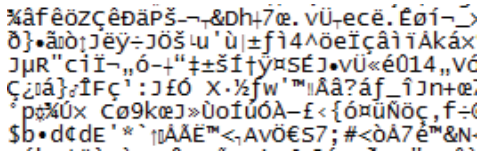
GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

4. (a) Identify the security measure and the type of restriction, software (S) or physical access (P), represented by EACH image in the following table.

Image	Security Measure	Type of Restriction: Software (S)/ Physical Access (P)
		
		
********		

(6 marks)

(b) Explain the purpose of EACH of the following security procedures:

(i) Archiving

.....

.....

(2 marks)

(ii) Recovery

.....

.....

(2 marks)

Total 10 marks

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

5. (a) Processing modes can be completed either via batch, online/real-time or time sharing. The following table describes the characteristics of two of these processing modes. Complete the table by entering a relevant statement for the online/real-time processing mode for EACH characteristic.

Characteristic	**Processing Mode: Batch**	**Processing Mode: Online/Real-Time**
Processing method	Data is grouped, sorted and processed at regular intervals	
Response/Turnaround time	Hours/days after submitted for processing	
File storage medium	Tape or magnetic disk	
File organization	Sequential or indexed sequential	
Access method	Sequential	

(5 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

“*”Barcode Area”*”
Sequential Bar Code

(b) Specify the MOST applicable processing mode (batch or online/real-time) for EACH of the following:

(i) Credit card billing systems

.....

(1 mark)

(ii) Electronic funds transfer systems

.....

(1 mark)

(iii) Flight stimulation systems

.....

(1 mark)

(iv) Calculating number of hours worked at the end of the week

.....

(1 mark)

(v) Processing each customer's payments for the current month

.....

(1 mark)

Total 10 marks

DO NOT WRITE IN THIS AREA *DO NOT WRITE IN THIS AREA* *DO NOT WRITE IN THIS AREA*

"*"Barcode Area"*"
Sequential Bar Code

6. In January 2016, a paper-based survey was distributed to capture data from students aged 12–21 on their technology use at school. The set of data was then entered into a software programme for analysis. The survey captured data on the following categories:

- Gender
- Date of birth
- Number of mobile devices owned
- Number of hours spent per day using the mobile device(s)

(a) Complete the table below by providing the guidelines for the data entry.

Data Required	Example of Correct Data Entered	Type of Suitable Data Check	Explaination of How the Data Check Works
Gender			
Date of birth			
Number of mobile devices owned			

(9 marks)

(b) State whether the data checks in (a) represent validation or verification of the data.

.....

(1 mark)

Total 10 marks

“*”Barcode Area”*”
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

SECTION II

PRODUCTIVITY TOOLS – 15 marks

Answer ALL questions.

7. The following spreadsheet template was used to generate the number of students who passed three subjects from 2014 to 2016. Formulae were inserted in order to compute the totals. Study the template and answer the questions that follow.

	A	B	C	D	E	F
1	**Subject**	**2014**	**2015**	**2016**	**Total by Subject**	**%**
2	Spanish	90	285	245	620	0.361
3	Geography	140	250	270	660	0.385
4	Woodwork	125	154	155	434	0.253
5	**Total by year**	355	689	670	1714	
6						

(a) State the type of alignment that has been applied to column A.

.....

(1 mark)

(b) Suggest a reason why the values in column F are displayed as decimals.

.....

.....

(2 marks)

(c) The formula E2/E5 in cell F2 was copied to cell F3. Write the new formula for cell F3.

.....

.....

(2 marks)

(d) The value in cell B3 is changed. List TWO cells whose values will be affected.

.....

.....

(2 marks)

Total 7 marks

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

8. Consider the database below which consists of two tables, REGION and SCHOOL, and answer the questions that follow.

TABLE: REGION

RCode	RName
C	CENTRAL
N	NORTH
S	SOUTH

TABLE: SCHOOL

RCode	SchoolName	NoofStudents
C	Rio High School	876
S	Truesouth High School	678
N	Northern Secondary	567
S	Caster College	398
S	Realise Secondary	234
C	Care Academy	120

(a) State

(i) the number of records in the SCHOOL table

.....

(1 mark)

(ii) the field that can be used as a primary key in the SCHOOL table

.....

(1 mark)

(iii) an appropriate data type for the NoofStudents field

.....

(1 mark)

(iv) the field that can be used to join the two tables.

.....

(1 mark)

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(b) Complete the following query to determine the schools that have fewer than 500 students.

RCode	SchoolName	NoofStudents

(2 marks)

(c) State the RCode and SchoolName that would be at the top of the table if the SCHOOL table **on page 14** was sorted in descending order by RCode and then by SchoolName.

.....

.....

(2 marks)

Total 8 marks

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

“*”Barcode Area”*”
Sequential Bar Code

SECTION III

PROBLEM SOLVING AND PROGRAMMING – 45 marks

Answer ALL questions.

9. Romario can add money to his mobile phone by entering a specific code via a text message. The instructions are entered using the format below. Answer the questions based on the instructions below.

AD	**99**	**9999999999**	**0945**
Code To Add Dollars	Amount of money from $20 to $50	3-digit area code and 7-digit mobile number	Personal Security Number

(a) (i) Identify the error in the following code:

AD 40 87662509 0945

.....

.....

(1 mark)

(ii) Name the process that locates and fixes errors in the code.

.....

(1 mark)

(b) Complete the table below to show whether the message will be accepted or not accepted for EACH of the following options.

Money	**Security Number**	**Accepted? Yes/No**
10	0945	
25	945	
30	0945	
65	945	

(4 marks)

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

(c) Draw a flowchart, including START and STOP symbols, to illustrate the following:

- Input SCODE
- If SCODE is equal to 0945
- Then add money to the phone
- Otherwise Output 'ERROR – Code Incorrect'

(9 marks)

Total 15 marks

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

10. Khodra pays money to add minutes to his prepaid mobile phone account. As each payment is made, the amount of money is stored in a one-dimensional array shown below.

Amount of Money	40	45	20	25	30	50	20	35			
Index Location	20	21	22	23	24	25	26	27	...	...	100

(a) State

(i) the index location for the payment of $30

.....

(1 mark)

(ii) the amount of money added at index 25.

.....

(1 mark)

(b) Write Pascal code for EACH of the following:

(i) Declare the array called MONEY.

.....

.....

(4 marks)

(ii) Initialize the array to 0.

.....

.....

.....

.....

(4 marks)

(iii) Print the amount of money stored at the 54th location in the array.

.....

.....

.....

.....

.....

(5 marks)

Total 15 marks

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

11. Consider the fragment of code below and answer the questions that follow.

```
Readln(areacode);
While areacode = 268 DO
Begin
     Amount:= Currency * .37;
     Write('Amount accepted is :');
     Writeln(Amount);
End;
Writeln('You used Area Code',areacode);
```

State

(a) the type of loop

.....

(1 mark)

(b) a relational operator used in the code

.....

(1 mark)

(c) the data type of Amount

.....

(1 mark)

(d) the location of the cursor when the area code is input

.....

(1 mark)

(e) the result when the area code is 876.

.....

(1 mark)

Total 5 marks

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

"*"Barcode Area"*"
Sequential Bar Code

12. Consider the following fragment of program code written in Pascal.

```
Line No.                        Code
   1.     Begin
   2.          Total := 0;
   3.          index := 1;
   4.          Repeat
   5.               Begin
   6.                    IF (money[index] <> 0)
   7.                    THEN Begin
   8.                         Total := money[index] + Total;
   9.                         index:= index + 1;
  10.                    End;
  11.               End
  12.          Until (money[index] = 0) or (index = 7);
  13.          Writeln(Total);
  14.     End.
```

(a) Complete the following trace table using the values (12, 3, 5, 0, 15, 5) that were entered when the program above was executed.

Index	Money [Index]	Total
1	12	
2	3	
3	5	
4	0	
5	15	
6	5	

(6 marks)

(b) State the purpose of the code in line 13.

.....

.....

(1 mark)

GO ON TO THE NEXT PAGE

"*"Barcode Area"*"
Sequential Bar Code

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(c) Name the type of error that would occur if the program does NOT produce the correct results.

.....

.....

(1 mark)

(d) Explain the statement in line 6 of the program code **on page 20**.

.....

.....

.....

(2 marks)

Total 10 marks

END OF TEST

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

“*”Barcode Area”*”
Sequential Bar Code

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA