

CATHOLIC DIOCESE OF KAKAMEGA EVALUATION TEST

JULY/AUGUST EXAM 2025 COMPUTER STUDIES

MARKING SCHEME PAPER 1

451/1

COMPUTER STUDIES

PAPER 1 (THEORY)

JUNE JULY 2025

2 ½ HOURS

SECTION A (40 MARKS)

1. List two types of computers based on functionality (1mk)
Analog computers
Digital computers
Hybrid computers @ ½ * 2
2. Identify each of the following networking components (3mks)
Figure 1: Network Interface Card
Figure 2: Switch/Hub
Figure 3: Twisted Pair Cable @ 1 * 3
3. State four services offered by the internet (4mks)
World Wide Web
News groups
Search Engines
E-Learning
Electronic mail @ 1 * 4
4. The formula = \$D\$6 * F7 has been inserted in cell H3. Write the new formulae when copied to cell K5 (2mks)
= \$D\$6 * I9 @ 2
5. State the effect of pressing the following keyboard buttons in a document (1mk)
 - a. Shift+Ctrl+Right arrow key (1mk)
Selects a single word on the right side of the cursor
 - b. Shift+Home (1mk)
Selects a single line when the cursor is at the end of the line
 - c. Insert key (1mk)
Toggles between the two insert modes
 - d. Shift + F3 (1mk)
Changes the case of selected text
6. Outline the three data processing methods (3mks)
Manual systems: data processing activities are carried out manually by the human Clerks using pen and paper assisted by some calculating tools such as Slide rule, Logarithms, etc.
Mechanical systems: data processing activities are carried out with the aid of mechanical devices such as typewriters
Electronic systems: data processing activities are carried out with the aid of electronic programmable devices such as computers
7. State the stage of system development life cycle in which each of the following activities take place:
 - a. Determination of the cost-effectiveness of a system; (1mk)
Problem recognition and definition
 - b. Conducting Interviews; (1mk)

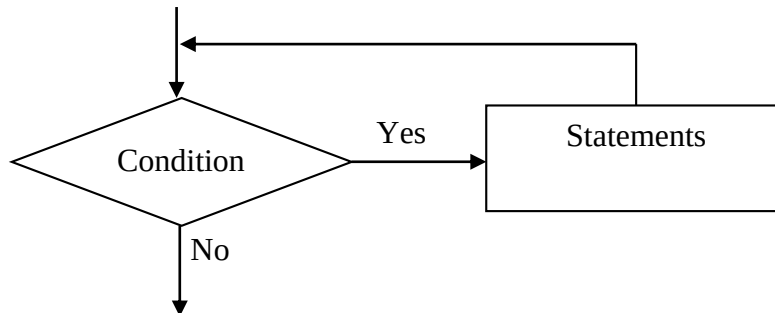
- Information gathering
c. Replacement of an old system with a new one (1mk)
System implementation
8. Outline any four malicious programs that can affect computer files (4mks)
Virus
Trojan horse
Worm
Back doors
9. State the three effects of ICT on employment (3mks)
Job creation
Job replacement
Job displacement
10. Outline any three types of registers (3mks)
- **Program Counter (PC):** holds the memory address of the instruction to be fetched next
 - **Instruction Register (IR):** holds the instruction that is currently being processed
 - **Accumulator (AC):** holds the results of the last processing step of the ALU
 - **Address Register (AR):** holds the address of the next piece of data to be fetched for processing
 - **Storage Register (SR):** holds a piece of data that is on its way to and from the CPU
- @ 1 * 4
11. State the three main activities carried out in creating merged documents (3mks)
- Creating the main document
 - Creating the data source
 - Merging the main document and data source
- @1 * 3
12. Distinguish between Multimode and single mode fiber optic following transmission media (2mks)
- | Single mode | Multimode |
|---------------------------------|---------------------------------|
| Has a narrow core | Has a wider core |
| Transmits a single light signal | Transmit multiple light signals |
- @2 * 1
13. State two limitations of Binary Coded Decimal in data representation (2mks)
Excessive use of binary digits to represent data
Can only be used to represent numeric data
- @1 * 2
14. State any two protocols that operate at the following layers of the OSI reference model (2mks)
- a. Application
Simple Mail Transfer Protocol (SMTP)
File Transfer Protocol (FTP)
Apple Talk and Apple Share
- @ ½ * 2
- b. Transport
Transmission Control Protocol (TCP)
Sequential Packet Exchange (SPX)
NetBEUI
Apple Transaction Protocol (ATP)
- @ ½ * 2
15. Write acronym WIMP in full (1mk)
W - Windows
I - Icons
M - Menus
P – Pointing devices/ Pointer

SECTION B

16. Iteration is designed to execute the same block of code again and again until a certain condition is fulfilled

- a) With the aid of flow charts, distinguish between WHILE loop and REPEAT...UNTIL loop (4mks)

WHILE loop

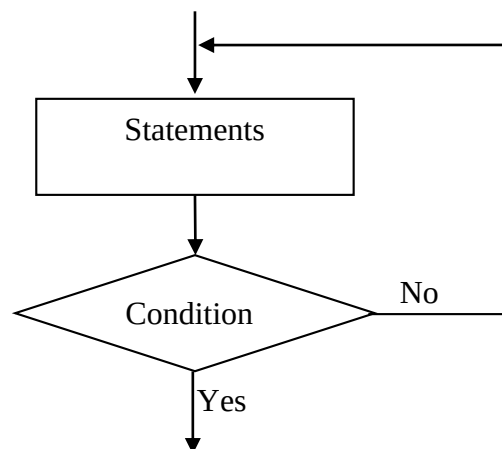


Exit loop

This is a pre-condition loop whereby a condition is tested before execution of statements inside the loop

@ 2

REPEAT ... UNTIL loop



Exit loop

This is a post-condition loop whereby a condition is tested after execution of statements inside the loop

@ 2

Diagram 1mk

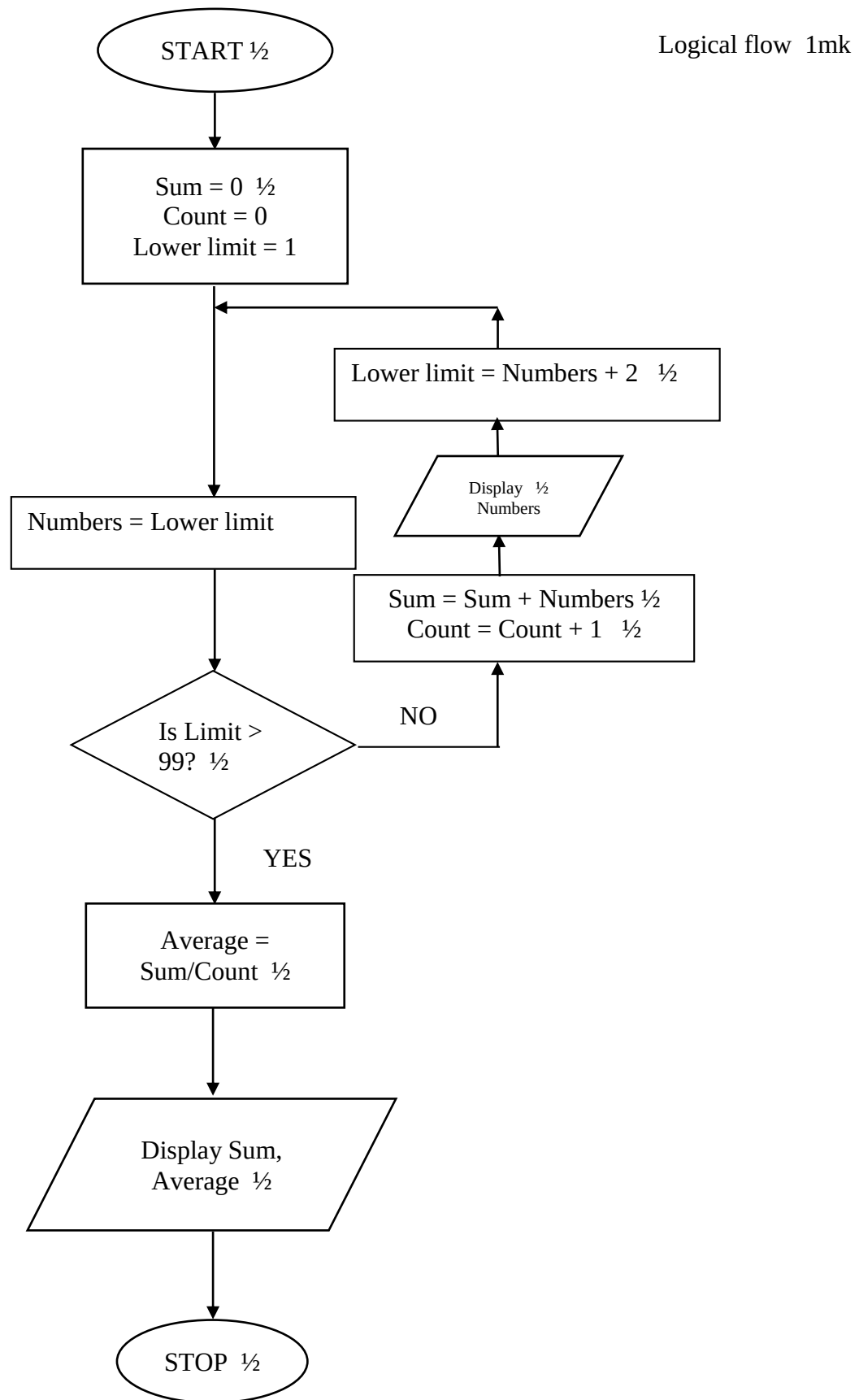
Description 1mk

- b) Write a pseudocode for a program to determine the odd numbers between 1 and 100. The program should then calculate the sum of the odd numbers and their average value. Lastly, the program should output the odd number, their sum and the average value (5mks)

```
START          ½
    Sum = 0     ½
    Count = 0
    For Numbers = 1 To 99    ½
        Begin
            Sum = Sum + Numbers    ½
            Count = Count + 1      ½
            Display Numbers        ½
            Numbers = Numbers + 2  ½
        End For
    Average = Sum/Count          ½
    Display Sum, Average         ½
STOP                          ½
```

c) Draw a flowchart for the above pseudocode

(6mks)



17. a. Explain the following Internet and E-mail related terms:

- i. ISP (2mk)

Internet Service Provider: An organization that provides subscribers to the Internet

- ii. WWW (2mk)

World Wide Web: A virtual space on the Internet that contains information

- iii. URL (2mk)

Uniform Resource Locator: An address to a particular website

- b. List any two examples of search engines (2mks)

Google, Bing, Yahoo

@ 1 * 2

- c. State the necessary requirements required to connect to the internet (4mks)

Devices (Internet Enabled)

Transmission media

Internet Service provider

Software

@ 1 * 4

- d. Below is an email address:

ggitau @moest. edu.ke
↓ ↓ ↓
A B C

- e. Name the parts labeled (3mks)

- i. A: Username
ii. B: Account name
iii. C: Domain name

18. Computers not only process numbers, letters and special symbols but also complex types of data such as sound and pictures.

- a. Explain why computers use binary numbers in data representation (2mks)

Binary digits are easy to interpret because they are based on two states

All forms of data can be represented in binary system format

- b. Explain the ASCII data encoding scheme. (2mks)

ASCII stands for – American, Standard, Code for Information Interchange. Originally a 7-bit encoding scheme representing 127 characters. 8-bit ASCII has 8-bits representing 256 characters.

Binary Code Decimal is a 4 – bit code used to represent numeric data only

@ 2

- c. Write 79_{10} in BCD notation (2mks)

7 9
0111 1001
1111001

- d. Explain the term WORD as used in data presentation (2mks)

A WORD is a combination of two or more bytes

- e. Using twos' complement subtract 23_{10} from 46_{10} and give your answer in decimal notation (4mks)

$$23 - 10111 \quad 46 - 101110$$

$$101110 - 10111$$

$$01000 +$$

$$1$$

$$101110 +$$

$$101001$$

$$(1)10111$$

$$\underline{10111}$$

- f. The binary value 111011011 is in its two's complement. Determine its decimal value (3mks)

$$111011011 - 1$$

$$111011010 \text{ complement}$$

$$000100101$$

$$\underline{100101}$$

19. (a) Describe three types of special ROM. (6mks)

Programmable Read Only Memory (PROM)-contents can be latered only once

Erasable Programmable Read Only Memory (EPROM)- Allteration can be done many times by exposing memory to ultra violet light

Electrically Erasable Programmable Read Only Memory (EEPROM)- Ulteration can be done many times under software control.

- (b) Give the full meaning of the following acronyms (3mks)

i) IRQ : Interrupt Request

ii) AI: Artificial Intelligence

iii) NTFS: New Technology File System

- c) Explain the following functions of the operating system (4mks)

i. Communication control and management

The operating system manages various communication devices and provides an environment within which communication protocols operate

ii. Memory management

The operating system divides the main memory into pages and allocates these pages to running tasks.

d) State the two types of processors (2mks)

Complex instruction set computers

Reduced instruction set computers

20. a) Differentiate between the following

(i) Sequential and sequential-indexed organization methods (2mks)

Sequential	Sequential-indexed
Records are stored and accessed in a particular sorted order using a key field	Records are stored and accessed in a particular order using an index

(ii) Interactive and online electronic data processing modes (2mks)

Interactive	Online
There's continuous dialogue between the user and the computer. The user provides response to prompts displayed on the screen	Data is processed immediately it is received.

(b) Explain the following types of data processing files

i) Reference file (2mks)

It is a file mainly used for references/ lookup purposes. Lookup information is that information which is stored in a separate file but is required during processing

ii) Transaction file (2mks)

This is a file used to hold input data during transaction processing

(c) Define the following terms as applied in computer files

i) Record (1mk)

This is a collection of related fields that represent a single entity

ii) Field (1mk)

A single character or collection of characters that represents a single piece of data

(d) Describe distributed data processing (2mks)

Refers to dividing of processing tasks among 2 or more computers that are located on physically separate sites, but connected by data transmission media.

(e) Outline any three disadvantages of manual data management systems (3mks)

1. Redundancy
2. Lack of flexibility
3. Lack of integrity
4. Labour intensive
5. Poor data sharing