CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®
EXAMINATION

17 JANUARY 2020 (a.m.)

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FILL IN ALL THE INFORMATION REQUESTED CLEARLY IN CAPITAL LETTERS.

TEST CODE | 0 | 1 | 2 | 2 | 9 | 0 | 2 | 0 |

SUBJECT INFORMATION TECHNOLOGY – Paper 02

423

PROFICIENCY GENERAL

REGISTRATION NUMBER | | | | | | | | | | |

SCHOOL/CENTRE NUMBER					

NAME OF SCHOOL/CENTRE

A000

CANDIDATE'S FULL NAME (FIRST, MIDDLE, LAST)

DATE OF BIRTH | D | D | M | M | Y | Y | Y | Y |

SIGNATURE _____

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FORM TP 2020016

JANUARY 2020

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 TWELVE questions. Answer ALL questions.
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.

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SECTION I

THEORY – 60 marks

Answer ALL questions.

1. (a) The following table shows a list of IT professions, labelled with the letters A, B, C, D and E.

Label	IT Profession
A	Data entry operator
B	Database administrator
C	Computer operator
D	System analyst
E	System administrator

Complete the following table using the letters A–E to show the IT profession which corresponds to EACH of the following job descriptions/responsibilities. (**Each letter may be used once, more than once or not at all.**)

Job Description	IT Profession
Mounts tapes, loads printer paper, backup data files	
Interviews stakeholders to gather data for a new information system implementation	
Grants privileges and controls access to data	
Transfers data from source documents directly into the computer	

(4 marks)

(b) Identify ONE unique software application that is used in EACH of the following professions/ fields.

(i) Engineering

.....

(1 mark)

(ii) Medical

.....

(1 mark)

(c) State TWO ways in which the software applications identified in (b) are used in EACH profession.

.....

.....

.....

.....

.....

.....

(4 marks)

Total 10 marks

2. (a) Describe the function of EACH of the following hardware components of a computer system.

(i) Random access memory

.....

.....

.....

.....

(2 marks)

(ii) Secondary storage

.....

.....

.....

.....

(2 marks)

(iii) Read-only memory

.....

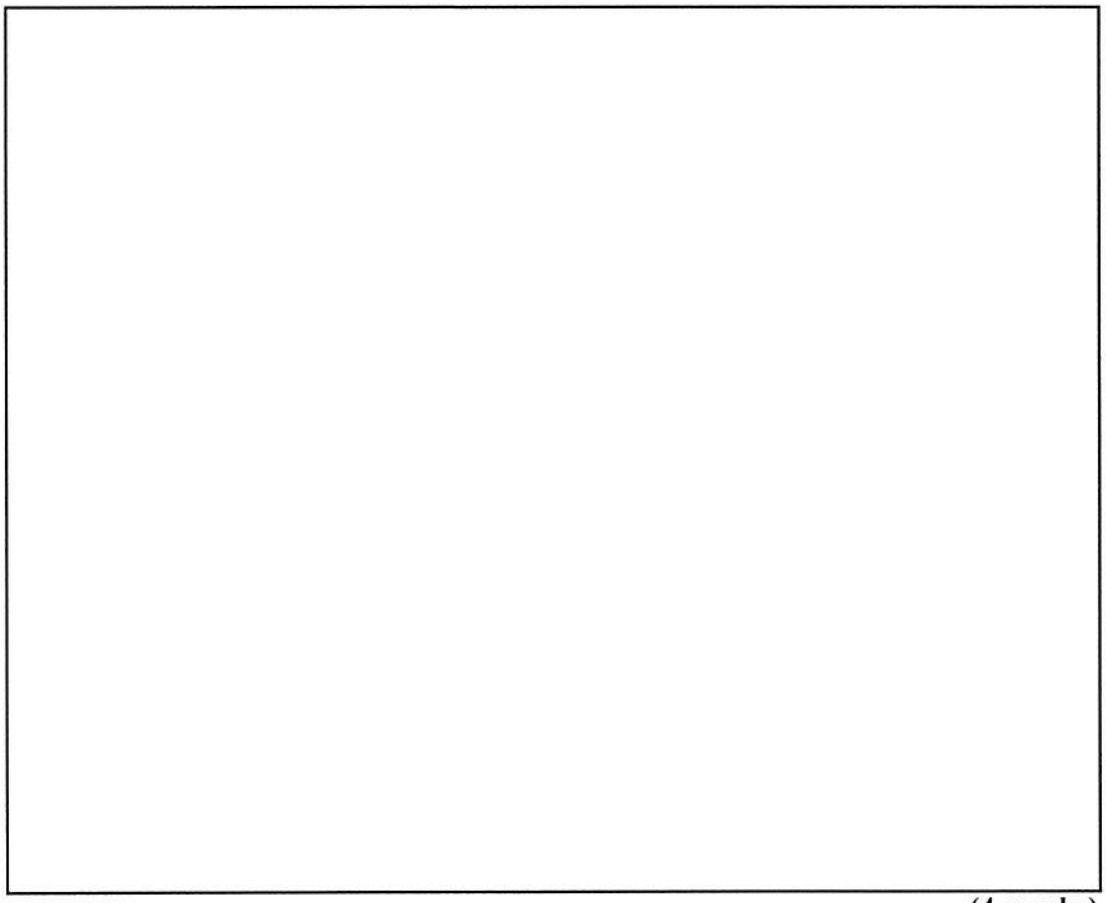
.....

.....

.....

(2 marks)

(b) In the box provided below, draw a diagram showing the **main** functions of a computer system.



(4 marks)

Total 10 marks

3. (a) Convert the binary number 1010101_2 to its decimal equivalent. **(Show all steps in the calculation.)**

(3 marks)

(b) Convert the decimal number 758_{10} to its hexadecimal equivalent. **(Show all steps in the calculation.)**

(3 marks)

(c) Compute the two's complement of 12_{10} using eight bits. **(Show all steps in the calculation.)**

(2 marks)

(d) The ASCII code for S is 01010011. Calculate the equivalent for W. **(Show all steps in the calculation.)**

(2 marks)

Total 10 marks

4. (a) Complete the table to show the storage medium and method of data access for EACH device.

Device	Storage Medium	Method of Data Acces
CD-ROM		
Tape		
Memory card		

(6 marks)

(b) Moni Pro Data Centre is currently conducting an upgrade of its facility from the IDE interface type and is trying to decide whether to implement the SATA or the SCSI interface technology.

(i) State TWO characteristics of the IDE interface used by Moni Pro Data Centre.

.....

.....

.....

(2 marks)

(ii) Name the interface type that Moni Pro should select for its upgrade and state ONE reason for your choice.

.....

.....

.....

.....

(2 marks)

Total 10 marks

5. Distinguish between EACH of the following pairs of terms used in information technology.

(a) Multiprogramming and multiprocessing

.....

.....

.....

.....

.....

(2 marks)

(b) Real-time processing and batch processing

.....

.....

.....

.....

.....

(2 marks)

(iii) Software interface and hardware interface

.....

.....

.....

.....

.....

(2 marks)

GO ON TO THE NEXT PAGE

(d) System program and application program

.....

.....

.....

.....

.....

(2 marks)

(e) Simplex data transmission and half-duplex data transmission

.....

.....

.....

.....

.....

(2 marks)

Total 10 marks

6. (a) (i) Write the following units of storage in ascending order.

Gigabyte Kilobyte Terabyte Megabyte

.....

.....

(3 marks)

(ii) Rock Satellite Systems feed photographs and videos to a server station. Identify the storage unit listed in (a) (i) which would be MOST suitable for storing this data.

.....

(1 mark)

(b) Complete the following table by stating ONE way in which EACH of the following devices is used in an application.

Device	Application Usage
Optical character reader (OCR)	
Optical mark reader (OMR)	
Dot-matrix printer	
Barcode scanner	
Joystick	
Magnetic ink character reader (MICR)	

(6 marks)

Total 10 marks

SECTION II

PRODUCTIVITY TOOLS — 15 marks

Answer ALL questions.

7. The Em Rock Group of Companies specializes in cybersecurity among other things. The group is very active in increasing awareness to cybercrimes. The following is an extract from an invitation letter that was sent to the partners of the company regarding the expected observations for cybersecurity month.

> **Re: National Cybersecurity Awareness Month 2020**
>
> October is observed internationally as cybersecurity Awareness Month and this year Em Fortress through its cybersecurity division, Em Rock, continues the tradition started five years ago of observing the month with a series of activities.
>
> **In this regard, we are inviting you to be a part of the first planning session for this year's event. The session will be held on 20 June 2020 on the sixth floor of our corporate headquarters, 13 UC Rust Road, Rock Away Bay, from 9 a.m. – 11 a.m.**
>
> Kind regards,
>
> Dr Monica Hue, LLM
> Cybercrimes Specialist
> CEO, Em Rock Group of Companies

(a) Identify TWO features from EACH of the following formatting types found in the document.

(i) Document formatting

.....

.....

(ii) Character formatting

.....

.....

(4 marks)

GO ON TO THE NEXT PAGE

(b) Differentiate between the TWO types of documents necessary for a word processor to generate multiple letters for invited participants.

.....

.....

.....

.....

(4 marks)

Total 8 marks

8. The Em Fortress Power Service, a subsidiary of the Em Rock Group of Companies, runs an evening school for its workers who wish to pursue further studies in their areas of interest within the company. Consider the following spreadsheet created by the administrator to facilitate the tracking of employees who have indicated an interest in this initiative for 2020.

	A	B	C	D	E	F
1	Em Fortress Evening Division					
2						
3						
4	First Name	Last Name	ID Number	Subjects	Hours	
5	Jane	Doe	7701	3	10	
6	Annalisa	McKenzie	7702	6	5.5	
7	Brian	Delissar	7703	2	5	
8	Craig	Hewling	7704	6	15.5	
9	Mark	Bent	7705	4	15	
10	Abbigail	Clarke	7706	5	12	
11	John	Brown	7707	7	12.5	
12	Adam	Jackson	7708	3	10.5	
13	Monique	Newton	7709	5	10	
14	Shauna	Smith	7710	1	9.5	
15						
16						

The data presented in the spreadsheet is limited to the area A1:E14.

(a) (i) State the term used to describe the difference between the largest numerical value and the smallest numerical value between A1:E14.

.....

(1 mark)

(ii) Name the area under the heading "First Name" .

.....

(1 mark)

(iii) Name the feature used to align "Em Fortress Evening Division" across the top of the sheet.

.....

(1 mark)

GO ON TO THE NEXT PAGE

(b) Write a formula which could be placed in Cell D15 to calculate the total number of subjects the company will need to pay for.

.....

(2 marks)

(c) Previous patterns have indicated that the number of subjects Em Fortress pays for increases by five per cent each year. Write a formula to calculate the number of subjects the company will need to pay for in 2020.

.....

(2 marks)

Total 7 marks

SECTION III

PROBLEM-SOLVING AND PROGRAMMING – 45 marks

Answer ALL questions.

9. Ricardo's father owns a bus company. As a programmer, Ricardo is creating a program to calculate the revenue generated by the company. Consider the following segment of a pseudocode, created by Ricardo.

```
START
        Set total ← 0
        Set revenue ← 0
        Set fare ← 3.30
        Write "Enter number of passenger:"
        Read passenger
                WHILE passenger < > 0 DO
                        Set total ← total + revenue
                        Set revenue ← passenger * fare
                                Write "The total revenue is:", total
                                Write "Enter number of passengers to continue or 0 to end the
                                program"
                                Read passenger
                ENDWHILE
STOP
```

(a) (i) List the FOUR variables in the pseudocode above.

.....

.....

(4 marks)

(ii) Identify the type of error that is located in the pseudocode.

.....

.....

(1 mark)

GO ON TO THE NEXT PAGE

(b) In the space below, draw a flowchart to illustrate the algorithm **on page 18** with the correct symbols. **(Correct the error identified in (a) (ii).)**

(10 marks)

Total 15 marks

GO ON TO THE NEXT PAGE

10. Ricardo's completed program is required to have a one-dimensional array that will store each passenger's name as shown below.

Passenger	Matthew Neil	Marley Jone	Susan Smith		Ricaijha Neil	Marcaisi Neil
Index	34	35	36	...	55	67

(a) (i) State the index location for Susan Smith.

.....

(1 mark)

(ii) State the size of the array.

.....

(1 mark)

(b) Write Pascal code for EACH of the following statements.

(i) Declaring the array with the appropriate name

.....

.....

.....

(4 marks)

(ii) Printing all the names stored in the array

.....

.....

.....

(5 marks)

(iii) Initializing the array within a WHILE STATEMENT

.....

.....

(4 marks)

Total 15 marks

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

```
Write (‘    LOGIN PLEASE’);

        REPEAT
                Writeln;                {first Loop}
                Write (‘    Enter Username: ‘);
                Readln (user_name);
                        IF user_name = ‘Raymond’ THEN
                                Write (‘    Enter Password: ‘)
                        ELSE
                                Write (‘    Wrong Username was entered’);
                                Readln (Pass_Word);
                                Writeln;
                         IF Pass_Word < > Correct_Password THEN
                                Writeln (‘    ACCESS DENIED’);
        UNTIL Pass_Word = Correct_Password;
                Writeln (‘    Welcome Mr Raymond Nurse ..... you have access ‘);

WHILE COUNT < > 0 DO
```

Identify

(a) the statement to test the condition at the bottom of the loop

.....

(1 mark)

(b) the comment statement

.....

(1 mark)

(c) the purpose of the code

.....

(1 mark)

(d) ONE relational operator used in the code

.....

(1 mark)

(e) the terminating value.

.....

(1 mark)

Total 5 marks

GO ON TO THE NEXT PAGE

12. The following statement shows an incomplete fragmented Pascal code.

```
Begin
        x:= 0 to 100
        Read (passenger);
                x:= x + 1;
End;
```

(a) Rewrite the fragment of code using the listed control structure for EACH of the following loops.

(i) FOR

(2 marks)

(ii) WHILE

(3 marks)

(ii) REPEAT UNTIL

(4 marks)

(b) Write the arithmetic statement in the code.

.....

(1 mark)

Total 10 marks

END OF TEST

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

EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. ☐

EXTRA SPACE

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Question No. ☐

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Question No. ☐

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CANDIDATE'S RECEIPT

INSTRUCTIONS TO CANDIDATE:

1. **Fill in all the information requested clearly in capital letters.**

TEST CODE: | 0 | 1 | 2 | 2 | 9 | 0 | 2 | 0 |

SUBJECT: INFORMATION TECHNOLOGY – Paper 02

PROFICIENCY: GENERAL

REGISTRATION NUMBER: | | | | | | | | | | |

FULL NAME: _____

(BLOCK LETTERS)

Signature: _____

Date: _____

2. **Ensure that this slip is detached by the Supervisor or Invigilator and given to you when you hand in this booklet.**

3. **Keep it in a safe place until you have received your results.**

INSTRUCTION TO SUPERVISOR/INVIGILATOR:

Sign the declaration below, detach this slip and hand it to the candidate as his/her receipt for this booklet collected by you.

I hereby acknowledge receipt of the candidate's booklet for the examination stated above.

Signature: _____

Supervisor/Invigilator

Date: _____



