FORM TP 2011087

TEST CODE **01229020**

MAY/JUNE 2011

C A R I B B E A N E X A M I N A T I O N S C O U N C I L

SECONDARY EDUCATION CERTIFICATE EXAMINATION

INFORMATION TECHNOLOGY

Paper 02 – General Proficiency

2 hours 15 mins

12 MAY 2011 (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.**

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

Copyright © 2010 Caribbean Examination Council.
All rights reserved.

SECTION 1

THEORY

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

(i) Performs calculations and/or comparisons **(1 mark)**

(ii) Holds the data and programs that are currently being used by the Central Processing Unit (CPU) **(1 mark)**

(iii) Contains instructions that are used during the booting of the computer **(1 mark)**

(b) Mike bought a notebook computer with the following specifications:

Intel® Atom Processor® N270 (1.6GHz/533Mhz FSB/512K cache)
1GB DDR2 SDRAM
10.1" Widescreen Display (1024 × 600)
Intel Graphics Media Accelerator (GMA) 950
160GB, 2.5 inch, 5400RPM SATA Hard Drive
3 USB Ports
Wireless 802.11g (1397) Mini Card
24WHr Lithium-Ion Battery (3-cell)

Using the computer specifications listed above, state the specifications for EACH of the following components:

(i) Type, capacity and speed of the hard drive **(3 marks)**

(ii) Memory capacity **(1 mark)**

(iii) Resolution of the display **(1 mark)**

(c) Indicate the type of method used to access data for the following:

(i) Hard drive

(ii) Magnetic tape **(2 marks)**

Total 10 marks

2. (a) Match EACH of the following applications with the most appropriate device. In your answer booklet write the application number with the device letter next to it to indicate your choice.

Application No.	Application	Device Letter	Device
1	Cheque Processing	A	Biometric systems
2	Point-of-sale	B	Joystick
3	Security	C	Plotter
4	Games	D	Magnetic ink character recognition
5	Architectural Design	E	Bar code reader

(5 marks)

(b) Consider the following scenarios:

Scenario 1: Mike communicates with his computer by typing in specific commands using a specific language to get tasks done.

Scenario 2: Mary communicates with her computer by using the mouse and selecting pictures representing tasks.

(i) Name the type of interface indicated in EACH scenario. **(2 marks)**

(ii) Which of the above interfaces is MORE user friendly for someone who is learning to use a computer? **(1 mark)**

(iii) State the type of program that provides the user interface. **(1 mark)**

(iv) Name ONE type of interface other than those named in (b) (i) above. **(1 mark)**

Total 10 marks

3. (a) An organisation has bought a software package containing several applications to be used in the various departments of the organisation.

(i) State the name of this type of software package. **(1 mark)**

(ii) Give ONE advantage and ONE disadvantage of using this type of software package. **(2 marks)**

(b) State the type of processing that is BEST suited for EACH of the following tasks:

(i) Processing of monthly electricity bills **(1 mark)**

(ii) Processing of airline reservations **(1 mark)**

(c) (i) Convert Octal 243 to decimal, binary and hexadecimal. **(3 marks)**

(ii) Convert –856 to Binary Coded Decimal (BCD). **(2 marks)**

Total 10 marks

4. A landscape gardening company has six employees who work in the main office. Each employee has a stand-alone computer system and printer to use for his/her daily tasks. It was recommended that it would be more efficient if the six computers were networked.

(a) Explain what is meant by a 'network'. **(2 marks)**

(b) Describe TWO benefits of networking the computer systems in the office. **(2 marks)**

(c) State, with reasons, whether the network among these employees in the office would be an intranet, extranet, or internet. **(2 marks)**

(d) Describe TWO security measures that would protect the computers and data from unauthorised access. **(2 marks)**

(e) Identify TWO ways in which employees in the office can contact gardeners who are on a job. **(2 marks)**

Total 10 marks

5. A local agent leaves a catalogue and order sheet for homeowners, and checks on the order a week later. The agent sends the details of the goods ordered to the Head Office where they are processed. The completed order is returned to the agent who distributes the goods and collects payment.

(a) Describe TWO methods homeowners may use to get their orders to the agent each week. State ONE disadvantage of EACH method. **(4 marks)**

(b) Operators at Head Office enter the orders, where they are validated and verified.

(i) Explain how the orders can be verified. **(2 marks)**

(ii) Describe briefly TWO validation checks that might be carried out on an agent's order. **(4 marks)**

Total 10 marks

GO ON TO THE NEXT PAGE

6. You have recorded some interviews and stored them on two devices. The devices below show the lengths of the interviews stored in minutes:

Device A: 98, 84, 105, 39, 31, 78, 109

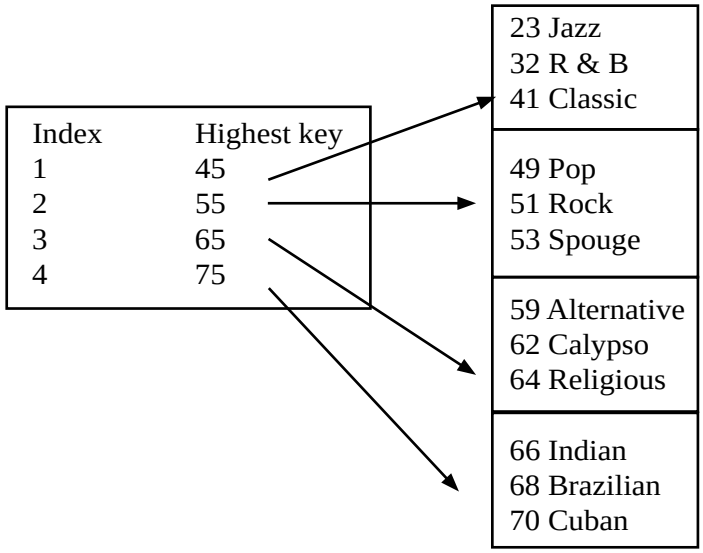
Device B: 31, 39, 78, 84, 98, 105, 109

(a) State which of the devices has the interviews ordered sequentially, and explain your choice. **(2 marks)**

(b) You have just recorded another interview which is 63 minutes long. Re-write the two lists showing the result after saving this interview to the two devices. **(2 marks)**

(c) The 39-minute interview was poorly recorded and needs to be deleted. Explain the process of deleting this interview from Device B. **(3 marks)**

(d) Consider the diagram below which illustrates a method of file organisation.



(i) State the type of file access that is illustrated in the diagram. **(1 mark)**

(ii) Write the index and keys that are used to locate Calypso. **(2 marks)**

Total 10 marks

SECTION 2

PRODUCTIVITY TOOLS

7. Answer the following questions based on the spreadsheet given below:

	A	B	C	D	E	F
1	**FIRST**	**LAST**	**STATUS**	**YEARS**	**RATE**	**FEES**
2	Ray	Charles	Junior	3	100	$300.00
3	Imran	Ally	Junior	4	100	$400.00
4	John	Persaud	Senior	5	200	$1,000.00
5	Michael	Scott	Senior	6	200	$1,200.00
6	Mary	Allen	Senior	7	200	$1,400.00
7					**TOTAL**	

(a) Junior members are charged a rate of 100 while senior members are charged a rate of 200. Write a function in Cell E2 that would insert the correct rate. **(2 marks)**

(b) Write the function that would be appropriate for Cell F7. **(2 marks)**

(c) State the numeric data format which has been applied to Column F. **(1 mark)**

(d) The data in the spreadsheet have been sorted by a primary field and then by a secondary field. List the primary and secondary field. **(2 marks)**

Total 7 marks

8. The Office of Investment uses a database named FOREIGN with two tables shown below to store data on foreign companies operating in the country:

Table 1: COMPANY

CID	Name	Sector	Ccode	Employees
A200	BJ	Petroleum	CA	75
M200	CMX	Mining	RU	120
M100	FEDCO	Electricity	US	190
A100	TPL	Agriculture	TT	230
T100	ATM	Telecommunications	US	550

Table 2: COUNTRY

Ccode	Cname
US	United States of America
CA	Canada
TT	Trinidad and Tobago
RU	Russia

(a) State the data type of the Sector and Employees fields of the COMPANY table. **(2 marks)**

(b) Identify a primary key for the COMPANY table. **(1 mark)**

(c) The records in the COMPANY table are sorted. Indicate the field name and the order of the sort. **(2 marks)**

(d) State the name of the field that would be used to join the two tables. **(1 mark)**

(e) Write a query to find ALL companies with over 200 employees in the Telecommunications sector. **(2 marks)**

Total 8 marks

SECTION 3

PROBLEM SOLVING AND PROGRAMMING

9. The following are some rules for passing a course:

– Passed both tests: Award Grade P

– Pass any one test only: Award Grade R

– Failed both tests: Award Grade F.

(a) Copy and complete the following table in your answer booklet:

Passed Test 1?	Passed Test 2?	Result
Y	Y	
Y	N	
N	Y	
N	N	

(4 marks)

(b) State the TWO boolean values that are used to test the rules in part (a). **(1 mark)**

(c) Write pseudocode to represent the rule that states if BOTH tests are passed then award Grade P. **(5 marks)**

Total 10 marks

10. A Pascal program contains 10 integers in an array named LONG.

Assume that the array and all variables are already initialised.

Write a program fragment to print:

(i) the sum of the integers

(ii) all integers smaller than the integer nine. **Total 15 marks**

11. (a) Copy and complete the trace table below to find the result of the following algorithm.

```
Start = 2
Finish = 4
Result = 0
For number = 1 to Finish do
        While (number <= Finish) DO
                Result = Result + Start
End For
Output 'The answer is', result
```

(3 marks)

Number	Start	Result
1	2	2
2	2	
3	2	
4	2	

(b) State the value of the variable Finish. **(1 mark)**

(c) What is the purpose of the algorithm? **(1 mark)**

Total 5 marks

12. Mya's teacher looked at her Pascal program and said that she should consider using conditional branching in a section of the looping structure. She also suggested that Mya debug the rest of the program, declare meaningful variables, and initialise more variables, as well as use more internal documentation, or Mya will lose marks.

For EACH of the following, explain and give ONE example to illustrate what is meant by

(a) conditional branching

(b) looping structure

(c) debug a program

(d) declaring and initialising variables

(e) document a program. **Total 15 marks**

END OF TEST