**COMPUTER MARKING SCHEME**

**SECTION A (40 Marks)**

1. Give **TWO** reasons why Powder type fire extinguishers are not recommended to be used in a computer laboratory.
2. *Powder based fire extinguishers may react with some electrical components hence changing their electrical characteristics*
3. *Powder based fire extinguishers has abbrasive particles that may cause corrosion to moving parts of the computer*

Or any other correct responce

Reason @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

1. State the purpose of each of the following memories in a computer system.
2. ROM

*It stores the firmware that is required frequently to perform specialised functions on the computer ie to control the booting process*

*Or*

*It is used to permanently hold information that can only be accessed but not modified or erased by the user*

1. RAM

*Temporarily holding*

* 1. *User data*
	2. *Running programs*
	3. *Input storage shortly before processing*
	4. *Output storage shortly after processing*

Or any other correct responce

Purpose @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

1. State two factors that one would consider when selecting data entry method in computing.
2. *Type of data*
3. *Speed of input device*

Or any other correct responce

Factor @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

1. Describe the following types of printers and state one application area of each.
2. Dot matrix

*A dot-matrix printer is an impact printer that produces printed images with a print head striking mechanism. The print head of a dot matrix printer is implemented in an array of pins arranged in rows and columns. To print a character, the required sets of pins are activated and sruck against an inked ribbon leaving the image on paper. Application – in banks for printing bank slips*

1. Thermal printer.

*It is a non impact printer that uses a chemically treated paper that changes color to form characters when subjected to heat. Application – in photo studios to print pictures*

Description @ 1 Mark

Application Area @ ½ Mark

Total = (2 X 1 Mark) + (2 X ½ Mark)

= 3 Marks

1. Differentiate between in-house software and freeware.

*These are programs developed and designed to solve specific user problems. They are developed for a specific person/ organisation and therefore they cannot be used by anyone else except the owners of the software who have all the rights over the software while freeware software are software products that are freely made available to the user. Most freeware software are distributed freely over the internet where the user can download a program of choice.*

Difference @ 2 Marks

1. Give two importance of feedback mechanism in systems
2. *The feedback mechanism helps in evaluating the system output to determine whether a system is moving toward the achievement of its goal*
3. *The feedback mechanism helps in monitoring the performance of the system*

Or any other correct responce

Importance @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

1. With an aid of a diagram, explain one-to-one database relationship.

PRESIDENT

COUNTRY

LEAD

1

1

*A one-to-one relationship is created if and only if the relating field in both tables are primary keys*

Diagram @ 1 Mark

Explanation @ 1 Mark

Total = (1 X 1 Mark) + (1X 1 Mark)

= 2 Marks

1. KASSU Secondary School intends to set up internet connection in their school for e-learning purposes. Advise the school management on four internet connectivity requirements that is required for them to be able to access internet.
2. *Network interface card*
3. *Internet service provider*
4. *Computer*
5. *Communication media*

Or any other correct responce

Connectivity requirement @ ½ Mark

Total = 4 X ½ Mark

= 2 Marks

1. The figure below shows an extract of an e-mail application.



What is meant by each of the following terms:

1. Trash

*Acts as a dust bin for your e-mail account where all deleted mails are stored before being permanently removed from the account*

1. Spam

*This is a folder in your account where all junk and suspicious mails received are stored*

1. ***Inbox***

*This is a folder in your account where all genuine mails received are stored*

Meanimg @ 1 Mark

Total = 3 X 1 Mark

= 3 Marks

1. State two ways in which users in an organization can be a security threat to data in an information system.
2. *Through accidental access to files they are not supposed to access*
3. *By using confidential data for their own personal gain*
4. *Through intentional access to unauthorised data*

Or any other correct responce

Threat @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

1. State three negative impact of information communication technology on the Environment.
2. *The huge garbage dumps of dead computer parts, printers, ink toners, cartridges, monitors and other accessories are deposited in land fills causing pollution.*
3. *Disposal of Nickel-Cadmium laptop batteries which contain toxic cadmium are buried in a land fill can leak into underground water table and catchment areas.*
4. *Massive extraction of natural resourses such as mining of iron ore and other metals for the costruction of computer parts*

Or any other correct responce

Threat @ 1 Mark

Total = 3 X 1 Mark

= 3 Marks

1. In a computer based information system, state the purpose of the following files and give **one** example where such a file may be required in a school.
2. Report file.

*A report file is used to extract records from the masterfile or generated after processing. It stores a copy of the generated reports by the system.*

1. Sort file.

*A sort file is used where data is to be processed sequetially to first arrange the records in the order of the master file before updating it. Example students exams marks entered in a class list*

Function @ 2 Marks

Total = 2 X 2 Mark

= 2 Marks

1. State three responsibility of a Database administrator in an organization.
2. *Selection of hardware and software*
3. *Managing data security and privacy*
4. *Managing Data Integrity*
5. *Data backup*
6. *Database recovery*
7. *Tuning database performance*
8. *Improving query processing performance*

Any three correct responce

Responsibility @ 1 Mark

Total = 3 X 1 Mark

= 3 Marks

1. With an example for each, describe how computers are used in the following areas of education;
2. Simulation

*This is whereby the compters are designed to resemble the actual enviroment for the users to learn instead of going to the actual environment which might be very expensive or risky for them. Example used for training pilots instead of using the actual planes*

1. Tutorial

*These are learning materials provided in soft copy for the learners to read for knowledge. Example: e – books*

Description @ 1 Mark

Example @ ½ Mark

Total = (2 X 1 Mark) + (2 X ½ Mark)

= 3 Marks

1. a. Dan a computer student noticed that every time a person enters the computer lab the computer screen flickers. Identify three reasons why the monitor might be flickering
2. *There may be a loose connection to his computer hence flckering when touched*
3. *Cables may be laid on the path way hence flickering when stepped on*
4. ***Electronic Interference -*** *External factors can also cause monitor flicker, it is possible that additional electronic devices, emitting their own waves, could be interacting with the monitor screen, causing a flicker. Generally, any strong magnetic force or device that sends out signals such as mobile phones could cause it.*

Or any other correct responce

Reason @ 1 Mark

Total = 3 X 1 Mark

= 3 Marks

b. State two ways in which the problem can be solved

1. *Proper insulation of cables*
2. *Laying the cables in trunks away from busy pathways*

Or any other correct responce

Solution @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

**SECTION B (60 Marks)**

1. a. State two advantages and two disadvantages of high level programming language

***Advantages of high level programming***

1. *High level languages are machine independent hence portable*
2. *High level languages are user friendly*
3. *They are easy to learn*
4. *High level language programs are easy to debug*
5. *They are more flexible hence they enhance the creativity of the programmer thus increasing productivity*

***Disadvantages of high level programming***

1. *High level languages are executed much slower than low level programming languages*
2. *High level languages have to be translated into machine code before execution*
3. *One instruction translates into several machine code instruction hence requires more storage space.*
4. *They do not make efficient use of computer memory and the processor*

Or any other correct responce

Advantage @ ½ Mark

Disadvantage @ ½ Mark

Total = (2 X ½ Mark) + (2 X ½ Mark)

= 2 Marks

1. State three situations when REPEAT .. UNTIL structure can be used in writing a program
2. *When the instructions are to be executed atleast once*
3. *When the number of loops is not known at the beginning of the program*
4. *When the instructions are to be executed if the condition is false*

Or any other correct responce

Situation @ 1 Mark

Total = 3 X 1 Mark

= 3 Marks

1. The roots of the equation **ax2 + bx + c = 0** are given by the formula
2. Write a pseudocode for the above program

*BEGIN*

*INPUT A, B, C*

*D= (B\*B)-(4\*A\*C)*

*IF D<0 THEN*

*X1=INVALID*

*X2=INVALID*

*ELSE*

*IF D=0 THEN*

*X1= -B/(2\*A)*

*X2=X1*

*ELSE*

*IF D>0 THEN*

*X1= (- B + SQRT(D))/(2\*A)*

*X2= (- B - SQRT(D))/(2\*A)*

*END IF*

*END IF*

*END IF*

*PRINT X1, X2*

*STOP*

Start/ stop @ ½ Mark

Input @ ½ Mark

Evalute D @ ½ Mark

Condition/ Construct @ 1 Mark

Process @ 1 Mark

Logic @ 1 Mark

Output @ ½ Mark

Total = ½ + ½ + ½ + 1 + 1 + 1 + ½

= 5 Marks

1. Draw a flow chart for the above pseudocode

INPUT A, B, C

*X1= (- B + SQRT(D))/(2\*A)*

*X2= (- B - SQRT(D))/(2\*A)*

*X1= -B/(2\*A)*

*X2=X1*

*X1=INVALID*

*X2=INVALID*

*D= (B\*B)-(4\*A\*C)*

IS D=0

IS D<0

*PRINT X1, X2*

Start/ stop @ ½ Mark

Input @ ½ Mark

Evalute D @ ½ Mark

2 decisions @ 1 Mark

Process @ 1 Mark

Logic @ 1 Mark

Output @ ½ Mark

Total = ½ + ½ + ½ + 1 + 1 + 1 + ½

= 5 Marks

1. (a) (i) The figure below shows a picture tool bar



Name and state the functions of the features marked A, B and C:

1. A

*Name: Cropping tool*

*Function: Used to trim the unwanted parts of graphics*

Name @ ½ Mark

Function @ ½ Mark

Total = ½ + 1 Mark

= 1 Mark

1. B

*Name: Rotate left 900*

*Function: Used to rotate objects through an angle of 900 to the left*

Name @ ½ Mark

Function @ ½ Mark

Total = ½ + 1 Mark

= 1 Mark

1. C

*Name: Text wrap tool*

*Function: Used to place text arround graphics*

Name @ ½ Mark

Function @ ½ Mark

Total = ½ + 1 Mark

= 1 Mark

(b) State the importance of Column breaks as used in word processor.

*It is used to enforce an end of a column to start/ move the cursor at the beginning of the next paragraph*.

Importance @ 1 Mark

(c) Change case is where a user applies so that the text can have some contrast in size. Write the word 

* 1. Title case

*Digital Signal*

Title case @ 1 Mark

* 1. Toggle case

*dIGITAL signal*

Toggle case @ 1 mark

 (d) Define the following terms as used in charts.

1. Legend

*The Legend is a chart object that identifies the patterns or colors that are assigned to the data series or categories in the chart.*

1. Data range

*The data range is the area of the worksheet that you want to chart. It includes any numeric data that you want to chart and can include the titles for the data.*

Definition @ 1 Mark

Total = 2 X 1 Mark

= 2 Marks

 (e) The table below shows how a kiosk owner uses a spread sheet to keep records in a shop.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** | **E** | **F** |
| **1** | **ITEM NAME** | **NUMBER OF ITEMS** | **UNIT COST**  | **TOTAL BUYING PRICE** | **TOTAL SELLING PRICE** | **PROFIT** |
| 2 | Blue band | *150* | *120* |  |  | *3600* |
| 3 | Toss | *135* | *50* |  |  | *1350* |
| 4 | Cow boy | *120* | *120* |  |  | *2880* |
| 5 | Panga soap | *118* | *50* |  |  | *1180* |

1. Write a **function** to calculate the total buying price.

*=product(B2:C2) or =product(B2,C2)*

Function @ 2 Marks

1. Write a **formula** to calculate the Profit.

*=E2-D2*

Formula @ 2 Marks

1. The total buying prices of all items was increased by 12% and the value 12% is placed in cell B6. Using cell addresses with absolute referencing, write a formula to calculate the Total Selling Price in cell E2.

*=($B$6/100)\*D2*

Formula @ 2 Marks

1. State the output of the expression =SUMIF(F2:F5,"<1 500")would return.

*2530*

Output @ 1 Mark

1. a. Describe the term prefixing an extra sign bit as used in data representation.

*This is a technique used to represent both positive and negative numbers using an extra sign bit as its most significant bit where a 1 represents a negative number and a 0 represents a positive number.*

Description @ 2 Marks

1. Convert each of the following numbers system.

 (i) to binary

 0.78125 X 2 = 1.5625

 0.2625 X 2 = 1.125

 0.125 X 2 = 0.25

 0.25 X 2 = 0.5

 0.5 X 2 = 1.0

 = 0.110012

Conversion @ 2 Marks

 (ii)  to Octal (2 Marks)

 Convertion to binary

3 - 00112

 A – 10102

 9 – 10012

 =0011101010012

 Convertion to octal

001/110/101/0012 = 16518

Hex to binary/decimal @ 1 Mark

Binary/ decimal @ 1 Mark

Total = 1 Mark + 1 Mark

= 2 Marks

1. Perform the following binary operation.



*1010.112*

*111.102*

 *10010.012*

 *101.112*

 *1010.102*

Operation @ 3 Marks

1. Using one’s complement, perform the following binary arithmetic leaving the answer decimal notation. 

*Conversion to binary*

*1710 –10001 00010001*

*4510 – 101101 00101101*

*Convert to 1c*

*11010010*

*Add the two numbers*

*00010001*

*11010010*

*11100011*

*Reconvert to 1c*

*00011100*

*Conversion decimal*

*-28*

Calculation @ 1 Mark each step

Total = 6 Marks

1. a. Distinguish between the following terms as used in data communication
2. Guided transmission medium and unguided transmission media

*Guided transmission medium is a transmission medium that transmits data to its destination using a physical medium such as cables while unguided transmission media is one that transmits data though free space. There is no physical connection between the communicating devices.*

1. Multiplexing and demultiplexing

*Multiplexing Is the process of sending multiple data signals over a single medium along a communication channel. While demultiplexing is the process of separating the multiplexed signals at the receiving end of a channel back to the number of transmmission chansmission channels multiplexed.*

1. Logical and physical Topology

*The physical topology of a network refers to the physical arrangement of cables, computers, and other peripheral devices on a network.*

*Logical topology is the method used to pass information between computers on a network.*

Difference @ 2 Mark

Total = 3 X 2 Mark

= 6 Marks

b. Below is a diagram of a network topology.

1. Name the above topology

*Tree topology*

Name @ 1 Mark

1. State two advantages and two disadvantages of using the topology named above (4 Marks)

**Advantages of Tree topology**

* *It allows for Point-to-point wiring for individual segments.*
* *It is supported by several hardware and software vendors.*

***Disadvantages Tree topology***

* *Overall length of each segment is limited by the type of cabling used.*
* *If the backbone line breaks, the entire segment goes down.*
* *It is more difficult to configure and wire than other topologies.*

Or any other correct responce

Advantage/ disadvactage @ 1 Mark

Total = 4 X 1 Mark

= 4 Marks

c. List and explain the two data transmission techniques

### *Packet switching*

*This is a data transmission technique which involves transmitting and routing of data as packet segments sent rapidly and sequentially over a communication channel.*

*It involves breaking the data into individual segments known as packets which are transmitted individually and then re-assembled when they reach the destination computer. The packets are labeled to show where they come from and where they are to go. Packets are forwarded from one computer to another until they arrive at their destination. If any are lost, they are re-sent by the originator. The recipient computer acknowledges receipt of packets to eliminate unnecessary re-transmissions.*

### *Circuit switching*

*A method of communicating in which a dedicated communications path referred to as a circuit or channel is established between two devices through one or more intermediate switching nodes before communication between the devices takes place. Unlike packet switching, digital data is sent as a continuous stream of bits on a circuit.*

*Each circuit that is dedicated cannot be used by others on the network until the circuit is released and a new connection is set up.*

Listing @ ½ Mark

Explanation @ 1 ½ Marks

Total = (2 X ½ Mark) + (2 X 1 ½ Mark)

= 4 Marks

1. a. Distinguish between a computer drive and computer driver

*A computer drive is a hardware component that facilitates storage and retreval of data on a removable storage device while a computer driver is sets of instructions installed/ incorporated to the operating system the controlls the functionality of their specific peripheral devices.*

Difference @ 2 Mark

1. State any four factors to consider when selecting an operating system
2. *The hardware configuration of a computer e.g. memory capacity, processor speed and hard disk capacity.*
3. *The type of computer in terms of size and make. For example, some earlier Apple computers would not run on Microsoft Operating systems*
4. *The application software intended for the computer*
5. *User – friendliness of the operating system*
6. *The documentation available*
7. *The cost of the operating system*
8. *Reliability and security provided by the operating system*
9. *The number of processors and hardware it can support*
10. *The number of users it can support.*

Or any other correct responce

Factor @ 1 Mark

Total = 4 X 1 Mark

= 4 Marks

1. Explain any four factors that dictates how the operating system organizes data in a computer
2. *Rapid access: The organization method should allow quick access to stored data*
3. *Ease of update: - The organization method should allow ease of update and the operating system must be able to keep a record of the date of modification*
4. *Economy of storage : - the organization method should use the least storage possible because memory is a scarce resource*
5. *Simplicity of maintenance: - The organization method should enable quick navigation through the file system and make it easy for it to be maintained.*
6. *Reliability: - the file organization method must be reliable.*

Or any other correct responce

Factors @ 1 Mark

Total = 4 X 1 Mark

= 4 Marks

1. Define the term file in relation to the operating system

*This is the smallest unit of data storage in a computer. Every user document in a computer is stored in files of specified formats depending on the program used to create it.*

*Files can also be defined as a collection of related data items given unique name for ease of access, manipulation and storage.*

Definition @ 1 Mark

1. The operating system stores details of a file for easy identification and retrieval of files. Explain any four file details the operating system uses to search and identify a file
	* 1. *A unique name and an optional extension; the name and extension are separated by a period (.).*
		2. *The file size*
		3. *The date and time the file was created or modified.*
		4. *The file type*

Detail @ 1 Mark

Total = 4 X 1 Mark

= 4 Marks

1. Distinguish between a menu driven operating system and graphical user interface operating system

*MENU DRIVEN INTERFACE*

*A menu driven operating system provide the user with a list of options that represent computer commands for the user to choose from.*

*THE GRAPHICAL USER INTERFACE (GUI)*

*GUI make use of rectangular work areas called windows, graphical objects (icons) to represent computer files and folders, most commands are executed using a pointing device as well as menus.*

Difference @ 2 Marks