# 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)

**THURSDAY, 23/03/2023**                                **ORDINARY LEVEL**

| Subject Title | **COMPUTER SCIENCE** |
|---|---|
| Paper Number | **Paper 2** |
| Subject Code Number | **0595** |

### TWO HOURS

### INSTRUCTIONS TO CANDIDATES:

*Answer any FIVE 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 ..... ..... ..... ..... show all the ..... ..... your working, giving your answer at each stage.*

*Calculators are NOT allowed*

1. i) a). What is computer generation? **(2 marks)**

b) For each of the following computer generations, state the technology used. **(3 marks)**

| Generation | Technology |
|---|---|
| 2nd | |
| 5th | |
| 1st | |

ii) Consider the algorithm below

```
1:    Start
2:    Get a positive integer, X
3:    Set counter = 1
4:    while counter < = X do
5:        Set P = X + counter
6:        counter = counter + 1.
7:    end while
8:    Display P
9:    Stop
```

a) List two control constructs in the algorithm and enumerate their line code respectively **(4 marks)**

b) Dry run the algorithm for x=5. Hence complete the trace table below. **(4 marks)**

| X | counter | P |
|---|---|---|
| 5 | 1 | / |
| 5 | 2 | 6 |
| | | |
| | | |
| | | |
| | | |

c) Explain what the program is designed to do? **(3 marks)**

d) Represent the above algorithm using a flowchart. **(4 marks)**

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2. i). Define the following terms as used in computer, given an example in each case.

a) Primary Storage **(3 marks)**

b) Secondary Storage **(3 marks)**

c) I/O Device **(2 marks)**

ii) Use binary arithmetic to evaluate the following

a) $1101101 - 1110$ **(2 marks)**

b) $1010101 + 1101$ **(2 marks)**

iii) Consider the database table of students below.

| StudentID | Name | Date_Of_Birth | Telephone | CLASS |
|---|---|---|---|---|
| 045 | Njam | 08th MAY 1999 | 77899800 | 5A |
| 067 | Lum | 16th June 2000 | 677787670 | USA |
| 046 | Paul | 13th March 2001 | 647553676 | 5B |

a) How many records and fields exist in the table? **(2 marks)**

b) What is the most suitable primary key from the table? **Justify your answer.** **(2 marks)**

c) State whether or not the DBMS should allow you to carry out the following actions. Give a reason in each case

- Add a student to the table with the following attributes

StudentID= 067, Name= Chi, Date_of_Birth=16th March 1999 Class= USS **(2marks)**

- Add a student to the table with the following attributes

StudentID= 066, Name= Emmanuel, Date_of_Birth=16th May 2000 Class= 5A **(2marks)**

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3. i) Software can be classified as either System software or Application software.
   a) State and briefly explain any two attributes of a good software. (4 marks)
   b) Differentiate between System software and Application software, given an example in each case. (4 marks)

   ii) Every system is expected to have a very friendly user interface for better user experience.
   a) What is a user interface? (2 marks)
   b) State and briefly explain any 2 types of user interfaces (4 marks)
   c) Which system software is responsible for providing a user interface? (1 mark)

   iii) a) What is a programming paradigm? (2 marks)
   b) Differentiate between procedural programming and declarative programming (2 marks)
   c) Give one example of an object-oriented programming language. (1 mark)

4. i) A bank decides to link all its branches nationwide by setting up a computer network.
   a) State two benefits of computer network to the bank. (2 marks)
   b) List three network components that are required to setup this network and their role (6 marks)
   c) With the aid of well labeled diagrams in each case, distinguish between parallel transmissions and serial transmissions. (4 marks)

   ii) a) What is an information system? (2 marks)
   b) Differentiate between validation and verification, given an example in each case (4 marks)

   iii) A school decides to replace old computers in their computer laboratory with newly purchased ones. Which conversional method is best suited to be used and why? (2 marks)

5. i) Consider the Boolean expression $\overline{AB} + (A + B)$
   a) How many input variables make up this expression? (1 mark)
   b) Construct a Boolean circuit (Logic diagram) for this Boolean expression (3 marks)
   c) Complete the truth table below for this expression. (4 marks)

| A | B | $\overline{AB}$ | AB | A+B | $\overline{AB} + (A+B)$ |
|---|---|---|---|---|---|
| 0 | 1 | | | | |
| 1 | 1 | | | | |
| 0 | 0 | | | | |
| 1 | 0 | | | | |

   ii) Given that $X = 01110101_2$
   a) What is X in Octal (2 marks)
   b) What is X in Decimal (2 marks)
   c) What is X in BCD (2 marks)

   iii) a) What is computer security? (2 marks)
   b) Briefly explain the following concepts in relation to computer security. (5 marks)
   - Confidentiality
   - Authentication
   - Integrity
   - Encryption
   - Password

6. i) A student wants to purchase a quality laptop for studies. Two laptops are proposed to the student with the following specifications :

| DELL | HP |
|------|----|
| Processor: 2 GHz dual core | Processor: 3 GHz |
| HDD: 160 GB | HDD: 100 GB |
| DVD-RW | DVD-R |

    a) Which of the laptop has the fastest processing speed. Justify your answer    (2 marks)
    b) Which of the laptop can be used to transfer information on a compact disc. Justify your answer(2 marks)
    c) Determine the laptop he will choose and give a reason    (2 marks)

ii) An ISP provides internet services to a school. The students in the school mostly work with social media platforms.
    a) What is an internet service?    (2 marks)
    b) Give three examples of internet services that can be provided by the ISP    (3 marks)
    c) Give two advantages and two disadvantages of social media in education.    (4 marks)

iii) A file of size 5 GB is to be stored on CDs of size 700 MB each.
    a) Convert 5 GB to MB    (2 marks)
    b) How many CD's are required to store this file?    (3 marks)

7. i) Consider the Gantt chart below

| TASK | DURATION | Week1 | Week2 | Week3 | Week4 | Week5 | Week6 | Week7 |
|------|----------|-------|-------|-------|-------|-------|-------|-------|
| A | 1 Week | ███ | | | | | | |
| B | 2 Weeks | ███ | ███ | | | | | |
| C | 1 Week | | | ███ | | | | |
| D | 4 Weeks | | | | ███ | ███ | ███ | ███ |

    a) What is a critical path?    (1 mark)
    b) State the critical path of the Gantt chart above and hence determine the duration of the project (3 marks)
    c) If the project started on the 2$^{nd}$ March 2021, what will be the earliest completion **date**?    (2 marks)

ii) The Minister of Secondary Education wants to introduce a school management system in all the Secondary schools in Cameroon. To achieve her goal, she decides to **implement** this software in one region at a time.
    a) What is system implementation?    (2 marks)
    b) State and give an advantage of the implementation strategy used by the Minister.    (2 marks)
    c) State any two activities that take place during system implementation    (2 marks)

iii) a) What is a file format?    (2 marks)
    b) Give the full meaning of the following acronym?    (4 marks)
        - .JPEG
        - .HTML
    c) Differentiate between a file and a folder.    (2 marks)

**END**