CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD
General Certificate of Education Examination

JUNE 2018 **ADVANCED LEVEL**

Subject Title	**Information and Communication Technologies**
Paper No.	**2**
Subject Code No.	**0796**

Two Hours

Answer any SIX questions.

All questions carry 17 marks each. For your guidance, the approximate mark for each part of a question is indicated in brackets.

You will be marked on your ability to use good English, to organize information clearly and to use specialist vocabulary where appropriate.

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

REPLACEMENT

1. (i) Define the following ICT terms and for each, give one way that it can be effectively used in today's Cameroon in any domain of your choice.
   (a) Teleworking
   (b) Videoconferencing
   (c) Office Automation
   (d) Telemedicine **(8 marks)**

   (ii) (a) What is a robot? **(2 marks)**
   (b) Explain one application of a robot. **(1 mark)**
   (c) Give one disadvantage of a robot. **(1 mark)**

   (iii) (a) Convert 580.25_{10} to binary. **(2 marks)**
   (b) Evaluate $111_2 \times 101_2$ **(2 marks)**
   (c) Evaluate $1011011_2 + 11111_2$ **(1 mark)**

2. (i) (a) State and briefly explain THREE computer crimes common in Cameroon of today. **(3 marks)**
   (b) For each of the three crimes named in (a) give ONE method you would use to prevent it. **(3 marks)**

   (ii) (a) Differentiate between interactive processing and batch processing. **(2 marks)**
   (b) Describe TWO Examples of batch processing. **(2 marks)**

   (iii) Briefly describe the following
   (a) Management Information System (MIS) **(2 marks)**
   (b) E-Commerce. **(2 marks)**

   (v) Explain THRR reasons why wireless communication is not preferred by some organizations. **(3 marks)**

3. (i) (a) Differentiate between flate file database and relational database **(2 marks)**
   (b) Give TWO advantages of using a relational database over a flat file database. **(2 marks)**
   (c) Explain the term "redundancy" as used in database and describe how it can be handled in database design. **(3 marks)**

   (ii) Explain the following system terminologies.
   (a) System testing **(2 marks)**
   (b) Acceptance testing **(2 marks)**
   (c) System Development Life Cycle. **(1 mark)**

   (iii) Describe the main function of the following in an intranet.
   (a) Firewall **(2 marks)**
   (b) Repeater **(1 mark)**
   (c) Switch. **(2 marks)**

4. (i) A company provides network services to its customers in a building occupying three rooms. The network is connected to the internet to bring special e-mail facilities to its customers.
   (a) Give the name of the device used to connect workstations in a client-server network. **(1 mark)**
   (b) Give the name of the device used to link similar or dissimilar networks. **(1 mark)**
   (c) Explain why a computer could be considered a client and another consider a server in a client/server network. **(2 marks)**

   (ii) Describe the functioning of the following data transmission devices.
   (a) Multiplexing; **(2 marks)**
   (b) half-duplex; **(2 marks)**
   (c) Simplex. **(2 marks)**

   (iii) Suggest **TWO** methods for protecting user e-mail account from virus attacks. **(2 marks)**

   (iv) Wireless networking technology is becoming very popular with people who access the internet at home. Describe **TWO** advantages and one disadvantage of using wireless network at home. **(3 marks)**

   (v) Describe **TWO** services available on the Internet that organizations can use other than e-mail. **(2 marks)**

5. (i) Generally, a computer program could be divided into any of the following control structures based on the functions to be performed: sequence, Selection/choice, Iteration.

(a) Briefly explain each of the three control structure named above. **(6 marks)**

(b) Study the algorithms A, B and C below

A: IF you are above 1.95 metres tall
THEN apply for the basketball
Scholarship
ELSE pay for your basketball classes.

B: GO TO the box
Pick two numbers randomly
Add the two numbers
WRITE down the sum
STOP

C: DO spend the money in your pocket, one hundred francs at a time
UNTIL you are left with less than one hundred francs

Match the algorithms above to the corresponding control structure named above by completing the Following table: **(3 marks)**

Algorithm	Type of control structure
A	
B	
C	

(ii) Define the machine cycle and briefly explain each of the stages involved. **(4 marks)**

(iii) (a) What is e-governance? **(1 mark)**

(b) Discuss a benefit of e-governance to the Cameroon government with respect to
- Elections
- Taxation
- Education **(3 marks)**

6. (i) (a) What is memory **(1 mark)**

(b) State and describe the functions of two memory chips found in a computer. **(4 marks)**

(c) Give two differences between sequential files and random files. **(2 marks)**

(d) Define each of the following stages in the SDLC and describe its main task.
- System analysis **(2 marks)**
- System construction **(2 marks)**

(ii) (a) The contents of a memory location reads 10100111. What is the decimal equivalent of this content? **(2 marks)**

(b) Convert the hexadecimal Number A7 to binary. **(2 marks)**

(c) Give two benefits of increasing the memory of a computer system. **(2 marks)**

7. (i) (a) Describe an operating system and give **TWO** examples. **(2 marks)**

(b) Distinguish between command line and graphical user interface. **(2 marks)**

(c) Explain **FOUR** functions of an operating system. **(4 marks)**

(ii) Describe **TWO** methods that can be used to convert an old information system to a new one. **(4 marks)**

(iii) (a) What is the difference between data security and Data protection. **(2 marks)**

(b) Name and explain **THREE** methods you could use to secure data in a computer system. **(3 marks)**

8. (i) Explain each of the following project management terminologies.
   (a) Critical path; (2 marks)
   (b) Gantt chart; (2 marks)
   (c) Project. (1 mark)

(ii) The circuit below implement the AND logical operator for the bulb to turn on, i.e when the logical value of F equals 1 or when power passes from power supply to the bulb.

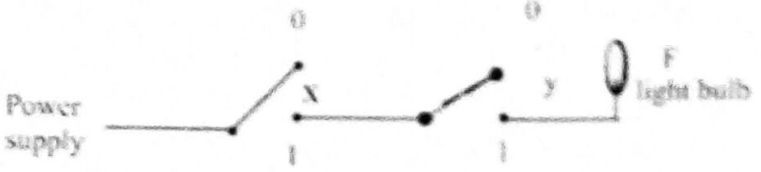


Figure 1

(a) Use figure 1 to complete the table below for the inputs variables x and y taking a value of 1 for ON and 0 for OFF (3 marks)

X	Y	F
0	0	
0	1	
1	0	
1	1	

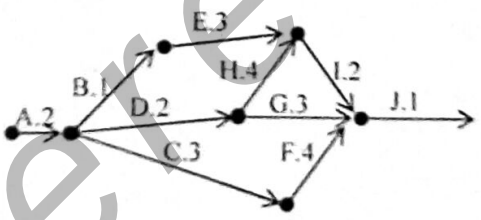
(b) What values will X and Y take for the bulb to light? (2 marks)

(iii) Given two inputs X and Y in a binary logic circuit write down two expressions of De Morgan's theorem for AND and OR. (3 marks)

(iv) (a) Why is an expert system referred to as a knowledge based system? (2 marks)
(b) Give **TWO** main features of an expert system. (2 marks)

9. (i) Explain the importance of the following types of software and give an example in each case:
   (a) Device driver; (2 marks)
   (b) Utility software; (2 marks)
   (c) Language translator. (2 marks)

(ii) The PERT chart for a certain project is given below.



(a) State the full meaning of PERT. (1 mark)
(b) Find the critical path showing how it is identified. (2 marks)
(c) How long is the project estimated to last? (1 mark)
(d) Identify two slack tasks on two separate path and state the slack time of each. (2 marks)

(iii) (a) Explain serial data transmission method, and state the two types of serial data transmission methods. (3 marks)
(b) Describe parallel transmission method, and explain a situation where it is used. (2 marks)