SAMIA JOINT EXAM
Kenya Certificate of Secondary Education

451/1 - COMPUTER STUDIES – Paper 1
NOV/DEC 2021 – 2½hrs

Name………………………………………………… Index Number……………………

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

Date………………….……………...………

Instruction to candidates

a) Write your name and index number in the space provided above.
b) Sign and write the date of examination in the spaces provided above.
c) This paper consists of **two** sections A and **B**.
d) Answer **all** the questions in section **A.**
e) Answer question **16** and any other **three** questions from section **B.**
f) All answers should be written in the space provided in the question paper.
g) **This paper consists of 14 printed pages.**
h) **Do not remove and pages from this booklet.**
i) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
j) *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	

1

SECTION A (40 MARKS)
ANSWER ALL QUESTIONS IN THIS SECTION

1. Name the two common types of system units and differentiate them. (2 mks)

……….
……….
……….
……….

2. Define the following characteristics of a computer system. (2 mks)
   (i) Versatile
   (ii) Reliable

……….
……….
……….
……….

3. State any **three** types of computer programme documentation (3mks)

....
....
....

4. Name any **three** effects of ICT on health (3mks)

....
....
....

5. List **one** function of a bridge in computer network (1mk)

....
....
....

6. a) Convert 1111000110111_2 to its octal equivalent (1mk)

(b) Convert 512.25_8 to its base 10 equivalent (2mks)

7. With an aid of a diagram, differentiate between selection control structure and iteration control structure. (4mks)

8. (a) Auki company is in the process of computerizing its services. List four measures that should be put into consideration to protect the users in their computerized areas. (2mks)

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

(b) Give two reasons why powder and liquid extinguishers are not recommended unlike gaseous extinguishers. (2mks)

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

9. Without proper marketing, a business cannot survive in a competitive environment hence computers are being used in a number of ways to enhance marketing. List any three ways of ensuring this is effected. (3mks)

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

3

10. Describe the following terms as used in computers. (3mks)

    (i)   Tab Key

……

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

       Spacebar

……

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

    (ii)   Clicking

……

……

11. Control unit is an essential component of the CPU. Describe the functions of the control unit.

(2 mks)

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

……

……

……

12. (a)Differentiate between buffers and Registers (2 mks)

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

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

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

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

    (b) Speech recognition devices are used to capture natural sound and convert the input into digital
form. State two problems related to speech recognition devices. (2mks)

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

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

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

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

13. Define Solid-state storage and give two examples. (2 mks)

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

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

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

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

14. (a) Explain how a pixel affects the resolution of a monitor. (1mark)

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

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

   (b) List two types of computer output on microform (COM). (2mks)

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

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

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

15. Advantages of using ATM cards

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

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

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

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

16. (a) Define the following terms as used in programming   (2 mks)

   i) Source code

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

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

   ii) Object code

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

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

   (b) Differentiate between Assembler and Interpreter as used in programming.   (2mks)

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

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

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

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

   (c) Identify the type of programming language used in the codes below;   (1mk)

   (i)   **1101 1101**   **1011 1011**
            1110 0001   **1100 0111**
            0010 1110   **1011 0011**

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

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

   (ii)   **LDA   A, 20**
            ADD   A, 10
            STO   B, A
            NOP

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

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

(d) Draw a program flowchart that would accept three numbers, find their sum. If the sum is greater than 200, it adds 30 to the sum, otherwise subtract 20 from the sum. The program should then display the sum. (5mks)

(i)   Draw a flow chart for the above pseudo code.   (5mks)

17. (a) In order to generate information from data items, a set of processing activities have to be performed on the data items in a specific sequence depending on the desired result. Draw a well labeled diagram to illustrate data processing cycle. (2mks)

(b) A data entry clerk experiences some common errors when typing. Most of the time, she finds that:
   (i) After every calculation, the result is less than the expected number of digits required e.g.345.7896543 the result is given as 345.789.
   (ii) Different charactersare typed wrongly, for example instead of typing12873457 she types 128734S7.

Identify the two types of errors commonly experienced by the clerk during data processing in (i) and (ii) above respectively. (2mks)

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

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

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

(c) State two ways a user can ensure data accuracy is maintained during data processing. (2mks)

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

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

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

(d)(i) State three advantages of a computerized filing system as used in data processing. (3mks)

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

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

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

9

(ii) State two disadvantages of a serial file organization method in computing.

(2marks)

……

……

……

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

(iii) Differentiate between distributed processing and interactive processing modes; stating one application area of each. (4marks)

……

……

……

……

18. (a) Write the following acronyms in full as used in operating systems.

(i)   GUI   (½ mark)

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

(ii)   WIMP   (½ mark)

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

(b) State **three** factors considered when choosing an operating system for use in a computer. (3 mks)

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

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

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

(c) An operating system manages and organizes a computer system using the following structures: **<u>File</u>**, **<u>Folder</u>** and **<u>Drive</u>**. State the meaning of the underlined items respectively. (3mks)

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

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

…………………………………………………………………………………………………

(d) (i) Differentiate between error handling and interrupt handling as used in operating systems.

(2mks)

………..………………………………………………………………..……………

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

  (ii) State **three** reasons why most network technicians prefer using command line operating systems to configure networking equipment. (3mks)

………..……………………………………………………………..……………

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

(e) Disk management is one important aspect in secondary storage in computer systems. Explain the following tools used by an operating system to manage disks in the computer. (3mks)

  (i)   Formatting

………..…………………………………….………………………..………

…………………………………………………………………………………..

  (ii) Partitioning

………..……………………………………………………………..………

…………………………………………………………………………………

  (iii) Defragmentation

………..……………………………………………………………..………

…………………………………………………………………………………

19. (a) Define the following terms as used in networking. (3mks)
  (i)   Network

………..……………………………………………………………..………

…………………………………………………………………………………

11

(i) Intranet

……………………………………………………………………………………..………

………………………………………………………………………………………………

(ii) Browser

…………..…………………………………………………………………..…………

……………………………………………………………………………………………..

(b) The World Health Organization is global entity that deals with health issues around the world. It has computer networks linking its regional and continental offices using internet. State **two** importance of the internet to such organization.   (2mks)

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

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

(c) Mr. Zuma, the Principal of a school wishes his school to have an internet connection in a bid to improve its service delivery. Mention **four** internet connectivity requirements that must be present to enable the connection.   (2mks)

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

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

(d) Explain the following as used in e-mail:

(i) Inbox   (1mk)

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

………………………………………………………………………………………………

(ii) Drafts   (1mk)

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

………………………………………………………………………………………………

(e) (i) Failure of information systems is a major concern in the security of data in computing systems. State **two** causes of such failure.   (2mks)

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

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

(ii) Explain the following computer crimes.

    (i) Fraud   (1mk)

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

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

    (ii) Industrial espionage   (1mk)

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

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

(f) Excluding passwords, state **two** other security control measures used to guard against unauthorized access to computers in a network.   (2mks)

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

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

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

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

20. (a) Convert the 1010.011_2 to decimal equivalent.   (3mks)

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

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

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

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

(b) Perform the following number system conversions.   (3mks)

    (i) 342.25_8 to binary.

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

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

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

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

    (ii) 503_{10} to hexadecimal   (3mks)

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

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

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

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

(c) (i) Compute the binary arithmetic given below: (3mks)

$$10111 + 10001 + 101$$

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

……

……

……

(ii) Using 8-bit notation, perform the **twos** complement of $25_{10} - 15_{10}$, leaving your answer in binary. (4mks)