MOKASA JOINT EXAMINATION

Kenya Certificate of Secondary Education

451/1 - COMPUTER STUDIES – Paper 1

JUNE/JULY 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		

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

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

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2. Define the following characteristics of a computer system. (2 marks)

(i) Versatile

(ii) Reliable

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3. Digital computers work with digital content. Describe a digital device. (2 marks)

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4. Differentiate between third and fourth generation computers (2 marks)

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5. (a) Mamboleo 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. (2 marks)

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

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6. 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. (3 marks)

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7. Differentiate between the following as used in computers. (3 marks)

(i) Tab Key
(ii) Spacebar
(iii) Clicking

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8. Control unit is an essential component of the CPU. Describe the functions of the control unit. (2 marks)

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9. (a) Differentiate between buffers and Registers (2 marks)

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(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. (2 marks)

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10. Define Solid-state storage and give two examples. (2 marks)

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

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

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12. Differentiate between *high definition multimedia interface* and *Firewire* interface. (2 marks)

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13. A warranty is an agreement between the buyer and the seller. It spells out terms and conditions after selling a product in case of failure or malfunction. Describe any three basic requirements a good warranty should cover. (3 marks)

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14. (a) Differentiate between pasteboard and master page as used in DTP (2 marks)

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(b) Differentiate between graphic-based and layout based desktop publishing software. (2 marks)

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15. Differentiate between Network database and Relational database. (2 marks)

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SECTION B (60 MARKS)

ANSWER QUESTION 16 AND ANY OTHER THREE QUESTIONS IN THIS SECTION

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

i) Source code

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ii) Object code

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

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

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

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

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(d) On the Nairobi-Nakuru highway, the Kenya Police have put speed cameras at a certain point to read the time a vehicle passes a point (A) on the road and then reads the time it passes a second point (B) on the same road. (Points A and B are 200 meters apart). The speed of the vehicle is calculated using:

- $\boldsymbol{Speed = \frac{100}{(time\ at\ point\ B - time\ at\ point\ A)}\ (Km/\ hr)}$
- *The maximum allowed speed is 100 kilometers per hour.*
- *500 vehicles were monitored using these cameras over a 1-hour period.*

(i) Write a pseudo code, which: (5 marks)

- Inputs the start time and the end time for the 500 vehicles that were monitored
- Calculates the speed for each vehicle using the formula above.
- Outputs the speed for each vehicle and a message if the speed exceeded 100 km/hour.

  >=100km/hr "High Speed"

  <100km/hr "Normal Speed"

(ii) Draw a flow chart for the above pseudo code. (5 marks)

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. (2 marks)

(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 characters are typed wrongly, for example instead of typing 12873457 she types 128734S7.

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

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

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

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(ii) State two disadvantages of a serial file organization method in computing. (2 marks)

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

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

(i) GUI (½ mark)

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(ii) WIMP (½ mark)

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

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

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(d) (i) Differentiate between error handling and interrupt handling as used in operating systems. (2 marks)

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

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(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. (3 marks)

(i) Formatting

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(ii) Partitioning

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(iii) Defragmentation

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19. (a) Define the following terms as used in networking. (3marks)

(i) Network

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(ii) Intranet

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(iii) Browser

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(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. (2 marks)

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(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. (2 marks)

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

- Inbox (1 mark)

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- Drafts (1 mark)

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

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(ii) Explain the following computer crimes.

- Fraud (1 mark)

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- Industrial espionage (1 mark)

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

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

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

(i) 342.25_8 to binary.

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

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

10111 + 10001 + 101

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

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