**451/1 - COMPUTER STUDIES – Paper 1**

**APRIL 2023 – 2½hrs**

**Name…………………………………………………………………………………………. Index Number………………………………**

**Admission Number………….……………………………… ………………………….. Class……………………….......................**

**Date………………….………………………………………………………………………… Signature ……………………………………..**

**Instruction to candidates**

1. *Write your name and index number in the space provided above.*
2. *Sign and write the date of examination in the spaces provided above.*
3. *This paper consists of* ***two*** *sections* ***A*** *and* ***B****.*
4. *Answer* ***all*** *the questions in section* ***A.***
5. *Answer question* ***16*** *(Compulsory) and any other* ***three*** *questions from section* ***B.***
6. *All answers should be written in the space provided in the question paper.*
7. ***Do not remove any pages from this booklet.***
8. ***Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***
9. ***Candidates should answer the questions in English.***

**For Examiner’s Use Only**

|  |  |  |
| --- | --- | --- |
| **Section** | **Question Number** | **Candidate’s Score** |
| **A** | **1-15** |  |
| **B** | **16** |  |
| **17** |  |
| **18** |  |
| **19** |  |
| **20** |  |
| **Total Score** | |  |

**SECTION A** (40 marks)

*Answer* ***ALL****the questions in this section in the spaces provided*

* + - 1. (a) List **four** types of publications that can be designed using desktop publishing software. (2 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

(b) Explain the following graphic terms:

1. Rotate (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Crop (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. List **four** input devices that capture data by way of scanning (2 marks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Explain the following operating system functions:
2. Job scheduling (1 mark)

…………………………………………………………………………………………………………………………………………………………………………………………………..............................

1. Interrupt handling (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Distinguish between a formula and a function as used in spreadsheets. (2 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. State **two** reasons why it is necessary to use standard furniture in a computer laboratory

(2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. When purchasing a computer, the clock speed, RAM size, Hard disk size and monitor size are often quoted. State the unit of measuring: (2 marks)
2. Clock speed …………………………………………………………
3. RAM size …………………………………………………………..
4. Hard disk size …………………………………………………………
5. Monitor size …………………………………………………………..
6. A computer user typed the name Kajiado as Kajaido and 8726 as 8126.
7. State the type of each error (1 mark)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Explain how each error can be controlled (2 mark)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Explain the functions performed by the following; (3 marks)
2. The control unit

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Arithmetic and logic unit

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Main memory

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Some of the basic factors one should consider when purchasing a computer include; cost, warranty among others. Explain **three** factors that determine the cost of a computer.

(3marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. List **four** stages in data collection. (2 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. (a) Name the **two** files commonly used in mail merge (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..........................................

1. Name and explain **two** types of drop caps. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Differentiate between relative cell referencing and absolute cell referencing. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Describe the following types of relationships as used in database design. (4 marks)
2. One – to – one;

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. One – to – many.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. (a)Describe the term data integrity. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) State**four** situations in which data may lose integrity (2 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. State **two** ways in which one can create a password which cannot be easily accessed by hackers. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

**SECTION B** (60 marks)

*Answer question* ***16*** *(Compulsory) and any other* ***THREE*** *questions from this section in the spaces provided.*

1. (a) State **two** qualities of a good pseudocode. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b). Distinguish between and assembler and an interpreter as used in programming.

(2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………......................................

(c). Explain **two** ways that may be used to identify the existence of errors in a program.

1. marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

(d). Draw a programme flowchart that would accept three numbers and find their sum. If the sum is greater than 200, it adds 30 to the sum otherwise subtracts 20 from the sum. The program should then display the result. (7 marks)

1. a) The following are some of the phases in the system development life cycle (SDLC): system analysis, system design, system implementation, system review and maintenance. State **four** activities that are carried out during system implementation phase. (4 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) Give **three** reasons why system maintenance phase is necessary in SDLC. (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

(c) State **two** instances where observation is not a viable method of gathering information during system analysis stage. (2 marks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………

(d) Various considerations should be made during input design and output design. State**two** considerations for each case; (4 marks)

Input design

……………………………………………………………………………………………………………………………………………………………………………………………………………………

Output design

……………………………………………………………………………………………………………………………………………………………………………………………………………………

(e) State **two** reasons why an organization may use other strategies of software acquisition other than developing their own. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) State **three** standard coding schemes used in computing and electronic systems. (3 marks)

(b) Convert the following numbers:

1. 110.1012  to decimal; (3 marks)
2. 12.687510 to binary; (4 marks)

(c) Subtract 110.012 from 11001.01012  (2 marks)

(d) Using twos complement, perform the following binary arithmetic leaving the answer in binary notation.

11012 - 1001012  (3 marks)

1. (a) Using **two** examples, explain the term field properties as used in database design.

(2 marks)

b) Below is an extract from a hospital database.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Patient No. | Name | Date registered | Amount paid | Remarks |
| LDK/001 | Mathew Olang | 04/05/08 | 2500.00 | To go for x – ray |
| LDK/004 | Joy Chelimo | 07/06/08 | 1200.0 | Medicine to be Ordered |
| LDK/008 | John Kamau | 09/08/08 | 3500.00 | To be admitted for further check up |
| LDK/002 | GaraldWasike | 02/04/05 | 800.00 | To come back for review. |

1. State with reasons the most suitable data types for the following fields: (8 marks)
2. Patient No;

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Date registered

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Amount paid

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Remarks

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Which would be the most appropriate primary key field for the above table? (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. What is the purpose of a primary key field in database design? (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Describe how information about patients who registered after 09/08/06 can be extracted from the database. (3 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) (i) What is an information system? (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………

(ii) State **two** roles of an information system. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Describe the following file organisation methods:
2. Random file organization (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Sequential file organization (2 marks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………......

1. The following records were extracted from two files that contained student data

**File A:**

Reg No. Student Name sex Address

3002 Christine Onyancha F Box 8932 Kisii

3008 John Otieno M Box 7222 Nairobi

3001 Amina Muthee F Box 1243 Butere

3015 Peter Musyoki M Box 6621 Nyeri

**File B:**

**Reg. No Fee Payments Date of Payment**

3002 1000 04/09/2011

3008 1500 03/09/2011

3001 900 02/09/2011

3015 400 21/09/2011

1. Which of the two files above represents a Transaction file? (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. Give a reason for your answer in c(i) above (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Name the other type of file represented above (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………..

1. An airline uses an information system whereby if a passenger at station A books a plane seat, this transaction is immediately shown at stations A and B such that no other passenger can book the same seat.
2. Identify this data processing mode (1 mark)

……………………………………………………………………………………………………………………………………………………………………………………………………………………

1. State **two** advantages and two disadvantages of this processing mode. (4 marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………