

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

JUNE 2012

ADVANCED LEVEL

Subject Title	Information and Communication Technologies
Paper No.	Paper 2
Subject Code No.	796

Two Hours

Answer any SIX questions.

All questions carry 20 marks each. For your guidance, the approximate mark for each part of a question is indicated in brackets.

You are reminded of the necessity for good English and orderly presentation in your answers.

In calculations, you are advised to show all the steps in your working, giving your answer at each stage.

Non-Programmable, noiseless and cordless electronic calculators may be used.

Turn Over

1. (i) Expand the following acronyms giving explanations in each case
- (a) BCD
 - (b) ASCII
 - (c) EBCDIC
- (3 marks)
- (ii) What is a robot? (1 mark)
- (iii) Explain two uses of computers in the following organizations:
- (a) Military
 - (b) Education
 - (c) Hospital
 - (d) Multinational corporation
 - (e) Manufacturing industry
- (10 marks)
- (iv) (a) Convert the decimal number 120 to an octal number.
- (b) Convert the binary number 101101001 to an octal number. (4 marks)
- (iv) Design and complete the truth tables of the following logic operators OR and NAND. (2 marks)
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2. (i) Give three reasons why data misuse is more easily carried out in a computer system than in a manual system. (3 marks)
- (ii) (a) What is a computer virus? (2 marks)
- (b) State two actions of a computer that may suggest the presence of a virus in it. (2 marks)
- (c) Write down four ways in which you can prevent a computer virus infecting your computer. (4 marks)
- (iii) What aspect of computer security does each of the following describe?
- (a) Prevent access to unauthorised computers (persons).
 - (b) Detect keystrokes logging or unauthorized data transmission.
 - (c) Used to identify the user to a computer system.
 - (d) Used for security and changed regularly.
 - (e) Restrict access to certain users.
 - (f) Data may be stolen but cannot be read.
- (6 marks)
- (v) State and briefly describe one other security method to protect the data of an organisation. (3 marks)
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3. (i) (a) Name and briefly describe THREE internal threats to ICT systems (6 marks)
- (b) Name and briefly describe two external threats of an ICT system (4 marks)
- (c) Describe three measures you would take to protect your ICT system from illegal access. (3 marks)
- (ii) (a) Explain what is meant by:
- Filename
 - File compression
 - File Allocation Table (FAT)
- (3 marks)
- (b) Give two reasons why it is necessary to defragment a hard disk (2 marks)
- (c) The file compression ratio of a disk compression utility is set at 15:1. If the contents of the hard disk is 28 GB before compression, what would it be after compressing the data with this compression utility? Give your answers in GB and MB. (2marks)

- (i) (a) What is batch processing? (2marks)
- (b) How is a batch processing system different from real-time processing system? (1 mark)
- (ii) (a) Which two of the following systems are batch processing systems?
 - Reservation systems
 - Payroll
 - Billings
 Explain your choice of answers. (4 marks)
- (b) Give three ways in which office staff will be affected by the introduction of a computer system. (3 marks)
- (iii) (a) Explain the following terms: Modeling and simulation. (5 marks)
- (b) Describe one situation which can be modelled and simulated. (5 marks)

5. (i) Computer users with different disabilities require special hardware and software. Complete the table below stating in each case, special hardware and/or software for people with the given disabilities. (5marks)

Disabilities	Hardware/software
Limited mobility	
Armless	
Slow typist	
Blindness	

- (ii) (a) What is data capture? (2marks)
- (b) Give three examples of automatic data capture methods, explaining how each method is carried out. (4 marks)
- (iii) (a) What do you understand by intranet and extranet (3marks)
- (b) List three special features of the networks mentioned in (a) above (3 marks)
- (c) How useful are these networks to an organisation? (3 marks)

6. (i) Define each of the following terms:
- (a) Telecommuting.
 - (b) Videoconferencing
 - (c) Expert system
 - (d) Loader (4 marks)
- (ii) What is system software? (2 marks)
Name and describe Four categories of system software and give an example for any TWO (6marks)
- (iii) Fully expand each of the following acronyms giving a brief explanation of its use in each case. (4 marks)
- (a) GIS
 - (b) HIS
 - (c) EIS
 - (d) LIS
- (iv) What is Management Information System (MIS)? (1 mark)
- (v) Reports are very essential for managers who use them to make good decisions. Name and briefly explain three types of MIS reports. (3 marks)

7. A payroll system has just been created for an agricultural firm of 50 workers
- (i) Describe THREE main steps that may be taken to implement the system. (3 marks)
 - (ii) Describe two verification methods that the firm could use when entering data into the system. (4 marks)
 - (iii) Describe THREE system input controls using specific examples. (6 marks)

Turn Over

- (iv) Describe two measures taken by the organization to ensure that data is not accidentally lost (2 marks)
- (v) Describe how, upon installation, the system can be tested. (5 marks)

8. A school has a manual library system which is run using the following rules:

- Books are grouped according to subjects in shelves.
- Books have codes on them.
- Students have access to the library.
- Each student has a school ID card.
- The record of books borrowed by students is stored on cards which are kept in the library.

(i) Give six data structures (fields and data types) of the details found in a borrower's card. Present your answer in a tabular form. (6 marks)

A system analyst is hired to design a computer system.

(ii) State and explain three ways of collecting information about the current system. (6 marks)

(iii) State four items of information that should be part of the design of the computer system. (4 marks)

(iv) Design a suitable output format for displaying the details of a borrower. You may annotate your design to make it clear. (4 marks)

9. The determinant (det) of a 2×2 matrix

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

is given by $\det = ad - bc$, where $a.d \equiv a \times d$.

The table below shows the values of a 2×2 matrix entered in a spreadsheet

	A	B	C
1	4	6	
2	5	9	
3			
4			
5			
6			
7			
8			

(i) Write down the formula you will use to calculate the determinant of the matrix whose entries are in the table. (2 marks)

(ii) Rewrite the equivalence of the formula above using a spreadsheet function, such as MDETERM in Excel, which computes the determinant for any $m \times n$ array, or otherwise. (2 marks)

(iii) Write a program in a stated programming language that reveals inputs of four integers, a, b, c and d, and displays the determinant of the matrix obtained from them as given above. (8 marks)

- (iv) (a) What is pseudocode? Give two rules for writing pseudocodes. (4 marks)
- (b) What is the difference between pseudocode and source code? (2 marks)
- (c) Give the importance of pseudocode. (2 marks)