HOLY INFANT HIGH SCHOOL MELEN-YAOUNDE

Mock General Certificate of Education Examination

MARCH 2024 **ADVANCED LEVEL**

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

Two and a half 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 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-Programming, noiseless and cordless electronic calculators may be used.

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 **(8marks)**

   (ii) (a) Describe an operating system and give TWO examples. **(2marks)**
   (b) Explain TWO functions of an operating system. **(2marks)**

   (iii) (a) What is the importance of file format? (**1mark)**
   (b) Draw the table below and classify the following file formats in the right column of file type: .JPEG, .MDB, .PDF, .XLS, .XML, .WAV, .PNG

Sound	Document	Spreadsheet	Bit-mapped	Database	Hypermedia

(4marks)

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2. (i) A Supermarket uses a computerized stock control system to run its warehouse.
   (a) State the device that can be used to automatically record the items bought by customers. Explain how the items are prepared for data capture and how the device is used in the process during sales. **(3marks)**
   (b) Explain how customers can make payments using credit cards. **(2marks)**

   (ii) (a) State and explain the functions of ONE sub component in the ALU of the CPU. **(2marks)**
   (b) State and explain TWO stages of the instruction cycle carried out in the control unit. **(2marks)**

   (ii) An outsourcing software has been produced for your organization.
   (a) Give THREE areas you will use to investigate the effectiveness of the software. **(3marks)**
   (b) Give TWO importance of outsourcing. **(2marks)**

   (iii) Give the function of the following in a computer system:
   (a) BIOS. **(2marks)**
   (b) Sound card. **(2marks)**
   (c) Motherboard. **(2marks)**

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3. (i) (a) Give THREE ways in which a system Analyst can gather information to design a new system for an organization. **(3marks)**
   (b) One of the phases of SDLC is design. List all the stages of the SDLC in chronological order. **(2marks)**
   (c) State TWO activities carried out in the design phase of the SDLC. **(2marks)**

(ii) A software development schedule is shown in the table below.

Task	Description	Duration (working days)	Predecessor(s)
A	Requirement Analysis	5	-------
B	Systems Design	15	A
C	Programming	25	B
D	Telecoms	15	B
E	Hardware Installation	30	B
F	Integration	10	C, D
G	System Testing	10	E, F
H	Training/Support	5	G
I	Handover	5	H

(a) Draw the PERT chart for this project. **(4marks)**

(b) Determine the critical path of this project. **(2marks)**

(c) Give TWO slack tasks, stating their slack times. **(2marks)**

(d) Give TWO characteristics you will use to determine that a project was good. **(2marks)**

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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. **(1mark)**

(b) Give the name of the device used to link similar or dissimilar networks. **(1mark)**

(c) Explain why a computer could be considered a client and another consider a server in a client-server network. **(2marks)**

(ii) Describe the functioning of the following data transmission terms.

(a) Multiplexing **(2marks)**

(b) Half-duplex **(2marks)**

(c) Simplex **(2marks)**

(iii) An office has four computers. The manager wants to connect the computers in a LAN.

(a) Name a network device which would be possessed by each computer in order to be connected to the network. **(1mark)**

(b) Give TWO reasons why manager will not prefer a wireless technology. **(2marks)**

(c) State and explain a network topology that is suitable to this office. **(2marks)**

(d) Explain TWO security measures that should be put in place in the above office to secure such network from authorized access or misuse. **(2marks)**

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5. (i) Explain the main function of the following in an intranet.

(a) Firewall **(2marks)**

(b) Switch **(2marks)**

(ii) (a) What is online Banking? **(1 mark)**

(b) Give TWO advantages of online banking. **(2marks)**

(c) Give TWO drawbacks to the bank for introducing online banking. **(2marks)**

(iii) 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 structures named above. **(6marks)**

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

A: IF you are above 1.95 meters 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 algorithm above to the corresponding control structure named above by completing the following table:

Algorithm	Type of control structure
A	
B	
C	

(3marks)

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

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

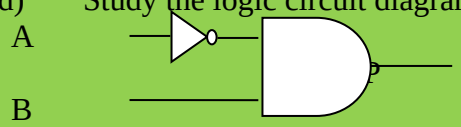
(ii) Describe the functioning of the following data transmission devices.

(a) Multiplexing **(2marks)**

(b) Half-duplex **(2marks)**

(c) Simplex **(2marks)**

(d) Study the logic circuit diagram below:



(a) What is the value of P? **(2marks)**

(b) Draw the truth table of the logic circuit above in (a). **(2marks)**

(c) Draw the circuit diagram for a NOR gate. **(2marks)**

(d) What is going to be the output if a NOT gate is added to P **(1mark)**

7. (i) (a) What is a computer Interface? **(1mark)**

(b) Give the characteristics of the Graphical User Interface. **(2marks)**

(c) State two advantages of GUI over Command Line **(2marks)**

(ii) Define and give one way in which each of the following measures can be used to secure unauthorized access to data.

(a) Biometric identification **(2marks)**

(b) Encryption **(2marks)**

(c) Physical security **(2marks)**

(iii) (a) Describe simulation and a situation that can be simulated. **(3marks)**

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(b) Give three advantages of simulation to architects. **(2marks)**

8. (i) Describe how the following data security methods can be executed.
   a) File backup **(2marks)**
   b) Virus scan **(2marks)**
   c) File compression **(2marks)**

   (ii) Research work on automatic speech recognition (ASR) has intensified since the beginning of the 21st Century. Emerging technologies are on the way to increase the quality of interaction between computer users and the machine.
   (a) What is automatic speech recognition? **(2 marks)**
   (b) State two advantages and one limitation of speech recognition. **(3 marks)**

   (ii) Explain briefly the use of the following input technologies and cite a situation in which each can be useful:
   (a) Magnetic strip. **(2 marks)**
   (b) Magnetic ink character recognition. **(2 marks)**
   (c) Touchpad. **(2 marks)**

9. (i) Give the full meaning of the following and state an application for each
   (a) LIFO **(2 marks)**
   (b) FIFO **(2 marks)**

   (ii) (a) What is a source code? **(2 marks)**
   (b) Give a reason why some programming languages are classified as high level programming languages. **(1 mark)**
   (c) State two ways in which you can represent an algorithmic. **(2 marks)**
   (d) State the qualities of a good algorithm **(2 marks)**

   (iii) Define the following terms:
   (a) Computer ethics.
   (b) Hacking
   (c) Copyright. **(3 marks)**

   (iv) Evaluate the following, where binary numbers are absolute values:
   (a) 34_{10} a binary
   (b) $10110101_2 - 11111_2$
   (c) $101101_2 \times 101_2$ **(6 marks)**