

**451/1  
COMPUTER STUDIES  
PAPER 1**

**FORM 4 MID YEAR CONTINUOUS ASSESSMENT TEST  
COMPUTER STUDIES  
PAPER 1**

**MARKING SCHEME**

1. (a) A computer laboratory should constantly be kept dust and smoke free. Specify two effects that dust would have on the operation of computers. (2 marks)  
- Dust may cause the malfunction of the read and write head of the drive.  
- Dust may cause failure of the fan that cools the processor.  
( 1 mark each)
- (b) Why should you first switch on the UPS before switching on the system unit and the monitor?  
Because the computer gets power from the UPS.
2. State two magnetic storage devices (2 marks)  
- Hard disk, -floppy disk, -jazz disk, -zip disk etc. ( 1mk each)
3. State the following types of transcription errors. (2 marks)  
(a) 3455 instead of 3456 ( misreading)  
(b) Simth instead of smith (Transposition)
4. (a) Perform the following binary addition (1 mark)  
1010 + 0111  
(10001<sub>2</sub> Award 0 if no radix)
- (b) Convert 101101000101012 to hexadecimal (2 marks)
- |           |          |          |          |
|-----------|----------|----------|----------|
| 10        | 1101     | 0001     | 0101     |
| 2 ( ½ mk) | C( ½ mk) | 1( ½ mk) | 5( ½ mk) |
5. State three ways used to represent a negative number. (3 marks)  
One's complement  
Two's complement  
Pre-fixing  
1 mark each
6. Distinguish between data privacy and data integrity as used in computing. (2 marks)  
Data privacy- Keeping data secret so that unauthorized people can not access it.  
Data integrity-correctness, completeness and accuracy of data  
(1mk each)

*This paper consists of 7 printed pages*

7. Differentiate ke-unique field that identifies a record in database  
 Foreign key-unique field that identifies a record in database  
 Foreign key-primary key in another table once the table are linked  
 (1mk each)
8. Distinguish between count and countif functions as used in spreadsheets.  
 Count – count cells that contains values in a range of cells  
 Count if-counts cells that meets a given criteria in a range of cells  
 1 mark each.
9. Apart from system unit, monitor, keyboard and mouse, state other four hardware requirements for video conferencing (2 marks)
- Digital camera/ video camera
  - Microphone
  - ADC and DAC converter
  - Satellite dish
  - Speakers
  - Video bridge
  - Remote control
- Any four ½ each.

10. Match the following statements with repeater, router or a bridge (2marks)

Statement	Device
(a) Operates at data link layer	Bridge ( ½ mk)
(b) Determined the best path for data to follow	Router ( ½ mk)
(c) Regenerates signals	Repeater ( ½ mk)
(d) Forwards everything which it doesn't recognize	Bridge ( ½ mk)

11. (a) State under which category of keyboard keys the following keys would fall

H      Alphabetic or Alphanumeric (1mk)

F10      Function (1mk)

- (b) State two functions of insert key (2 marks)
- Switch to:  
 Type over mode and insert mode  
 Each 1mk

12. (a) Explain why you have to read the user manual before installing the software. (2 marks)

To know the system requirements (2mks)

- (b) Explain the following documentations
- (i) User documentation (1mk)  
 Written guide or visual information about how a system works and how to use it (1mk)
- (ii) Technical documentation (1mk)  
 Written guide on how to maintain, repair and support computer system (1mk)

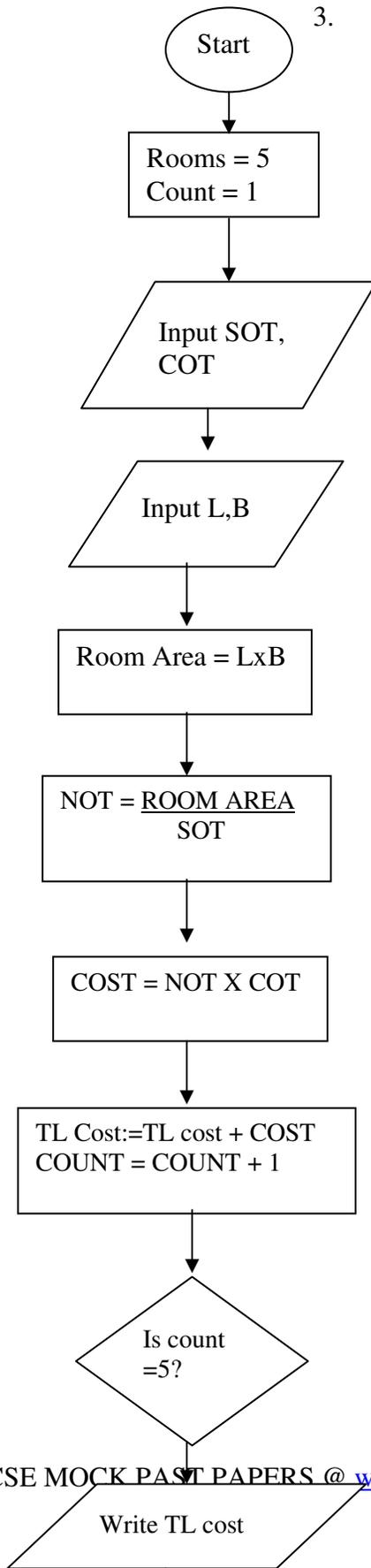
2.

13. In Kenya Tea packers Company several people are employed as record clerks, typists and messengers. The company intends to introduce a computers system in all the departments. Suggest three reasons that would make workers unhappy with the new system.  
(3 marks)
- Job replacement
  - Reatrining on the use of computers
  - Side effects of using computers
- 1 mak each.
14. Explain the following internet related terms
- (a) Sign in  
Enter username and password to authenticate the access to your email account  
(1mk)
- (b) Search engine  
Site used in searching for materials from the internet (1mk)
- (c) Surf  
Browsing or accessing the internet (1mk)
- (d) Sign up  
Registering to have an email account(1mk)
15. State two function of a compiler (2 marks)
- Translate high level language to machine code
  - Detects and prints the syntax errors in the whole program at the end of compilation
  - Organize the storage of variables used in a program
  - Links the program with the operating system
- (any 2 1mk each)

## SECTION B

**Answer question 16 and any other three questions from this section in the spaces provided**

16. (a) Explain three errors which may occur in computer programs (3 marks)
- Syntax – Due to wrong use grammatical rules of the language
  - Semantic-wrong logic
  - Run time/execution errors – Occur during the execution of the program though the program is free from syntax and logical errors
  - Algorithmic errors-due to wrong algorithm
- Any 3 with explanation 1mk each
- (b) Draw a flow chart which can be used to design a program to workout the cost of covering the floor of a house with carpet tiles given:
- i) Number of rooms in the house
  - ii) For each room
    - The size of a tile (SOT) and cost of a tile (COT) to be used in that room.
    - The length (L) and breadth (B) of the room
    - For each room calculate the number of tiles (NOT) required as well as the cost of the tiles.
  - iii) Print the total cost (TL cost) of tiles required.



Award marks as follows

Start/Stop 1mk

Initialization 1mk

Processor 4mks

Decision 3marks

Input 3marks

Total 10 marks

4.

- c). Differentiate between a system flowchart and a program flowchart. (2 marks)  
System flowchart – Shows the logic of the system as a whole  
Program flowchart – shows the logic of a module within the system  
(1mk each)

17. a). Explain the function logical topologies: (4 marks)
- i). Token ring  
-A special packet (token) goes round the network and only the computer that contains the address of the token receives/sends the token (2mks)
- ii). Ethernet  
A workstation listens to the transmission media before sending its information once none of the other workstation is sending (1mk)
- b). State the function of the network layer of the OSI Model. (1 mark)  
Address information is added to the packet  
Determines routing from source to destination.
- c). List **four** internet protocols. (4 marks)  
TCP/IP,SMTP,APPLE TALK,FTP,IP,NetBEUI, SPX  
(Any 4 1mk each)
- d). Describe the following topologies: (8 marks)
- i). Star  
- All computers are connected to a central hub/server  
- If cable fails affects only one computer  
- Simple isolate faults  
- Easy to add or remove computers  
- If the hub/server fails the network fails  
Any 2 @ 2mks
- ii). Ring  
- A series of computers and devices are connected point to point link in a closed loop  
- No use of central computer  
- Not easy to add or remove computers from the network.  
Any 2 @ 2 marks
18. a). What is a virtual reality? (1 mark)  
-Where a person gets psychologically immersed in an artificial environment generated by a computer system.  
(1mk)

b). Explain the following interactive sensory equipment used I virtual reality:

i). Head gear

- Channels images and sound from the source to the eyes and ears of the wearer hence producing a 3-D effect in the virtual world. (1mk)

ii). Body suit

Made of conductor wires that sense body movement and relay data into the virtual reality system.(1mk)

5.

c (i). What is artificial intelligence?

(1 mark)

making computers perform task that could otherwise require intelligence if performed by human beings (1mk)

ii). State and explain **three** components of an expert system.

(6 marks)

- Knowledge base-stores knowledge in form of rules and facts concerning a certain subject interest  
- Inference engine-software which controls how knowledge is searched and accessed from the knowledge base

- User interface-Enables the user to interact with the system  
(stating 1mk, explanation 1mk)

d). Most computerized security systems make use of biometric analysis. Name **three** physical features of human beings that can be considered for this analysis. (3 marks)

- Eyes pattern, finger prints, voice etc 1mk each

17. a). Explain **three** coding schemes

(6 marks)

ASCII – 7 BITS

BCD-4 BITS

ABCDIC-8 BITS

(Stating 1mk explanation 1mk)

b). Using one's and two's complement, work out 9 – 14.

(2 marks)

i). One's complement

9 – 1001 ( ½ mk)

4 – 0100 complimenting 1011 ( ½ mk)

0101- 1mk

ii).Two's complement

9-1001 ( ½ mk)

14-0100 complimenting 0101 ( ½ mk)

Two's compliment – 0010

0101 – 1mk

c). Workout the hexadecimal equivalent of  $1011\ 1110\ 0011_2$  .

(4 marks)

1011	1110	0011
$1 \times 2^0 = 1$	$0 \times 2^0 = 0$	$1 \times 2^0 = 1$

$1 \times 2^1 = 2$	$1 \times 2^1 = 2$	$1 \times 2^1 = 2$
$0 \times 2^2 = 0$	$1 \times 2^2 = 4$	$0 \times 2^2 = 0$
$1 \times 2^3 = 8$	$1 \times 2^3 = 8$	$0 \times 2^3 = 0$
11(B)	14(E)	3

BC3<sub>16</sub>

20. a). State and explain **four** functions of an operating system. (4 marks)

**Functions of operations system**

- Schedules tasks in the processor
- Controls use of computer resources
- Coordinates between input / storage output devices
- Deals with errors produced during program execution

6.

- Sequences jobs for the processor to execute.
- Manages secondary and primary memories

(Any 4 @ 1 mark)

b). Explain the following terms as used in disk management using an operating system.

i). Disk de-fragmentation (2 marks)

Process of removing the unused spaces on the disk.

i). Disk cleanup (2 marks)

Process of detecting and removing files on the hard disk drive that may no longer be needed.

c). What will happen if you attempt to delete a folder while a file contained in it is open. (1 mark)

The process will be aborted and error message displayed to alert to first close the open file in that folder before attempting to delete.

d). State **two** properties than an operating system displays about a file. (2 marks)

- Size of the file
- File name
- Date created / modified

e). Give **four** advantages of storing files in folders. (4 marks)

- Files are orderly arranged
- Same files can be stored in different folders
- Accidental deletion is avoided.
- Same files are easily stored in same folders.