

CARIBBEAN EXAMINATIONS COUNCIL
Caribbean Secondary Education Examination

INFORMATION TECHNOLOGY

PAPER 2

2 Hours

March 2013 (a.m.)

INSTRUCTIONS TO CANDIDATES

1. *This paper consists of three sections.*
2. *Answer 5 Questions in Section 1, All Questions in Section 2 and All Questions in Section 3.*
3. *The use of Standard English is appreciated when responding to questions.*
4. *Sentences should be used to answer questions and diagrams where used should be clearly labeled.*

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

SECTION A

THEORY – 60 marks

Answer ALL questions.

1. Figure 1 illustrates the components of a computer system with letters A, B, C, D, E and F representing hardware components.

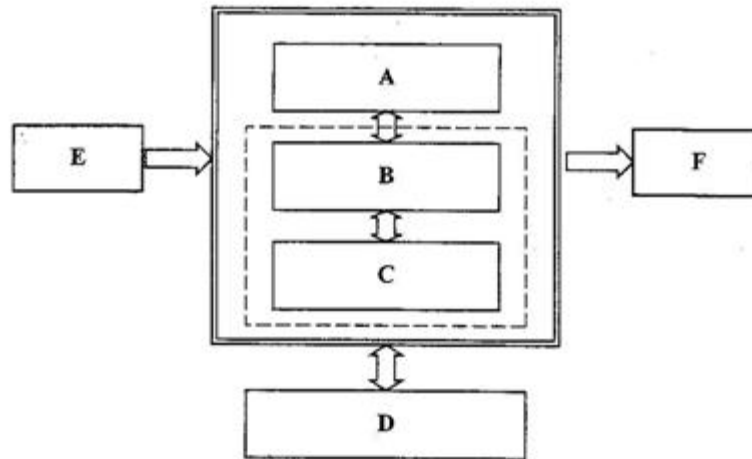


Figure 1. Components of a computer system

- a. Name the components A, B, C, D, E and F, given that the components B and C are enclosed in the CPU and the arrows represent the flow of data among the components. [6 marks]
- b. Give ONE example of the type of device that may be found in each of the following labeled components.

- (i) B or C
(ii) D
(iii) E
(iv) F

[4 marks]

Total 10 marks

2. a. Using the number 27, determine its:

- i. Octal equivalent [1 mark]
ii. Hexadecimal equivalent [1 mark]
iii. Binary Equivalent [1 mark]
iv. Binary Coded Decimal Equivalent [1 mark]

- b. Table 1 below contains four groups of data that make up various IP addresses accessed by a network. For example, 130.6.76.0 refers to a school network in the North area, on Floor D, accessed by PC44.

TABLE 1: IP ADDRESSES ACCESSED BY A NETWORK

Group 1	Network	Group 2	Network	Group 3	Location	Group 4	Location
127	College	6	North	73	Floor A	0	PC44
128	University	7	South	74	Floor B	1	PC59
129	Hospital	8	East	75	Floor C	2	PC12
130	School	9	West	76	Floor D	3	PC08

- State the meaning of the term 'network'. [1 mark]
- Use the table to identify the IP address 128.8.74.3. [1 mark]
- What is IP addressing associated with? [1 mark]
- Given is a list of websites. Say what the portions bolded represent. [2 marks]

www.yahoo.com

www.keyclub.org

www.moe.edu.jm.com

Total 10 marks

- Most schools do not have the telephone numbers of other schools. The Minister of Education has requested his Information Technology Department to recommend a method of recording and distributing the telephone numbers of all schools.
 - The Minister has decided NOT to produce and distribute the data in a hard copy form.
 - State what is meant by 'hard copy'. [1 mark]
 - Give TWO possible reasons to explain the Minister's decision for NOT using hard copies. [2 marks]
 - One recommendation is that the telephone numbers should be stored on a CD and then distributed to schools.
 - State the meaning of the term 'CD'. [1 mark]
 - State **WITH REASON** whether a CD is a primary or secondary storage device. [1 mark]
 - Give TWO reasons to justify the recommendation to use a CD. [2 marks]
 - Name TWO types of CD that could be recommended. [2 marks]
 - Give ONE reason why a flash memory card would NOT be suitable in this case. [1 mark]

Total 10 marks

4. a. A school is expanding its computer network and the process involves using cables and various types of networks.

Name:

- i. The type of network that consists of computers within a small area. **[1 mark]**
- ii. The type of cabling that consists of a copper wire covered by a thick layer of insulation. **[1 mark]**
- iii. The type of cabling that consists of clear glass fibres enclosed in an outer sheath. **[1 mark]**
- iv. The type of transmission that is capable of transmitting data at a rate of more than 1000 characters per second. **[1 mark]**
- v. The protocol that a network uses for radio frequencies between wireless devices. **[1 mark]**

- b. Write the Roman numeral (i) to (v) in your answer booklet. Match EACH of the job responsibilities (i – v) to the letters (A) to (E) that correspond to the MOST appropriate computer-related professional. Your answer should show the Roman numeral and the letters only. **[5 marks]**

	Job Responsibility		Professional
(i)	Works with programmers to develop and test the system	A	Database Administrator
(ii)	Keeps data up-to-date	B	Computer Technician
(iii)	Carries out the day-to-day maintenance tasks with hardware and software	C	Computer Engineer
(iv)	Develops and installs the software used in a network	D	System Analyst
(v)	Determines the network cabling requirements and layout	E	Network Administrator

Total 10 marks

5. Select any ONE of the following professions:

- Music
- Teaching
- Medicine

For the profession selected:

- a. Describe ONE positive impact and ONE negative impact that Information Technology (IT) has had on that profession. **[4 marks]**
- b. Give ONE example of a hardware device or type of software that is used in the profession. (Write the name of the device or software in full). **[2 marks]**
- c. Describe how the hardware or type of software you have named in part (b) is used. **[4 marks]**

Total 10 marks

6. The hardware specifications of a computer system is included in the following information:

Line 1: Intel ® Core™ i3-550, 3.20 GHz

Line 2: 1 TB SATA HDD, 7200 RPM

Line 3: 8X DVD +/- RW

- a. Indicate the line number which provides the information on the optical drive and on the processor in the computer system. **[1 mark]**
- b. What is the speed of the main storage component? **[1 mark]**
- c. Explain why the access time for a moving head hard disk drive is GREATER than the access time for a fixed head disk drive. **[2 marks]**
- d. Draw a diagram explain the relationship between data and information. A description of data and information should be provided as well as the various stages identified. **[6 marks]**

Total 10 marks

7. a. Write the numbers 1 – 7 on separate lines in your answer booklet. Using the information in Table 1, match the number of the device with the letter for the person who uses the device.

TABLE 1

	Device		Person who uses the device
1	Joystick	A	Point of sale cashier
2	MICR	B	Player in a Games Arcade
3	Webcam	C	Customer seeking information in a kiosk
4	Touch Screen	D	Bank worker reconciling cheques
5	Digital Camera	E	Teacher grading multiple-choice responses
6	Barcode Reader	F	Reporter researching a story
7	OMR	G	Consultant participating in a video conference

[7 mark]

b. Describe the use of biometric systems, stating clearly:

- i. where they are used
- ii. ONE type of data that is collected
- iii. ONE benefit over traditional methods of collecting data.

[3 marks]

Total 10 marks

8. a. Write the letters A – G in your answer booklet and state against EACH letter, the correct technical term which is required to complete the sentences in the paragraph below. **[7 marks]**

David's father wishes to advertise his used car business on the Internet. David advises him that he can create a website that consists of several interconnected A . The website must be placed on a B computer. Persons wishing to use access the information on the Internet must use an Internet C on their computers to navigate to the particular website. They must either know the address of the website called a D E locator or must use a search F to find the website. When they find a car that they are interested in purchasing, they can then G the relevant information to their computer.

- b. Preventing unauthorized access to computer files can be achieved by locking doors to the computer rooms. State THREE other methods that can be used to prevent unauthorized access to computer facilities. **[3 marks]**

Total 10 marks

SECTION B

PRODUCTIVITY TOOLS – 20 marks

Answer ALL questions.

9. The table below shows the structure of a YOUTH Table.

TABLE 2: YOUTH TABLE

Field	Data Type	Description
IDNo	Number	A 4-digit identification number assigned to the person
Name		Name of person e.g. John Smith
DOB		Date on which a person was born e.g. 22/11/87
Phone		Phone contact of the person in the format xxx-xxxx

- a. State an appropriate data type for EACH of the fields: Name, DOB and Phone. **[3 marks]**
- b. State the MOST appropriate field that should be a primary key. **[1 mark]**
- c. Write a query to obtain the names of ALL youths born after 31 December 1994. **[4 marks]**
- d. Identify the sort methods that there are in database. **[2 marks]**

10. The following questions related to word processing.

- a. List the FOUR steps involved in moving a paragraph from the beginning of a word document and place it on the last page of the document. **[4 marks]**
- b. Briefly describe how you can place your cursor on a new page when your cursor is on the current page. **[2 marks]**
- c. State the word processing feature that can be used to send a personalized letter to 500 clients. **[1 mark]**
- d. For what are these icons used for in Word Processing: **[2 marks]**



Total 10 marks

11. The ICT Unit of a college has prepared the following spreadsheet showing the Internet usage of four countries.

	A	B	C	D
1	Country	Population	% of Population with Internet Access	Action Needed
2	Jamaica	2,847,232	55.5%	
3	Trinidad & Tobago	1,228,691	39.5%	
4	Guyana	748,350	29.4%	
5	Barbados	258,653	49.7%	

- a. State the range of data containing the percentage of the population with Internet access for the four countries. **[1 mark]**
- b. Write the function to find the average population of the four countries. **[2 marks]**
- c. What formatting features has been applied to the population data of the four countries? **[1 mark]**
- d. The data in the spreadsheet has been sorted. State the column heading used for the sorting. **[1 mark]**
- e. The text “Good Access” is to be inserted in the Action Needed column if the % of the population with Internet access is greater than 40%, otherwise, the text “Poor Access” is inserted. Write the function that will be inserted in cell D2 to do this. **[3 marks]**
- f. What type of graph would be best used to show the population comparison for the countries. **[2 marks]**

Total 10 marks

SECTION C

PROBLEM SOLVING AND PROGRAMMING – 50 marks

Answer ALL questions.

12. Consider the following program code:

1. Program Test;
2. Var Num1, Num2, answer: integer;
- 3.
4. Begin
5. Write ('Enter first one.');
6. Readln (Num1);
7. Write ('Enter second one.');
8. Readln (Num2);
9. Answer:= Num1 * Num2;
10. Writeln ('The results is ', Answer);
11. END.

- a. State the name of the programming language used to write the code. **[1 mark]**
- b. Explain whether the code in lines 5 to 10 represents a loop, selection or sequence of statements. **[2 marks]**
- c. State the specific purpose of the **writeln** command. **[1 mark]**
- d. Write the output from the program when Num1 = 3 and Num2 = 4. **[1 mark]**
- e. The following set of values are input:

Set A: Num1 = 0 Num2 = 5
Set B: Num1 = 2.5 Num2 = 5

Write Set A and Set B on separate lines in your booklet. For EACH set of values:

- i. State whether a logic error, syntax error or no error is produced. **[2 marks]**
- ii. If an error is produced, indicate whether the value of Num1 or Num2 has caused the error. **[1 mark]**

Total 8 marks

13. a. State TWO programming languages EACH that are categorised as:

- i. low-level
- ii. high-level

[4 marks]

b. Rewrite the following list to show the correct order of steps associated with implementing a program:

[5 marks]

- i. Compile
- ii. Write source code
- iii. Execute
- iv. Maintain
- v. Link

c. State the name of the code that a program uses for executing.

[1 mark]

Total 10 marks

14. a. Use the algorithm below to answer the questions that follow.

```
Line 1 A := 2
Line 2 B:= 10
Line 3 WHILE A < B DO
Line 4 Print A, B
Line 5 B:= B DIV A
Line 6 ENDWHILE
Line 7 Print A, B
```

i. Copy and complete the trace table below:

[6 marks]

A	B

ii. Write an alternative operator for DIV if real numbers were used.

[1 mark]

b. Using any two of the numbers 10, 12, 14, 16 and 22, write ONE example for EACH of the following operator symbols and state whether the result of the example is TRUE or FALSE.

- i. <
- ii. >
- iii. <>
- iv. =

[8 marks]

Total 15 marks

15. a. Write a purpose statement in programming for the following instruction: **[2 marks]**

Develop an algorithm or write pseudocode to determine whether an applicant is approved for allocation of a home in a named housing community. The algorithm/pseudocode should accept the name of the applicant and his/her gross salary as well as salary deductions. The net salary should be calculated. An applicant qualifies if the net salary is above the qualifying salary for that housing community. The algorithm should then determine whether the applicant is approved. Approval is granted should the sum of applicant's expenses and repayments not exceed half of the balance.

- b. Do a defining diagram to show the following: **[3 marks]**

Write an algorithm to find the Final Mark of a course. The Final Mark consists of the Course Work Mark and the Exam mark being averaged.

- d. Write a Psuedocode Algorithm that will determine the amount of discount a shopper gets based on the Total Cost of goods purchased. Output to the algorithm is Final Cost. **[5 marks]**

Total Cost \$0 to \$5000	10%
Total Cost \$5001 to \$10000	15%
Total Cost in excess of \$1000	20%

- e. Write a Pascal program that will determine the amount of discount a shopper gets based on the Total Cost of goods purchased. Output to the program is Final Cost. **[7 marks]**

Total Cost \$0 to \$5000	10%
Total Cost \$5001 to \$10000	15%
Total Cost in excess of \$1000	20%

Total 17 marks

END OF TEST