FORM TP 2010082

TEST CODE 01229020

MAY/JUNE 2010

CARIBBEAN EXAMINATIONS COUNCIL

SECONDARY EDUCATION CERTIFICATE EXAMINATION

INFORMATION TECHNOLOGY

Paper 02 – General Proficiency

2 hours 15 minutes

13 MAY 2010 (a.m.)

INSTRUCTIONS TO CANDIDATES

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.

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SECTION I

THEORY – 60 marks

Answer ALL questions in this section.

1. Figure 1 below shows the basic components of a computer system. Study Figure 1 and answer the questions that follow.

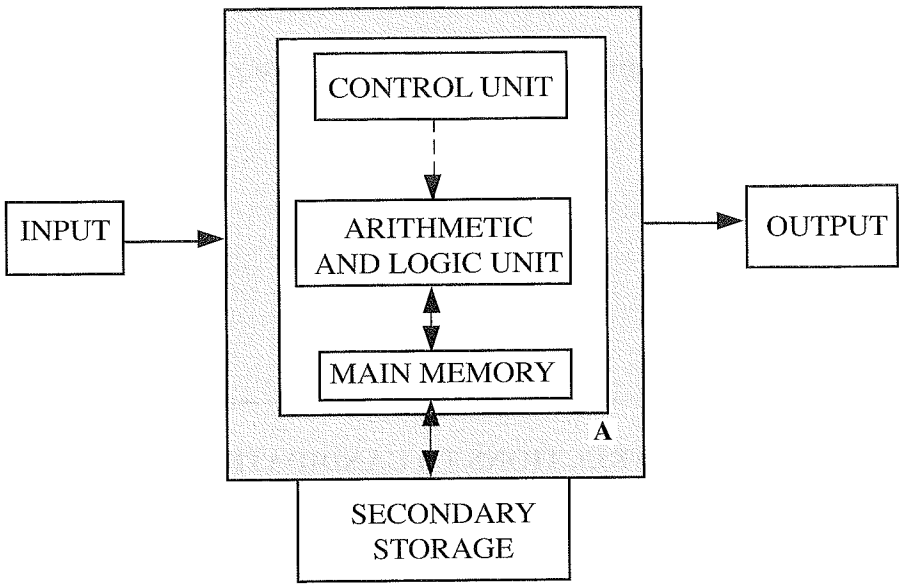


Figure 1

(a) Name the component that performs EACH of the following functions:

(i) The calculations and logic instructions **(1 mark)**

(ii) Stores programs and data that are currently being used by the CPU **(1 mark)**

(iii) Fetches instructions from memory, decodes them and processes them **(1 mark)**

(iv) Gets data into the shaded area **A** **(1 mark)**

(v) Sends processed data from the shaded area **A** **(1 mark)**

(vi) Keeps data and information for **future** use **(1 mark)**

(b) Write the name of a component that

(i) contains the Control Unit and the Arithmetic and Logic Unit **(1 mark)**

(ii) is also known as RAM **(1 mark)**

(iii) is also called a peripheral device. **(1 mark)**

(c) Write the general name given to the collection of components in Figure 1. **(1 mark)**

Total 10 marks

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2. The following questions refer to Figures 2 and 3 below:

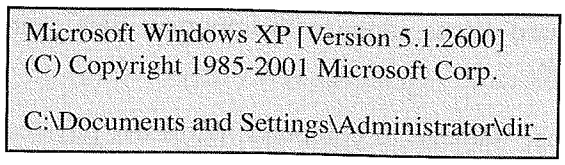


Figure 2

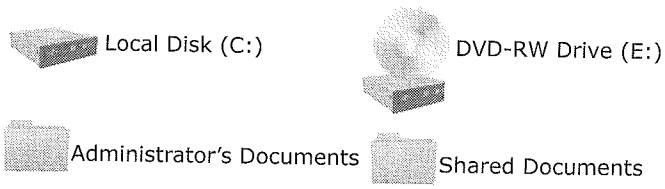


Figure 3

(a) State the type of user interface that is represented in EACH figure. **(2 marks)**

(b) Indicate by writing the figure number of the interface that

(i) uses a mouse

(ii) would be easier for someone who is not familiar with a computer. **(2 marks)**

(c) Give the name of another user interface. **(1 mark)**

(d) State the name of the system software that provides the user interface. **(1 mark)**

(e) You wish to change the name of a file you have on your computer. Explain how you would do so using the interface in

(i) Figure 1

(ii) Figure 2. **(4 marks)**

Total 10 marks

3. (a) Write the numbers 1 to 5 on separate lines in your answer booklet. Using the information in Table 1, match the number of the device with the letter for the task that the device performs by writing the letter next to the number in your answer booklet.

TABLE 1

	Device		**Task**
1	OMR	A	Reading magnetic ink characters on a check
2	Sensor	B	Reading codes with name and price information
3	MICR	C	Converting paper-based data into digital form
4	Scanner	D	Marking students' responses on a multiple-choice examination
5	Barcode reader	E	Turning on the fan when the environment is too hot

(5 marks)

(b) For EACH of the devices listed in part (a), state ONE organization where each would MOST likely be used. **(5 marks)**

Total 10 marks

4. After a storm, there was water damage to the files left on employees' desks, and power surges caused damage to computer hardware. When a check was done, the manager noticed that a number of computers were damaged and two hard drives, along with important files, were missing from computers in the accountant's office.

(a) State ONE natural disaster that can cause damage to computer hardware, physical files or data. **(1 mark)**

(b) Using the scenario described above, for EACH of the following clearly indicate what type of theft or damage is present and provide TWO examples to justify your response:

(i) Deliberate theft OR deliberate damage to computers and files **(3 marks)**

(ii) Accidental theft OR accidental damage to computers and files **(3 marks)**

(c) Explain how EACH of the following should be protected from damage or theft:

(i) Physical files

(ii) Computer equipment

(iii) Software and data **(3 marks)**

Total 10 marks

5. E-learning, e-commerce and e-mail are very popular ways to access and share information.

(a) State the word that the abbreviation 'e' represents in e-learning, e-commerce and e-mail. **(1 mark)**

(b) State the network of networks that is necessary to transfer this information to users across the world. **(1 mark)**

(c) State ONE advantage and ONE disadvantage of using any ONE of these methods (e-learning, e-commerce or e-mail) to access or share information. **(2 marks)**

(d) Write the appropriate term, e-learning, e-commerce or e-mail, that matches EACH of the following examples:

(i) Paying a fee to access the latest Top-40 tunes

(ii) Accessing a webpage to post a question for a tutor

(iii) Sending a single message to four friends **(3 marks)**

(e) Explain the difference between 'e-learning' and 'e-commerce'. **(3 marks)**

Total 10 marks

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6. The Power and Light Company has recently purchased a payroll information processing system.

(a) State TWO advantages of an information processing system. **(2 marks)**

(b) State TWO types of processing carried out by a payroll system. **(2 marks)**

(c) State TWO types of reports generated by the payroll system. **(2 marks)**

(d) The payroll system uses a master file and a transaction file. Explain what is contained in EACH file. **(2 marks)**

(e) Records can be organized in a file in a serial or sequential manner. Explain the difference between the two methods of file organization. **(2 marks)**

Total 10 marks

SECTION II

PRODUCTIVITY TOOLS – 15 marks

Answer ALL questions.

7. A beverage manufacturer uses a database that contains two tables to store information on customers.

TABLE 1: CATEGORY

Type	Name
D	Distributor
W	Wholesaler
R	Retailer

TABLE 2: CUSTOMER

CNO	CNAME	Type	Outlets	YTD SALES
D100	Bish and Sons	D	5	300,000.00
R100	Saywack	R	1	25,000.00
W100	Corbin	W	2	75,000.00
D200	Hamilton	D	3	100,000.00
W200	Singh	W	3	65,000.00
R200	Mohan	R	2	50,000.00
W300	Peter	W	2	30,000.00
W400	Pauline	W	1	20,000.00
R300	McDonald	R	2	30,000.00
D300	Narine	D	4	250,000.00

(a) List TWO properties of a field. **(2 marks)**

(b) Explain how you would delete a field from a table. **(2 marks)**

(c) Give the name of the **primary** key in the CUSTOMER table. **(1 mark)**

(d) Write a query to find ALL distributors with YTD SALES **greater** than 50,000.00. **(3 marks)**

Total 8 marks

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8. The accounts department of the beverage company has prepared a summary sheet showing beverage sales for 2009. This summary is given in the spreadsheet listed below:

	A	B	C	D
1	Type	Sales	Status	VAT
2	Soda	150,000.00		
3	Beer	175,000.00		
4	Malta	23,000.00		
5	Shandy	135,000.00		
6	Stout	75,000.00		
7	Total	558,000.00		

(a) List TWO types of data that can be entered into a spreadsheet cell. **(2 marks)**

(b) Write the formula that was inserted in cell B7 to compute the TOTAL sales. **(1 mark)**

(c) What formatting feature was used on the Sales figures? **(1 mark)**

(d) All beverages with sales under 100,000.00 are given a status of 'POOR' while others are given a status of 'GOOD'. Write the function that should be entered into cell C2 to show the status of the beverage 'soda'. **(3 marks)**

Total 7 marks

SECTION III

PROBLEM SOLVING AND PROGRAMMING – 45 marks

Answer ALL questions.

9. (a) Table 3 shows labels in Column 1 and statements that represent the steps in problem solving in Column 2.

Arrange the labels to show the **correct** order in which the steps in problem solving occur. Write that order in your answer booklet.

TABLE 3

Labels	Statements
S1	Select the most efficient solution.
S2	Test and validate the solution.
S3	Definition of the problem.
S4	Develop the algorithm.
S5	Propose and evaluate solutions.

(5 marks)

(b) You are using a program to calculate the average number of storms that have recently passed through the Caribbean. This is calculated by adding the number of storms and then dividing by the number of years. The screen for the program looks like the one below:

STORM STATS

Enter the Number of Years (1 to 4) ☐

Enter the Number of Storms:

Year 1 ☐ Year 2 ☐ Year 3 ☐ Year 4 ☐

Average number of storms: ☐

You were told that the number of storms for the last three years were 10, 8, and 12.

(i) State the data that is required to input

a) the number of years
b) Year 1
c) Year 2
d) Year 3
e) Year 4. **(5 marks)**

(ii) State the result for the 'Average number of storms'. **(1 mark)**

(iii) Write an algorithm using pseudocode to input the total number of storms for three years, to calculate the average number of storms, and to output result. **(4 marks)**

Total 15 marks

10. (a) Each of the following programming statements contains ONE error. Rewrite the statement, correcting EACH error.

(i) IF (X = 3) TRY Y :=8;

(ii) WHILE (X = 3) UNTIL Y := Y + 1;

(iii) FOR X :-=1 – 10 DO
Writeln(X); **(3 marks)**

(b) (i) Explain the difference between a 'variable' and a 'constant'. **(2 marks)**

(ii) Write an example of a constant using a Pascal statement. **(1 mark)**

(c) Write an example of a value that can be stored in EACH of the following types of variables:

(i) Integer

(ii) Real

(iii) Character

(iv) String **(4 marks)**

Total 10 marks

11. (a) Rewrite the following fragment of code using the given control structures:

```
Mark :=1;
While Mark <= 40 DO
Begin
        Writeln(Mark);
        Mark := Mark + 1
End;
```

(i) a FOR loop **(3 marks)**

(ii) A Repeat loop **(4 marks)**

(b) Complete the following by replacing the letters A, B, C and D with the appropriate programming terms.

Rashida wrote a program in Pascal, and used a **A** to translate all program instructions at one time. The program produced a list of **B** which suggested that she made mistakes in the language rules of sentence structure when she was writing the program. Luckily, she did not have any **C** which meant that the sequence of programming statements was correct. Rashida took a long time **D** the code, since she could not find the errors in her source code. Eventually, her program was working. **(4 marks)**

(c) (i) State TWO reasons why it is important to document a program. **(2 marks)**

(ii) Explain the difference between 'system documentation' and 'user documentation'. **(2 marks)**

Total 15 marks

12. Consider the following program in Pascal, and answer the questions that follow:

```
Program HUM (input, output);
VAR  CSEC:array[1..8] of integer;
       Start, inc:  integer;

Begin
       Inc := 0;
       FOR Start := 1 TO 8 DO
              CSEC[Start] := Inc;
End.
```

(a) State the name of the program. **(1 mark)**

(b) State the name of the array. **(1 mark)**

(c) State the size of the array. **(1 mark)**

(d) Explain the purpose of the array. **(2 marks)**

Total 5 marks

END OF TEST