**NAME ……………………………………..……… DATE …………………………………**

**INDEX NO. …………….……….……..…..… CANDIDATE’S SIGNATURE ………….**

**451/1**

**COMPUTER STUDIES**

**PAPER 1**

**(THEORY)**

**TIME: 2 ½ hours**

**FORM 3 EXAMINATION 2023**

*Kenya certificate of Secondary Education*

**451/1**

**COMPUTER STUDIES**

**PAPER 1**

**(THEORY)**

**TIME: 2 ½ hours**

**Instructions to Candidates**

1. Write your name and index number in the spaces provided above.
2. This Paper consists of two sections A and B.
3. Answer **ALL** the questions in section A.
4. Answer **question 16** (compulsory) and any other **THREE** questions from section B.
5. All answers should be written in the spaces provided.
6. This paper consists of 12 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

**FOR EXAMINER’S USE ONLY**

|  |  |  |
| --- | --- | --- |
| **Section** | **Questions** | **Candidate’s score** |
| **A** | 1. **15**
 |  |
| **B** | **16** |  |
| **17** |  |
|  **18** |  |
|  **19** |  |
|  **20** |  |
| **TOTAL SCORE** |  |

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Computer Studies

Paper 1

(Theory)

**SECTION A 40MKS**

**Answer All the Questions in this section in the spaces provided**

1. a) Distinguish between optical and magnetic scanners (2marks)

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b) Differentiate between hardware and software portability (2marks)

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

1. a) Name two special purpose memories found either inside or outside the microprocessor (2marks)

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b) Distinguish between an accumulator and an address register (2marks)

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1. Differentiate between formatting and editing as used in word processor (2marks)

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1. a) Distinguish between pasteboard and printable page in DTP (2marks)

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b) Differentiate between a margin guide and column guide as used in DTP (2marks)

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1. a) Define the term normalization as used in a database design (1mark)

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b) Explain two objective of normalization (2marks)

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1. Describe two methods used to secure data in a database (2marks)

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

1. Explain the meaning of the following terms as used with DTP (4marks)
2. Crop

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

1. Embedded object

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

1. Master page

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

1. Tool box

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

1. Make a clear difference between a website and web portal (2marks)

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

1. a) What is a protocol (1mark)

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

b) Write the following in full (2marks)

1. TCP/IP

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

1. HTML

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

1. HTTP

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

1. FTP

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

1. Explain the following as used in data security (3marks)
2. Fraud

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

1. Eavesdropping

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

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

1. Information security

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

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1. Explain the importance of control structure in program development (1mark)

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1. State four stages in data processing (2marks)

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1. Describe three electrical safety precaution rules that should be observed in a computer room (3marks)

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1. a) What is a speech input (1mark)

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b) State two disadvantages of using this method of data input (1mark)

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1. Name two solid state storage devices (1mark)

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**SECTION B (60MARKS)**

***Answer question 16 (compulsory) and any other THREE question from this section***

1. a) Explain three errors detecting methods in program development (3marks)

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b) The gross salary of employees of Mutson chemists is based on the basic and additional benefits. Employees with more than 10 year’s experience get an additional pay of 10% of their basic salary. Bonuses are given as per employees’ sales of the month as:

 >200,000 15%

 100,000 – 200,000 10%

 Below 100,000 5%

 Draw a flowchart for the program that will calculate gross salary and output each employee’s basic

 salary, gross salary and all benefits. (12marks)

1. a) Write the following acronyms in full
2. EBCOIC (1mark)

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

1. COBOL (1mark)

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

1. ASCII (1mark)

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

1. Explain why computes use binary numbers in data representation (2marks)

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

1. Convert the following values to the stated number system
2. 20.216 to decimal (2marks)

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1. 7.12510 to binary (2marks)

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

1. Perform the following binary arithmetic
2. 111001112 + 001011102 (1mark)

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1. 101012-1102 (1mark)

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1. Use Two’s compliment to subtract 1012 from 10002 (2marks)

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1. Convert 57.410 to its octal equivalent (2marks)

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1. a) Describe each of the following data processing methods and give an example of where used.
2. Online processing

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1. Batch processing

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1. Real time

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b) Make a clear difference between (6marks)

1. Logical file and physical file

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1. Master file and back up file

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1. Random and indexed sequential file organization methods

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

1. An organization is facing threats to data integrity. Explain three ways on of how the threats can be

minimized

 (3marks)

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1. a) One of the functions of an operating system is job scheduling. Explain what is meant by job

 scheduling (2marks)

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 b) Recently on 4th March 2013 Kenya went on election in which the results were to be transmitted

 electronically using mobile phones from all polling stations to the main server. But the system (server) failed to work.

1. Give two security threats that the system was prone to (2marks)

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

1. State control measures that the IEBC should take in future to ensure and safe tallying of votes

 (2marks)

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

1. The principal of Chebloch primary school wants to acquire a new operating system for his computer. Advise him stating the advantages of graphical user interface over command line interface.

 (2marks)

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 d) Explain the meaning of the following terms used in data processing (6marks)

1. Truncated

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1. Transposition

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

1. Transcription

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

 e) Explain why the processor of a micro computer is referred to as micro processor. (1mark)

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20. a) List and explain the functions of each computer bus (6marks)

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 b) The formul = &B2 + C&4 is entered in cell C5 and then copied to D10. Write down the formula as it

 appears in the destination cell (2marks)

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 c) Give two reasons why smaller computers like laptops tend to be more expensive than desktop

 computer (2marks)

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 d) Define the term program documentation (1mark)

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

 e) Briefly explain the terms parallel running and direct changeover as used in system implementation

 (2marks)

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 f) Differentiate between a primary key and a foreign key as used in designing a database (2marks)

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