**Computer Studies**

**Form Four Marking Scheme**

1. A programmer always uses command line operating system more than the other types of operating systems. State two reasons why he likes this type of operating system
* ***Reliable***
* ***Fast***
* ***Require small memory***
* ***Can work well with screens with low resolutions***

***Award 1 mark each max 2***

1. Biometric systems is used for both physical and data security. State three disadvantages of using biometric systems
* ***Expensive to acquire***
* ***Software malfunction hinders it operation***
* ***Non recognition or scanning issues***
* ***Physical disabilities***

***Award 1 mark each max 3***

1. What is automatic recalculation
* ***It a feature in spreadsheet that automatically adjust the result of a formula if the values in a worksheet are changed***

***Award 2 marks max 2***

1. State three causes of data loss in computing
* ***Power failure***
* ***Computer virus***
* ***Accidental erasure***
* ***Crashing of hard disk***
* ***Unauthorized access***

***Award 1 mark each max 3***

1. List two precautions taken against crashing of hard disk
* ***Proper shutting down of computers***
* ***Avoid dropping the disk to the ground***
* ***Provide reliable power***
* ***Avoid dust***
* ***Avoid exposure to excessive heat***

***Award 1 mark each max 2***

1. Differentiate between COM ports and LPT ports
* ***COM port also known as a serial port transmits data bit by bit LTP port also known as a parallel port transmits multiple bits simultaneously at a time.***

***Award 1 mark each max 1***

1. Describe three main parts of a file Name
* ***File name –This is the unique name given to a file***
* ***Period – it also known as dot it separates the file name from the extension***
* ***Extension – used to describe the nature or content of a file***

 ***Award 1 mark each max 3***

1. Ventilation is an important practice in the computer lab because it enhances proper circulation of air. Outline three ways in which air is regulated in the computer room.
* ***Installing air conditioning systems in the computer lab***
* ***Have enough vents in the room***
* ***The room should have standard windows and doors***
* ***Avoid overcrowding in the room***

***Award 1 mark each max 3***

1. Warranty must be signed during the purchase of a computer. Name three items a buyer must consider before signing the warranty
* ***Scope of coverage***
* ***Liability agreement***
* ***Preventative maintenance***

***Award 1 mark each max 3***

1. Mention two cause of system entropy
* ***Technological advancement***
* ***Change in user requirement***
* ***Directives or Change in policies***

***Award 1 mark each max 2***

1. Explain why two’s complement is preferred to one’s complement in computing.
* ***There is only way of representing a zero***
* ***Support effective addition and subtraction of numbers represented with a sign bit without the need of an extra circuit***

***Award 1 mark max 1***

1. Computers have evolved through a number of generations. List three limitations of the first generation of computers.
* ***Big in size***
* ***Consume a lot of power***
* ***Generate a lot of heat***
* ***Limited programming capability***
* ***Low processing speed***
* ***Limited memory***
* ***Unreliable***
1. Identify the type of operating system represented in Figure 1 and 2

|  |  |
| --- | --- |
| **C:\Users\Jalweny\Desktop\Menu driven interface.png****Figure 1** | *C:\Users\Jalweny\Desktop\GUI.jpg***Figure 2** |

* ***Figure 1 Menu driven interface***
* ***Figure 2 Graphical User Interface***

***Award 1 mark each max 2***

1. Give two benefits of writing a program in Low Level programming Language
* ***Programs written in low level programming languages are stable***
* ***Processor execute them very fast***
* ***Processor understand them with no or minimal translation***

***Award 1 mark each max 2***

1. State four function of an operating system in respect to disk management
* ***Scanning***
* ***Formatting***
* ***Partitioning***
* ***Compressing***
* ***Defragmentation***

***Award 1 mark each max 4***

1. Due to rapid changes in Technology the World is slowly moving from the magnetic and optical storage devices to solid state storage devices
2. Define the term solid state storage devices
* ***Is a storage device that uses integrated circuit assemblies to store data persistently***

***Award 1 mark max 1***

1. Give two advantages of solid state storage devices
* ***support fast data access***
* ***Do not suffer from mechanical failure (Durability )***
* ***Energy efficient***
* ***Readily available in different sizes or capacities***
* ***Mass storage***

***Award 1 mark each max 2***

**SECTION B (60 MARKS)**

1. State three basic types of program control structures
* ***Selection***
* ***Sequence***
* ***Iteration***

***Award 1 mark each max 3***

1. Mention three causes of syntax errors
* ***Grammatical mistakes***
* ***Punctuations***
* ***Improper naming variables***
* ***Misspelling of reserved words***

***Award 1 mark each max 3***

1. An organization intends to increase salaries of employees using the following rates

|  |  |
| --- | --- |
| Current Salary | Percentage Increase |
| Greater than or equal to 70000 | 5% |
| Greater than 50,000 and less than 70,000 | 8% |
| Less than or Equal to 50,000 | 10% |

Design a flowchart that reads the total population of the employee in the organization and the perform the following for each employee

* Read the current salary
* Compute the increment
* Display current Salary , Increment and the new salary

 ............................. 1mk



Input=TotalEmployee

Count=0

 ...................... 1mk





Count<= Total Employee

 No ........1mk



 ......................Imk

 Yes

Input Salary

 .............1mk



Salary >=70,000

Salary >50,000



 .......1mk

Increment =0.05\*Salary

Increment=0.08\*Salary

Increment=0.1\*Salary







New Salary=Salary+ Increment

Count=count +1

 ..................1mk



 LC=1mk

Print Employee Salary, Increment ,New salary

 ........1mk





1. Convert the following numbers to their decimal equivalent
2. 11.0112

*(21x1)+ (20x1)*

 *2 +1 =3*

*0.011* ***(3marks)***

*1/4 =0.25*

*1/8 =0.125 0.25+125 =0.375*

 *3.375*

1. 12.158

 *12.15 = 001010. 001101*

 *Convert the binary number to decimal*

 *1010 = 10 10* **(3marks)**

*0.001101 = 0.125+0.0625+0.015625*

 *= 0.203125*

 *10.20312510*

1. A1H

*A =1010*

 *1 =0001*

 *7 6 5 4 3 2 1 0* ***(3marks)***

 *1 0 1 0 0 0 0 1*

 *128+32+1 =161 10*

1. Outline four ways in which data integrity may be maintained
* ***Control access to data by enforcing security measures like password , use of biometrics systems and patterns***
* ***Design user interfaces that restrict invalid data entry***
* ***Backup data regularly***
* ***Use error detection and correction software when transmitting data***
* ***Use devices that capture data directly from the source***

***Award 1 mark each max 4***

1. Explain three advantages of using questionnaires as a fact finding tool**.**
* ***Questionnaires are inexpensive***
* ***Questionnaire offer a quick way to get results***
* ***Scalability questionnaire allow one to gather data from a very large audience***
* ***More sincere responses are possible since they fill and return in privacy***
* ***Award 1 mark each max 3***
1. What is the role of a recycle bin
* ***Temporally hold deleted files***
* ***Restore deleted files***
* ***Permanently erase files from the computer***
* ***Award 1 mark each max 2***
1. Masai teacher’s college has decided to automate its library for effective services to the students. Identify four methods they are likely to use to gather information during system development.
* ***Observation***
* ***Interviews***
* ***Observation***
* ***Study of source documents***
* ***Automated methods***

***Award 1 mark each max 4***

1. What do the following terms mean in relation to internet?
2. Downloading
* ***Is the transmission of a file or data from one computer to another over a network, usually from a larger server to a user device.***
1. Hyperlink
* ***Is******a word, phrase, or image that you can click on to open to a new document or a new section within the current document***
1. Web browser
* ***Is an application software for accessing the World Wide Web or a local website.***
1. ISP
* ***A company providing internet services like Safaricom, Airtel LiquidTelcom***
1. Search engine
* ***Is a software system designed to carry out web searches***.

***Award 1 mark each max 5***

1. Differentiate between sorting and filtering as used in electronic spreadsheet program
* ***Sorting is the process of arranging data into meaningful order so that you can analyze it more effectively while filtering is a quick and efficient method of finding and working with a subset of data in a list***

***Award 2 marks max 2***

1. What do the following terms mean
2. Spam mails
* ***Also known as junk email, refers to unsolicited email messages, usually sent in bulk to a large list of recipients***
1. Inbox
* ***An inbox is a repository in an email application that accepts incoming messages***
1. Onboard Modem
* ***Modem that is built on the computer motherboard***
1. WIMP
* ***Wimp stand for Window Icon Menu Pointer***

***Award 1mark each max 4***

1. Mention three types of database model
* ***Relational database***
* ***Flat file***
* ***Network***
* ***Object oriented***
* ***Hierarchical***

***Award 1mark each max 3***

1. List three advantages of using database management systems
* ***Improved data sharing***
* ***Enhanced data security***
* ***Consistent and reliable data***
* ***Faster data access***
* ***Reduction in data redundancy***

***Award 1mark each max 4***

1. In a database system, data integrity ensures the correctness and completeness of the data in the database. Differentiate the following types of integrity constraints:
2. Domain Integrity
* ***This ensure that no field takes on a value outside the range of valid values***
1. Entity Integrity
* ***Rules that governs the composition of a primary key. A primary key cannot contain a null value***
1. Referential Integrity
* ***Governs the nature of records in a one to many relationship between entity tables in the database. All foreign keys in the child table must have matching record in the parent table***

***Award 1mark each max 3***

1. Use diagrams to describe the following types of relationships
2. One to One



* ***For a particular field in one table there only one matching record in the related table and vice versa***
1. Many to Many





* ***For particular records in one table there are several matching records in the other table and vice versa***
1. One to Many



* ***For a particular field in one table there are several matching records in another table***

***Award 1mark each max 3***

1. File organization refers to the arrangement of records on secondary storage. Briefly describe the following file organization methods.
2. Serial
* ***Records in a file are stored and accessed one after another on a storage medium***
1. Sequential
* ***Records are stored and accessed in a particular order sorted using a key field***
1. Random
* ***Records are stored randomly but accessed directly on a storage medium***

***Award 1mark each max 3***

1. What is a website
* ***A group of related web documents stored in a web server and linked together such that a user can jump from one section of a document to another section or another file***

***Award 2marks each max 2***

1. Name three facilities that are needed to connect to the internet**.**
* ***Modem***
* ***ISP***
* ***Transmission medium***
* ***Data Terminal Equipment***
* ***Internet Software***

***Award 1mark each max 3***

1. State three ways students can benefit by having internet in a school
* ***Collaborate with learners in other institutions***
* ***Access to information enable students to enrich their knowledgebase***
* ***Internet simulation and videos make learning real therefore abstract concepts are made clear and understandable***
* ***Students can attend lessons and lectures remotely through virtual classroom***

***Award 1mark each max 3***

1. State the function of the following protocols
2. TCP
* ***Transmission control protocol is responsible for delivery of sequenced data over the network***
1. IP
* ***Internet protocol it does packet forwarding and routing***
1. POP3
* ***Post Office Protocol 3 is used protocol for receiving email over the internet.***

***Award 1mark each max 3***

1. Describe the following topologies
2. Ring
* ***Devices are connected in a close loop***
* ***All devices have equal access media***
* ***Devices waits for its turn to transmit***

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***Award 2marks max 2***

1. Mesh
* ***Every node in the network is connected to very other node forming a mesh like shape***

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***Award 2marks max 2***