

SOUTH WEST REGIONAL MOCK EXAMINATION GENERAL EDUCATION

THE TEACHERS' RESOURCE UNIT (TRU)
Cellule d'appui à l'action Pédagogique

IN COLLABORATION WITH
En collaboration avec

**THE REGIONAL INSPECTORATES OF PEDAGOGY AND
THE SUBJECT TEACHERS' ASSOCIATIONS (STA)**

FRIDAY, 22ND MARCH 2024

ADVANCED LEVEL

Subject Title	INFORMATION AND COMMUNICATION TECHNOLOGIES
Paper Number	Paper 2
Subject Code Number	0796

TWO AND A HALF HOURS

INSTRUCTIONS TO CANDIDATES:

Answer any SIX questions.

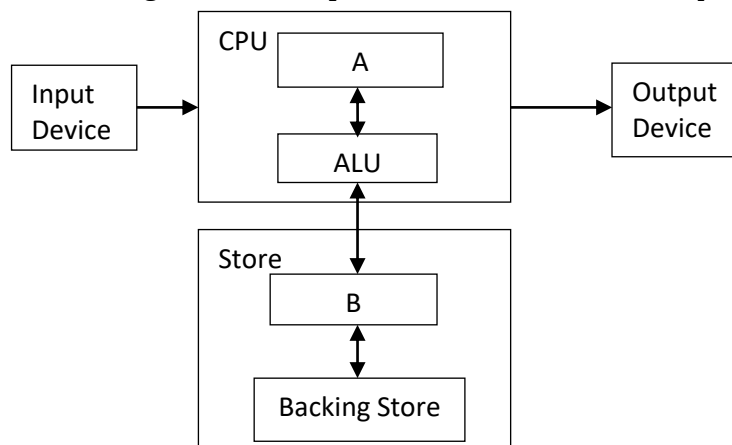
All questions carry 17 marks each. For your guidance, the approximate mark for each part of a question is indicated in brackets.

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.

Calculators are NOT allowed

1. (i) Study the block diagram of a computer below and answer the questions that follow.

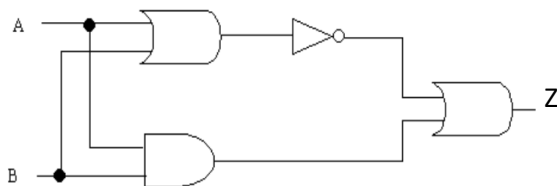


- (a) With reference to the block diagram describe the term computer. **(1 mark)**
 (b) State and describe the role of the missing components A and B in the computer system **(2 marks)**
 (c) Identify the component(s) responsible for machine cycle and explain the activities of TWO stages of the Instruction cycle. **(3 marks)**
 (d) Describe one hardware component of the backing store stating clearly its role in the computer system. **(2 marks)**
- (ii) Explain the following database concepts giving example(s) of each case where necessary.
 (a) Cardinality **(2 marks)**
 (b) Entity **(2 marks)**
 (c) Attribute **(1 mark)**
- (iii) In a school library a student can borrow Five types of books and a book can be borrowed by any qualified student.
 (a) What type of relationship exist between Student and book? **(1 mark)**
 (b) Using Entity-relationship Diagram (ERD) describe the student-book relationship stating clearly the cardinality of the relationship. **(3 marks)**

2. (i) Explain briefly the following systems citing an example in each case.
 (a) Embedded system. **(2 marks)**
 (b) Simulation. **(2 marks)**
 (c) Control system. **(2 marks)**
- (ii). Connections between computers on a network can be wired or wireless.
 (a) Give TWO advantages and ONE disadvantage of wireless connections over wired connections. **(3 marks)**
 (b) State two wired transmission media and two wireless transmission media. **(4 marks)**
- (iii). Copy and complete the table below stating the specific role of each of the devices in a network. **(4marks)**

Device	Specific Role
Router	
Gateway	
Bridge	
Repeater	

3. (i) Study the logic circuit below and answer the questions that follow.



- (a) State the Boolean expression of the above logic circuit (2 marks)
- (b) Assume the output of the logic circuit is Z, construct a truth table showing clearly the inputs and the corresponding output (3 marks)
- (c) Simplify the boolean expression in (a) using De Morgan theorem to its simplest form. (3 marks)
- (ii) Sup-tech Cameroon is an NGO that trains young Cameroonians with basic skills in computing. The management decides to connect the computers, printers, scanners and other devices together in a network using a dedicated system that controls access to these hardware components.
- (a) Describe a suitable network architecture for the above setup. (2 marks)
- (b) Give ONE advantage and ONE disadvantage of (ii)(a) above to the NGO. (2 marks)
- (c) List and explain the function of two devices needed to setup this network. (4 marks)
- (iii) The Internet was developed from an experimental network call **ARPANet**. Give the acronym of the word **ARPANet**. (1 mark)

4. (i) Study the algorithm below and answer the questions that follow

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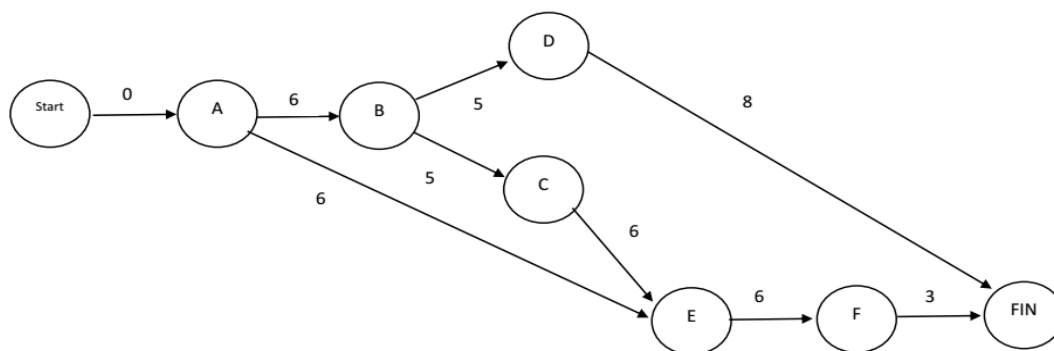
1. Start
2. i = 0
3. sum=0
4. get n
5. while i<=n do
6.     sum=sum + i
7.     i = i + 1
8. endwhile
9. display sum
10. end

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- (a) State and explain the control structures used in the algorithm with their line numbers. (4 marks)
- (b) Draw a flowchart for the above algorithm. (4 marks)
- (c) Dry run the algorithm with the value n = 7, write down the output. (2 marks)
- (d) How many times will the instructions in lines 5 to 8 run when n=7? (1 mark)
- (ii) Computer graphics can either be Bit map or Vector graphics. Define the terms:
- (a) Bitmap graphic. (1 mark)
- (b) Vector graphic. (1 mark)
- (c) With respect to quality and memory capacity, differentiate between bitmap and vector graphics. (2 marks)
- (d) State TWO bitmap file format and TWO vector graphic file format. (2 marks)
5. (i).A newly created financial institution in the South West region is considering expanding its scope so as to increase its customer base. The first strategy this institution intends to put in place is to convert from the current manual information system to a computerized system. This new system will help improve on the management of financial transactions and the quality of services render to customers. To avoid errors the company employed the services of an analyst to study the existing system.
- (a) Describe THREE roles of the analyst in this company (3 marks)
- (b) Assume Feasibility study is a necessary stage in developing the new system, state and explain THREE types of feasibility study relevant to the company. (6 marks)
- (ii) To improve service quality to customers the company intends to implement ATM, POS (Point of sale) terminal, and internet banking. Explain the importance of these services to the customers.
- (a) ATM (2 marks)
- (b) POS (2 marks)
- (c) Internet banking (2 marks)
- (iii) In terms of storage technology and access speed differentiate between CD-ROM and Hard Drive. (2 marks)

6. (i) Computer viruses can cause untold damage if allowed to infect a computer system.
 (a) State the manifestation of the following viruses in the computer system
- Trojan horse (1 mark)
 - Logic bomb (1 mark)
 - Boot sector virus (1 mark)
 - Worm (1 mark)
- (b) Describe two possible methods of preventing a virus from getting onto your computer system. (4 marks)
- (ii) Explain the following computing terms.
- (a) System security (2 marks)
- (b) System reliability (2 marks)
- (c) System resilience (2 marks)
- (iii) State a means of preventing the following computer health related problem.
- (a) Back pain (1mark)
- (b) Carpal Tunnel syndrome (1mark)
- (c) Computer Vision Syndrome (1mark)

7. (i) (a) What is an Integrated Development Environment (IDE)? (1 mark)
- (b) State and describe the use of any TWO features common to most IDEs. (2 marks)
- (c) Distinguish between source code and object code as used in programming. (2 marks)
- (ii) Study the PERT chart below. Tasks are represented in nodes and duration on arcs measured in days.



- (a) State the full meaning of the acronym PERT (1mark)
- (b) Convert the information on the above chart into a table showing clearly the task, duration, and predecessor(s) in a chronological order. (3 marks)
- (c) State two concurrent tasks and their duration. (2 marks)
- (d) Calculate the duration of the project. (2 marks)
- (d) Identify the tasks with zero slack time. (2 marks)
- (iii) Evaluate $11101_2 \times 11_2$. (2 marks)

8. (i) (a) Explain the following concepts in computing.
- Digital divide. (1 mark)
 - Telemedicine. (1 mark)
- (b) Give TWO reasons that have contributed to the high rate of digital divide in the developing countries. (2 marks)
- (c) Explain TWO ways in which digital divide has affected the development of telemedicine in Cameroon. (2 marks)
- (ii) (a) Define sorting and search algorithms as used in programming citing one example of each case. (3 marks)
- (b) State ONE importance of sorting algorithm to a programmer. (2 marks)
- (iii) (a) What do you understand by the term application software? (1 mark)
- (b) Differentiate between bespoke and off-the-shelf software. (2 marks)
- (c) Describe THREE ways the operating system manages the secondary storage. (3 marks)

THE END