LAIKIPIA EAST TERM 2 2022 FORM 4 EVALUATION EXAM
Kenya Certificate of Secondary Education – K.C.S.E

451/1
COMPUTER STUDIES
Paper 1
AUGUST, 2022
MARKING SCHEME

1.
     (i)   Vacuum tubes / Thermionic valves
     (ii)   Transistors
     (iii)   Integrated circuits
     (iv)   Large scale integrated and very large scale integrated circuit   ½ × 4 mks

2.
     a)   Instructions are executed in sequence from the beginning to the end
     b)   A group of instructions are choosen for execution after a specified condition that returns true or false is satisfied.
     c)   Allows s a group of instructions to be executed repetively until a certain condition is satisfied   3 mks

3.   Cold booting refers to starting a computer from the main switch when it is initially off while warm booting is restarting a computer when it is initially on without shutting it down   2 mks

4.
     a)   The act of using a word processor to create, edit, format and print documents   1 mk
     b)   i) A feature that enables text to automatically flow to the next line when the cursor reaches the end of the current line.   1 mk
          ii) An already set format for quickly creating most frequently used documents   1 mk

5.   a) Changing data being transmitted to a code only the sender and the receiver can understand to prevent it from being tapped, listened to or copied by un authorized persons   1 mk
   b)   Tapping into communication channels to get information   1 mk

6.

16	842	10 $\longrightarrow$ A	award marks as follows
16	52	4	- Division 1 mk
16	3	3	- Correct answer 1 mk

$$\Rightarrow 34A_{16}$$

7.   (i) Alphabet keys/Alphanumeric/Typing   1 mk
     (ii) Function keys   1 mk

8.   (a) a language in which instructions are represented using binary codes easily recognized and interpreted by a computer
     (b)   A problem oriented language in which instructions are presented using human understandable languages such as English   1 mk
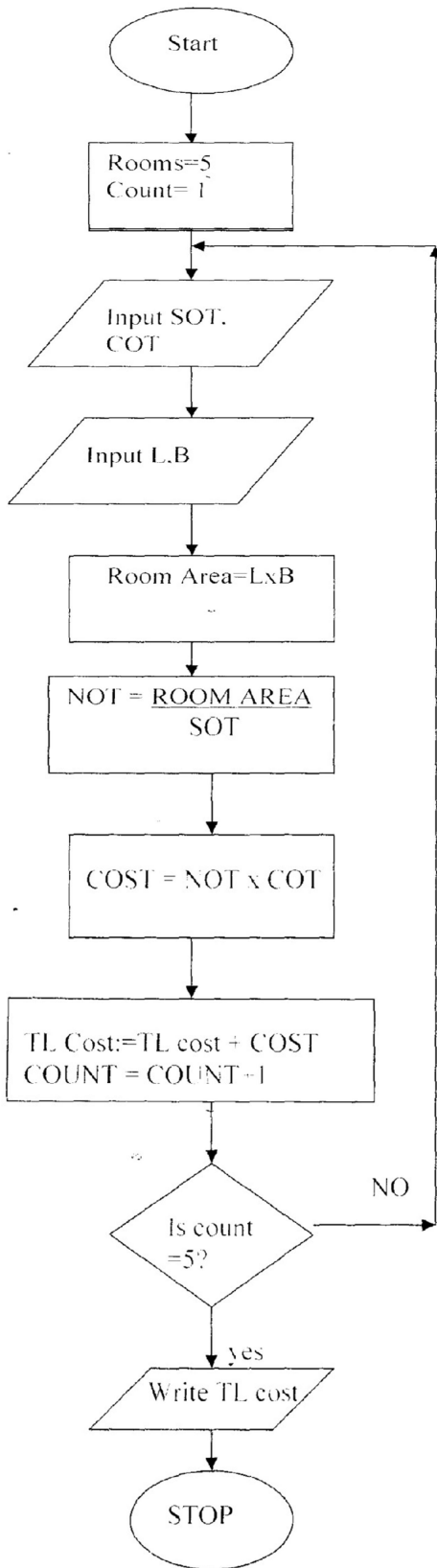
9.   (i)   This is loss of signal strength that takes place during data transmission
     (ii)   The process of combining several data signals and sending them over the same

transmission medium. 1 mk

10. If the warrant on offer was return to base
   - The price of a computer with a 1 year warrants could he higher than that of a six months warranty.
   - If computer parts were not comprehensively covered (any two - 2 mks)

11. (a) SUM IF (A1:A5,">60")
   - Correct function (1 mk)
   - Correct values in brackets. (1 mk)
   (b) (i) A process of rearranging scattered files and folders on a disk to speed up their Access. (1 mks)
   (ii) Refer to dividing a large physical disk into two or more logical drive (1 mks)
   (iii) Scan Disk

12. (a) Universal serial port (USB) port
   (b) Provides high speed and quality data transmission
   - Supports a wide range of devices. (2 mks)

13 (a) a process of sending and receiving data between two or more networked computers or Communication devices. (1 mk)
   (b) - Not affected by electromagnetic interference
   - Supports high band width
   - Has light weight and occupies less space
   - Transmits data at high speed (3 mks)

14. $48_{10} \rightarrow 110000_2$ _____ $\frac{1}{2}mk$

   $12 \rightarrow 1100_2$ _____ $\frac{1}{2}mk$

   $001100 - Increase no of bits$

   $110011 - Turn to 1's complement$

   $+110100 - Turn to 2^{15} complement$

   $\Rightarrow 110000$

   _____ $110100+ \rightarrow \frac{1}{2}mk$

   1100100_2

   Overflow

15 (a) Information gathering
   (b) (i) Sincere responses are possible due to the confidentiality of the process
   - Respondents can fill questionnaires at their awn pace
   - Enables extensive equiry to be carried out (1 mk)
   - Some respondents may not fill or return the questionnaires
   (ii) Good questionares are difficult to prepare
   - Erroneous responses are likely if the question is not understood. (1 mk)

```
                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           │
                    ┌──────▼──────┐
                    │ Rooms=5     │
                    │ Count= 1    │
                    └──────┬──────┘
                           │◄─────────────────┐
                     ╱──────────╲             │
                    ╱ Input SOT.  ╲           │
                    ╲ COT         ╱           │
                     ╲──────┬────╱            │
                     ╱──────▼───╲             │
                    ╱ Input L.B  ╲            │
                    ╲──────┬─────╱            │
                    ┌──────▼──────┐           │
                    │ Room Area=LxB│          │
                    └──────┬──────┘           │
                    ┌──────▼──────┐           │
                    │ NOT = ROOM AREA│        │
                    │       SOT   │           │
                    └──────┬──────┘           │
                    ┌──────▼──────┐           │
                    │ COST = NOT x COT│       │
                    └──────┬──────┘           │
                    ┌──────▼──────────┐       │
                    │ TL Cost:=TL cost + COST │
                    │ COUNT = COUNT +1│       │
                    └──────┬──────────┘       │
                           │            NO    │
                       ╱───▼───╲              │
                      ╱ Is count ╲────────────┘
                      ╲  =5?    ╱
                       ╲───┬───╱
                          │ yes
                     ╱────▼─────╲
                    ╱ Write TL cost╲
                    ╲──────┬───────╱
                    ┌──────▼──────┐
                    │    STOP     │
                    └─────────────┘
```

16   (a)   (i)   A data structure with contiguous memory locations holding data of the same type referenced by a single name.

(ii)   This is the representation of program statements using syntax similar to a programming language called structured English.

(iii)   A sequence of steps which outline a procedure of solving a given problem. (1 mk)

award marks as follows:

start / stop   (1 mk)

Initialization   (1 mk)

                                        Processor

Decision   (1 mk)

Input   (1 mk)

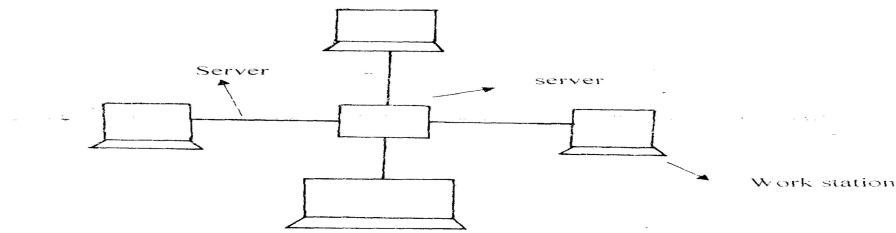   Total

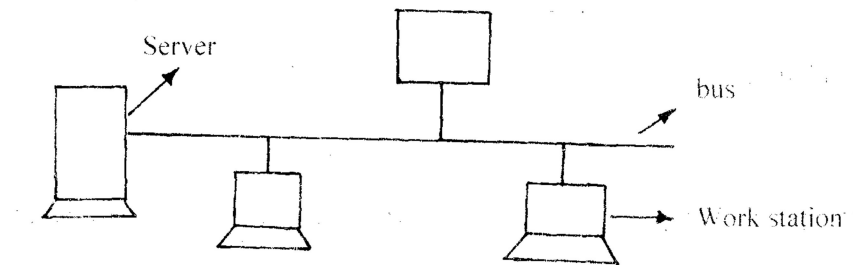(c)   5, 3, 1 4/5, 1   (4 mks)

3

17. (a) This is a standard address used to find web pages bearing information on the internet
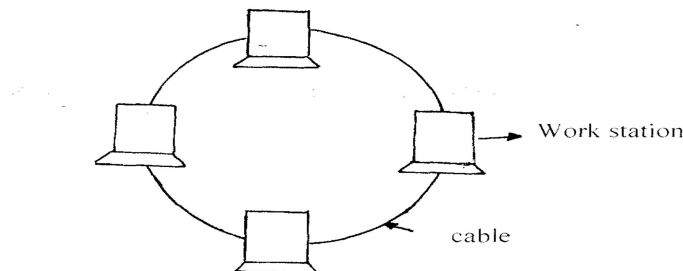
(b) (i) Star

Description: This is where all computers and devices are connected via point – to – point links to a centralized computer called a server

(ii) Bus topology

Description: All computers and devices are connected together by point – to – point links in a closed loop.

(iii)

Description: A series of computers and devices are connected together by point — to — point links in a closed hoop.

Award marks as follows
- Correct diagram (1 mk)
- Labeling (1 mk)
- Description (1 mk)

(c) (i) A logical file is viewed in terms of its contents and processing activities that can be carried out on it while a physical file refers on how a file is arranged on a storage media (2 mks)

(ii) (a) This is the main file within an organization that stores permanent data against which transaction are processed (1 mk)

(b) A file that stores temporary incoming and outgoing data used to update the master file (1 mk)

(c) A duplicate master file stored assay from the computer system to reinstate the original file incase of damage (1 mk)

4

18. (a) (i) A field that uniquely identifies each record in database (1 mk)

(ii) A thing of interest about which data is to be stored (1 mk)

(iii) A collection of related field values representing a single entity (1 mk)

(b) ASCII uses 7 ⟶ bits to represent a character. 3 bits for the zone and 4 bits for data

BCD uses 4 bits to represent a character

EBCD uses 6 bits to represent a character. 2 hits for the zone and 4 bits for data

⟶ EBCDIC uses 8 bits to represent a character. 4 bits for data and 4 bits for

Award marks for any three 1 mk for stating and link for explanation

(c) - Hacking where a person breaks codes and passwords to gain access to data and information without permission control: use of biotric features. audit trail

- Tapping: Using an intelligent program to avail information from the host computer or a network during transmission control: encrypting data

- Piracy making illegal copies of copyrighted software information or data

Control: Enactment of laws. Lowering software prices

- Link for description

- link for control measure

- Award marks for crimes such as fraud, sabotage, tresspass

19. (a) This where a person gets psychologically immersed in an artificial environment generated by a computer system. 1 mk

(b) (i) Channels images and sound from the source to the eyes and ears of the wearer hence producing a 3D effect in the virtual world. (2 mks)

(ii) Made of conductor wires that sense body movement and relay data into the vitual reality System (2 mks)

(c) (i) making computers perform tasks that would otherwise require intelligence if performance by human beings (1 mk)

(ii) Knowledge base — stores knowledge inform of rules and facts concerning a certain subject of interest.

Inference engine – Software which controls how knowledge is searched and accessed from the knowledge base.

User interface – A feature that enables the user to interact with the system. (3 mks)

(d) - Eye pattern

- Finger prints (3 mks)

- Voice

20. (a) A network of computer based processing procedures integrated with manual processes to produce information that can support decision making. (1 mk)

(b) - When the interviewers are geographically dispersed in different places

- When too much information is required about a small area of interest.

(c) (i) A room in which computers and computer equipment are kept and used for learning and other purposes.

(ii) - Use of burglar proof doors

- A well set up and serviced electrical system

- Avoiding liquids in the lab

- carefully handling of computing equipment. (2 mks)

(d) (i) - Cost

- Job opportunities

- Duration of study
- Desired level of qualification. (3 mks)

(ii) (a)
- Write in house application programs
- Customize commercial package to meet the needs of the organization
- Test debug, install and maintain programs. (2 mks)

(b)
- Reviewing current systems with view of identifying faults that can necessitate development of systems.
- Work with programmers to ensure a smooth coding process. (1 ×2mks) -
Facilitate training for users of the new system.

(c)
- Develops and tests websites
- Maintains updates and modifies information on the web sites. (1 ×2 mks)