

MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education
FORM FOUR EXAMINATION -2024

CODE451/1 SUBJECT: COMPUTER STUDIES Paper 1

COMPUTER STUDIES MARKING SCHEME
JUNE- TIME $2\frac{1}{2}$ Hours

Name: Adm No:

Class: Candidate's Signature: Date:/06/2024.

INSTRUCTION TO CANDIDATES

- Write your name and admission number in the spaces provided above
- This paper consists of **Two** sections A and B
- Answer **ALL** questions in section A
- Answer question 16 and any other **THREE** questions from section B
- All answers should be written in the spaces provided on the question paper

FOR EXAMINER'S USE ONLY

SECTION	QUESTIONS	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**

1. Today, many companies are re-engineering their products to implement the USB connection to the computer. State any two reasons for the drift. (2marks)

- USB support connection of many devices ✓

- USB Interface support fast data transmission ✓

- USB Connection provide quality transmission ✓

award 1 mark each Max 2

2. State three methods of input available for the operation of a smartphone. (3mark)

- Voice Input ✓

- Touch screen ✓

- Finger Print scanning ✓

- QR code scanning ✓

award 1 mark each Max 3

3. A vehicle assembly company has introduced robots to replace the human workforce. Describe two effects this would have on the work force. (2marks)

- Job creation for the skilled personnel who will operate the robots ✓

- Job replacement - Robot will take up the jobs of unskilled human

resource causing unemployment ✓ (award 1 mark each Max 2)

- Job displacement - Some unskilled human resource will be transferred to some sections or departments within the organization ✓

4.

(i) It was noted that after every lesson, the students complained of itchy eyes and mild headache.

State any two reasons for this problem.

(2marks)

- Inner walls of the computer room is painted with bright colors ✓

- Very bright Monitors ✓ = Monitors facing the windows

- Flickering screen/Monitors ✓

award 1 mark each Max 2

- Poor lighting in the room ✓

(i) State any two solutions of the problem mentioned in (4) (i) above.

(2marks)

- Paint the inner walls with dull colors ✓

- Adjust the screen brightness and contrast ✓

- Avoid Using flickering Monitors ✓

award 1 mark each

- Consider Using Anti-glare Screens ✓ Max 2

- Computer screens should face away from the windows to avoid glare caused by brighter background ✓

- Consider have regular breaks ✓

5. State any two importance of referential integrity with reference to database tables. (2marks)

- It ensure that all data in a database remain consistent and up to date. ✓ Award 1 mark each max 2
- It helps to prevent incorrect records from being added, deleted or Modified. ✓ - Accept elimination of option records

6. State ways of manipulating text in a printable area of a publication (2marks)

- Using text box. ✓
- Using text frame. ✓ Award 1 mark each max 2

7. Bradwil is pursuing Bachelors of Computer Science at University of Lagos in Nigeria, he is supposed to graduate at the end of this year and then come back to Kenya to seek for employment. Name any three career opportunities in the field of ICT that Bradwil may take up after graduation. (3marks)

- Computer Programmer ✓
- System Analyst ✓
- Database Administrator ✓
- Network Administrator ✓ Award 1 mark each max 3

8. Malcom limited designs and sells software to end users in different parts of the country. The company noticed that some end users make copies of their products and selling without their permission to some users at a lower rate. State three things that the company must do to stop this malpractice (3marks)

- Make the software affordable ✓
- Use product code/Identify ID to prevent illegal installation ✓
- Use licences and certificates to identify genuine software. ✓
- Enforce the law that protect the owners of data and information. ✓ Award 1 mark each Max 3

9. Explain three hardware factors that one must consider before installing an operating system (3marks)

- Memory capacity - There are operating systems that require a large memory capacity therefore if your computer have limited capacity then the o/s will not support the function of the computer. ✓
- Hard disk capacity - The storage computer should have adequate space in hard disk to accommodate the o/s and its associated data. A computer with limited hard capacity will not allow installation of the o/s. ✓
- Processor speed - Modern o/s require fast speed processor and cannot well with very low speed processor. ✓
- Monitor Resolution - Modern o/s require computers with high screen resolution and therefore their function can not be supported with computer with very low screen resolution. ✓

stating 1/2 of award 1 mark each max 3

10. Financial institution handles a lot of data and also collaborate with other companies all over the World and therefore data integrity must be maintained all the times. Describe three ways employed by modern financial institutions to minimize threats to its data (3marks)

- Use Methods that capture data directly from source ✓
- Use error detection and correction when transmitting data ✓
- Design user interfaces that minimize chances of invalid data entry ✓
- Control access to data by enforcing security measures ✓
- Backup data on an external storage media periodically ✓

Q word 1 mark each Max 3

11. Mr. Kikozi bought a flash disk of 16GB. He used quarter of the total space in the flash to save his personal documents, a half of the remainder for audio files. Calculate the remaining space in the flash in Megabytes (3marks)

Personal document = $\frac{1}{4}$

Audio file = $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ ✓ $M_1 = \frac{3}{8} \times 16 = 6 \text{ GB}$

Used space = $\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$ ✓ $1 \text{ GB} = 1024 \times 1024 \times 1024$

Remaining space = $\frac{3}{8} - \frac{5}{8} = \frac{3}{8}$ ✓ $M_2 = 1 \text{ GB} = 1024 \text{ MB}$

$= (6 \times 1024) = 6144 \text{ MB}$ ✓

Am - 1

12. Explain the functions of the following layers of OSI model

(a) Session

It is responsible for setting up transmission session between two communication devices / Establish communication path between communicating devices and maintain the dialogue between them until the end of the communication (2marks)

- Dialogue

- Establishment of communication path

(b) Network

It is responsible for routing the packets to the intended destination. The destination IP address is assigned then the router used it with the help of IP protocol to forward the packet (2marks)

- Evidence of Forwarding & routing

13. Describe two reasons for extensive use of Mobile banking in modern society (2marks)

- Flexibility / Mobile banking services can be used anywhere provided there is internet connectivity. ✓
- The transaction cost is low as compared other means ✓
- Provide a safe ground or platform for financial transactions ✓
- Mobile banking service is not limited time of operation like bank hall service. It operates on 24/7 clock system. ✓
- The platform is easier to use and readily available for those who subscribe to the service. ✓

Q word 1 mark each Max 2

14. Describe the term collated as used in printing

(1 mark)

Refers to arranging printed pages in a specific order

Indence of order

15. Describe three technological platforms used by Kenyan Secondary students to collaborate with their peers in Canada, US and UK

(3 marks)

- = Social Media platform - students use facebook, Instagram, WhatsApp to link with others to allow them share educational materials ✓
- = Video conference - Through zoom, webex and google mix learners can have discussion in a given learning area. ✓
- = Email - This enable learners exchange mails and also attach educational materials ✓
- = Google doc. - Google provide a number documents/ sheets which learners can share in the internet. ✓

Rider: Accept platforms that support collaboration

Award: 1 Mark each Max 3.

SECTION B: 60 MARKS

Answer question number 16 any other three questions in this section

16.

(i) Mention three attributes of a Machine language

(3marks)

- Program Instructions are in binary form ✓
 - Program Instructions are Machine dependent ✓
 - Program Instructions execute very fast ✓
 - Program Instructions are difficult to debug and develop ✓
- Award 1 mark max 3

(ii) Explain the following qualities of an Algorithm

(a) Definiteness

(2marks)

- The steps in the algorithm must be clear and detailed to the point (There is no ambiguity in the steps)

(b) Finiteness

(2marks)

- An Algorithm must always terminate after a finite number of steps (Evidence of start and stop)

(iii) The pseudocode below was written by a learner. Use it to answer the questions that follows

START.	Start
Sum = 0	Sum = 0
Count = 0	For count = 0 - 4 do
For count = 0 to 4 DO	Print "enter a number (N)"
Print "Enter a number (N)"	Input N
Input N	If N > 10 then
IF N > 10 Then	Number out of range
Number out range	Else
Else	Sum = sum + N
Sum = Sum + N	Print sum
Print sum	End if
Endif	End for
Count = Count + 1	Stop
Stop	

(3marks)

Stop. (a) Identify the errors in the above pseudocode

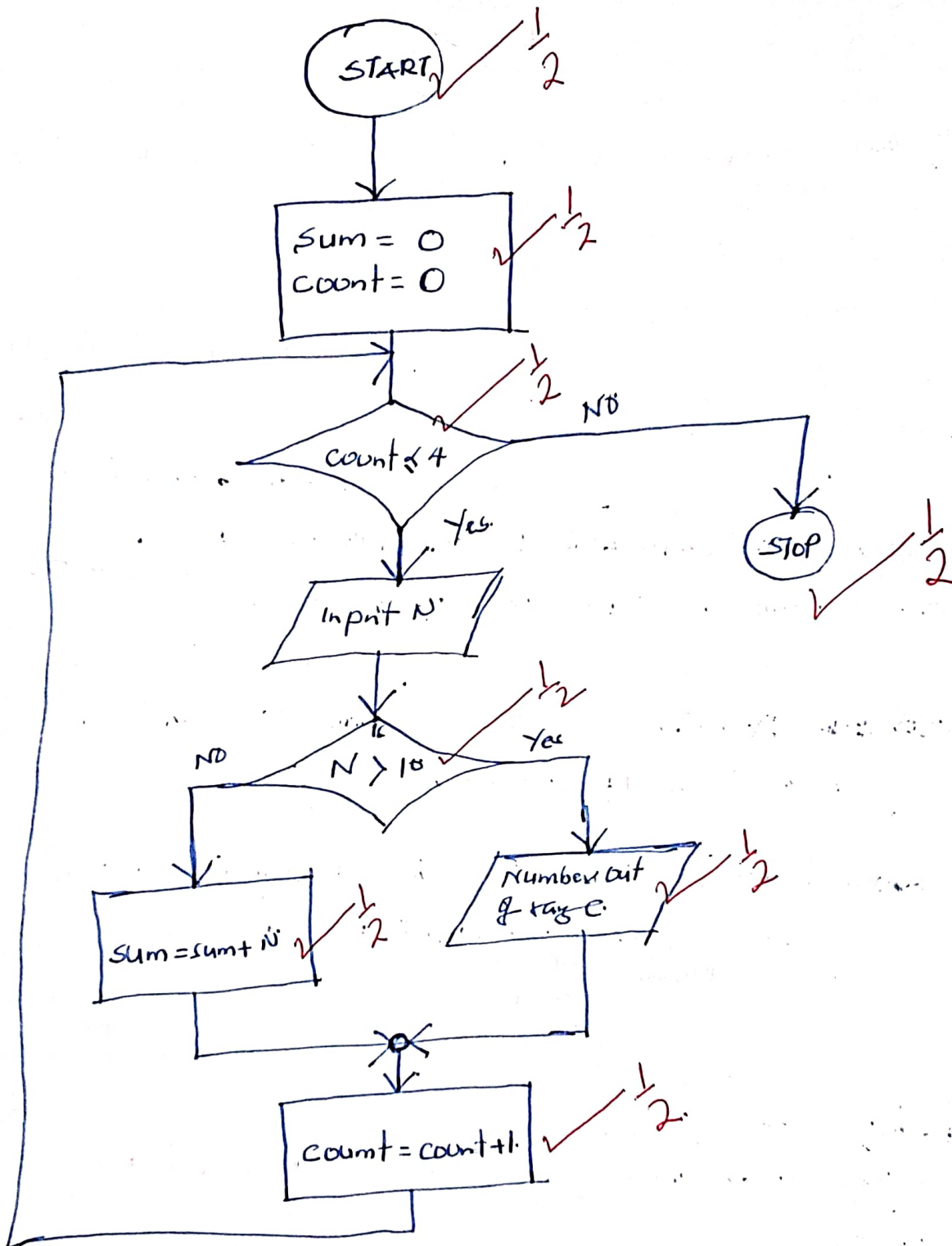
- ⇒ Initial count as count = 0 ✓
- ⇒ Condition For count = 0 - 4 ⇒ For count = 0 to 4 do ✓
- ⇒ The Pseudo code lack the increment and therefore cannot increase loop if Count = Count + 1 ✓

⇒ P should be N.

Award one for the correct correction or correct statement in pseudocode

(b) Draw a flow chart for the corrected pseudocode

(5marks)


 $d = 1$

5 marks

17.

(i) State the stage in systems development when the activities listed below are performed (4marks)

(a) The system analyst walk the users through the system

System Implementation ✓

(b) A list of hardware and software requirement is generated

System Requirement specification ✓

(c) Preparing of test data

System construction ✓

(d) The system analyst presents a report recommending for a change in the system.

Feasibility study ✓

Answer 1 mark each max 4

(ii) State the difference between pilot and phase change over (2marks)

- The new system is installed on experimental basis for a while before implementing it on a large scale while in phase change over implementation is done on only one part of the new system at a time or step by step.
 Answer max 2

Evidence for experiment for pilot and dept by step or section by section phase

(iii) Explain a reason for conducting the following studies in system development (2marks)

(a) Operational feasibility
- This establishes the extent to which the users are comfortable or happy with the proposed or new system.

(b) Schedule feasibility
- It establishes whether developing the new system or proposed system will be accomplished within the available time.
 Answer 2 marks each max 2

(iv) Janabi was preparing a document in Ms-Word which contain both text and graphics. He realized that graphics in the document were not properly fitted in the document. State three image transformation features available in Ms-Word that will assist Janabi in fitting the graphics nicely in the document (3marks)

- Cropping ✓ - Enlarging ✓

- Rotating ✓ - Reducing ✓

- Resizing ✓

Answer 1 mark each max 3

(v) Mention three advantages of mail merging (2marks)

- Easy to make changes since the changes are done in the main document
- Help in generating uniform document sent to multiple recipients
- Save time in document since only the main document is created then merged with the source data source.

Answer 1 mark each max 2

(4marks)

(ii) Arrange the following numbers from the smallest to largest

65

$$32 + 16 + 0 + 4 + 0 = 52$$

175.0

101110₂, 65₈, AFH, 320₁₀

(2marks)

(iii) Convert ACFH to binary number system

$A = 1010$ ✓ $E = 1111$ ✓ $C = 1100$ ✓ = $10101100 \cdot 1111$

(iv) The table below is an extract of a spreadsheet showing what the students had targeted and the actual scores in computer

actual scores in computer					
	A	B	C	D	E
1	Name	Targeted Score	Actual Score	Performance factor	Remark
2	Jane	40	45		
3	Waco	30	65		
4	James	50	60		
5	Riana	30	20		
6	Shella	45	45		
7	Martina	70	60		
8					

A performance factor is obtained by subtracting the target score from the actual score and dividing the difference by target score. Write a formula that uses cell references only that would be entered in cell

(a) D2 to compute performance factor

(2marks)

$$= (C_2 - B_2) / B_2$$

And 2 Make

(b) D8 to display the best performance factor

(2marks)

$$= \text{Max}(p_2, D_2)$$

Ans 2 mark

(c) E2 to display the statement "More Remedial" If the performance factors is less than 1, "Exempted" if the factor is less than 3 and "Optional remedial" if otherwise (3m)

(3marks)

$$= IF(D2 < 1, "More Remedial", IF(D2 < 3, "Exempted", "Optimal"))$$

-First Name - I make

- Bracket to Bracket = 2 Meters

19.

(i) Briefly describe two functions of a query as used in database

(2marks)

- Perform Calculations
- Search for specific data items in the database
- Delete, change, add items to the

Ans 1 mark each max 2

(ii) Explain the following features of a DBMS

(a) Macro

(2marks)

It is a database object that automate frequently performed procedures or tasks

(b) Module

(2marks)

It is an inbuilt programming environment available in DBMS used to automate database operations

Ans 2 marks each max 4

(iii) Describe two types of controls used when designing a form as a user interface in a databases

(2mark)

- Bound control - linked to a database while unbound controls are not

(iv) A student created a relationship between two tables then entered data in the respective tables. He was unable to run the queries because of the Type Mismatch error

(a) State the cause of this error

(1mark)

- Difference in data type between the fields used to create a relationship

Evidence of different data type
Ans 1 mark max 1

(b) State how this error can be corrected

(2marks)

- Open the two tables in design view
- Change the data type for the fields used to create a relationship to have the same data type

Evidence of same data type

(v) What is telecommuting

(2marks)

- Working from home and communicating with the office by computer, telephone, the Internet and other communication technology

Evidence of working at home
Ans 2 marks

(vi) Give two reasons to justify why telecommuting is gaining popularity in the modern society

(2marks)

- Flexible Working hours
- Reduce employee turnover
- Lowers overall cost (commuting cost and office rent)
- Increased Productivity

Ans 1 mark each max 2

20.

11

(a) Explain the following terms as used in Data security

(i) Vulnerability

is a weakness, flaw or error found within a computer that has the potential to be leveraged by a threat agent in order to compromise a security network. *Amal 2 marks* (2marks)

(ii) Social engineering

- It is a threat to data and information where people unknown give out information to strangers or unauthorized persons. *Amal 2 marks* (2marks)

- The act of soliciting for sensitive information from unsuspecting users.

(b) State two example of security monitors used to control threats to data

- CCTV cameras *Amal 2 marks* (2marks)

- Log files *Amal 1 mark each max 2*

(c) Alteration is illegal changing of data and information. This is one of the computer crimes common in the 21st Century. Describe three ways employed by organizations to curb this vice

- Assign users access rights. *Amal 1 mark each max 3* (3marks)

- Install CCTV cameras to monitor the computer.

- Motivate the employees.

- Security policies.

- Use of log files. *Amal 1 mark each max 3*

(d) Kijawinni runs a learning Institution in Kenya. List three top level domain names that he can use when creating a website

• .ac

• .edu

• .sc

Amal 1 mark each max 3

(e) Mention three communication based internet services

• Email

• Social Media

• Website

• Instant Messaging

• Newsgroups

Amal 1 mark each max 3 (3marks)