**Term 1- 2023 OPENER EXAM**

**COMPUTER STUDIES (451/1)**

**PAPER 1**

**FORM FOUR (4)**

**Time: 2 ½ Hours**

**MARKING SCHEME**

**SECTION B (40 MARKS)**

1. Give three measures an organization need to put in place to prevent threats from sabotage
* ***Install security monitors***
* ***Use biometric system to restrict access to computer room***
* ***Assign access privilege’s to different computer users***
* ***Motivate the employees so that they sense of belonging***

***Award 1 marks each max 3***

1. Describe any three types of data that can be accepted in spreadsheet cells
* ***Label are texts or alphabetic characters which cannot be manipulated mathematically***
* ***Value usually refer to numeric characters or special symbols that cane manipulated mathematically***
* ***Formula is a user defined mathematical expression used to create a relationship between cells and returns a value in the chosen cell***
* ***Function is a inbuilt formula available in spreadsheet program that the user can quickly use instead of having to create one every time a calculation is to carried out***

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

1. Mention three factors to consider before installing an operating system
* ***Processor speed***
* ***Memory size***
* ***Hard disk capacity***
* ***Display***

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

1. Enumerate three data management tools available in spreadsheet
* ***Sorting***
* ***Filtering***
* ***Graphs***
* ***Form***
* ***Subtotal***
* ***Data validation***

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

1. Describe three ways in which ICT can be used to run a taxi business in a busy town like Nairobi
* ***Use of navigation software to locate client destinations***
* ***Communicate with clients via sms, calls, whatsapps and twitter***
* ***Advertisement via social media, website and electronic displays***
* ***Create e-payment platforms***
* ***Use computer application to keep books of account***
* ***Tracking system for remote management***

***Award 1st three @1 mark each max 3***

1. State a stage in system development life cycle where each of the following activities are carried out
2. Performing system audit
* ***Review and Maintenance***
1. Listing hardware and software requirement of the system
* ***Requirement specification***
1. Establishing whether the system to be developed is cost effective
* ***Problem Definition***

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

1. Convert the decimal number 30$\frac{3}{8}$ to its binary equivalent (3marks)

The number is the same as 30.375

|  |  |
| --- | --- |
| ***2*** | ***30*** |
| ***2*** | ***15 rem 0*** |
| ***2*** | ***7 rem 1*** |
| ***2*** | ***3 rem 1*** |
| ***2*** | ***1 rem 1*** |
|  | ***0 rem 1*** |

 ***30 = 111102***

***0.375 x2 = 0.75***

***0.75 x 2 = 1.5***

***0.5 x 2 = 1.0***

 ***= 0.011***

 ***11110.0112***

1. Briefly describe three ways in which internet platforms have revolutionized business activities
* ***Internet platform promote e-payment which enable clients settle the bills electronically without using hard cash***
* ***Encourage e-commerce where selling of goods and services take place in the internet***
* ***Internet platform provide various a way of advertisement which reach so many people in world***
* ***Internet base businesses can operate 24 hours***
* ***Promote efficient communication between business partners regardless of their location***

***Award 1st three @1 mark each max 3***

1. Give three ways of preventing transcription errors during data entry
* ***Dara verification /Double checking***
* ***Use methods that capture data directly from source***
* ***Dara validation***

***Award 1st three @1 mark each max 3***

1. Describe the term desk checking as used in computer programming
* ***It is a concept used to detect errors in a computer program by going through the program while on paper***

***Award 2 marks max 2***

1. Describe three security services offered by the operating system in a computer
* ***Back up- The operating system have facilities for creating duplicate copies of original file which be used to reconstruct the system in case of file failure or loss***
* ***User name and password – Operating system have a routine responsible for creating user names and passwords to authenticate the users when gaining access to the system***
* ***Logs- The operating system have a security file which store all the activities taking place in the computer***
* ***System restore is a feature in Windows operating system that allows the user to revert their computer's state to that of a previous point in time***
* ***Firewalls and Patches –Operating System regularly provide patch updates and firewall for monitoring network traffic, and enforcement of secure access through least privileges and user controls.***

***Award 1st three @1 mark each max 3***

1. When an image inserted in a desktop publishing document is selected, handlers on its placeholder appears. State two uses of these handlers
* ***Resizing the image***
* ***Rotating the image***
* ***Changing the shape***
* ***Flipping over the image***
* ***Award 1st three @1 mark each max 3***
1. Use flowcharts to demonstrate two ways of implementing a For loop in a program

***For loop counts upwards For loop counts downwards***

**Condition**

**Statements**

**Upper Limit=Loop Variable -1**

**Loop Variable =Upper Limit**

**Loop Variable = Lower Limit**

**Condition**

**Statements**

**Lower Limit=Loop Variable +1**

***Accept the use of variable like K, X , Y***

***Award 1 mark max 2 for correct well labelled diagram***

***Do not award description***

1. Use appropriate example to explain how records are accessed in sequential file organization using binary search method
* ***This method repeatedly divide a set of records in a file in two halves***
* ***The search only proceeds to the halve with the intended record***
* ***For example if the file have records serialized as 20, 30, 60 70,100, 200, 205, and 300 and the computer is searching for record number 205 , the search will begin at 100 ignoring the first half***

***Award 1st three @1 mark each max 3***

1. Write down the correct syntax for each of the following Excel functions given that C1,C2,C3,C4 and C5 contain 50,60,45,56 and 10 respectively
2. RANK
* ***=Rank(C1, $C$1:$C$5,0)***
1. COUNTIF
* ***=Countif(C1:C5, “>45”)***

***Award 1st two @1 mark each max 2***

**SECTION B (60 MARKS)**

1. Describe the following terms as used in programming
2. Hardware oriented
* ***Not portable. It means that the program written for one computer cannot be installed and used in another***
1. Syntax
* ***Refers to the rules that govern the correct combination of symbols that may be used to produce a correctly written program***
1. Bug
* ***In computer technology, a bug is a coding error in a computer program***

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

1. When writing a computer program programmers are always advised to use approaches and techniques that makes the program easy to follow and maintain. List four ways in which a programmer can make program code easy to follow
* ***Proper punctuations***
* ***Correct use of reserved words***
* ***Proper naming of variables***
* ***Use of comments within the code segment***
* ***Code indentation***

***Award 1st four @1 mark each max 4***

1. A bookshop owner contracted a programmer to design a program that can be used to manage book orders in his business as follows;
* Enter the order ID and Order amount
* Calculate the discount and New order amount

The book shop gives a discount of 13% for orders of a books worth Ksh.5, 000, 8% for orders of books worth Ksh.1000 and none for orders worth Ksh.1,000 and below.

Draw a flowchart to represent the information above, display the discount and new order amount

Enter OID, OAmount

OAmount >1000 and <5000

OAmount >=5000

DS= 1\*OAmount

DS= 0.08\*OAmount

DS= 0.13\*OAmount

Start@1mark

Input OID/OAmount @1 Correct condition 1 @ ½

Correct condition 2@ ½

DS Computation @ 1

New Amount @ 1

Output 2 @ 1

Logic @ 1

Stop @1

New OAmount=OAmount-DS

Display DS , New OAmount

1. List the process used by the computer to perform the following arithmetic operations
2. Addition
* ***Addition***
1. Multiplication
* ***Shifting***
1. Subtraction
* ***Complementation***

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

1. Convert the following numbers to binary number
2. 10AH

***1=0001 ......... @ ½***

***0 =0000 ....... @ ½***

***A=1010 ...... @ 1***

***!0AH = 0001000010102 .................. @ 1***

1. $23\frac{13}{64}$ base 10 **(3marks)**

|  |  |
| --- | --- |
| *2* | *23* |
| *2* | *11 rem1* |
| *2* | *5 rem 1* |
| *2* | *2 rem 1*  |
| *2* | *1 rem 0* |
| *2*  | *0 rem 1* |

|  |  |
| --- | --- |
| *0.203125x2* | *0.40625* |
| *0.40625 x 2* | *0.8125* |
| *0.8125 x2* | *0.625* |
| *0.625 x2* | *1.25* |
| *0.25 x2* | *0.5* |
| *0.5 x2*  | *1.0* |

 *10111. 0001012*

***Whole number part @ 1***

***Fraction part @ 1***

***Answer @ 1***

1. Perform the binary arithmetic below and write your answer in decimal notation

**00011012+0001112-0010112**

**0001101**

**+000111** .............. @ ½

**0010100 ............. @ ½**

 **-001011**

**0001001 ............. @ 1 = 910 ............ @ 1**

1. Identify three ways of representing negative signed binary numbers
* ***Prefixing an extra sign bit***
* ***Ones compliment***
* ***Twos compliment***

***Award 1st three @1 mark each max 3***

1. Give four ways of in which parents can protect their children from accessing inappropriate content from the internet
* ***Block the sites with appropriate content***
* ***Educate them on the dangers of inappropriate content***
* ***Use family link platform to monitor what the accessing remotely***
* ***Set parental control***
* ***Turn safe search***

***Award 1st four @1 mark each max 4***

1. Due to the risks involved in using the traditional classroom teaching method during this covid-19 period, many colleges have embraced online teaching via Zoom, google classroom and Webex. Mention four items that a student must have in order to attend lessons through the platforms indicated above
* ***Internet connectivity***
* ***Data Terminal equipment***
* ***Headphone***
* ***Microphone***
* ***Camera***
* ***Platform software***

***Award 1st four @1 mark each max 4***

1. Briefly describe four benefits of backing up data in your phone in the clouds
* ***Clouds provide a vast storage space where large volumes of data can be saved***
* ***Data saved in the clouds can be accessed from any point provided there is internet connectivity***
* ***Cost effective***
* ***Cloud environment have numerous ways of enforcing security of its data***

***Award 1st four @1 mark each max 3***

1. Explain the following types of security threat
2. Malware attack
* ***A malware attack is a common cyberattack where malware (normally malicious software) executes unauthorized actions on the victim's system. The malware action may cause system malfunction or data loss***
1. Social Engineering
* ***Social engineering uses psychological manipulation to trick users into making security mistakes or giving away sensitive information.***
1. System failure
* ***A system failure is a problem either with hardware (other than disk) or with operating system software that causes your system to end abnormally or malfunction***

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

1. Repetitive Strain and eye strain may results from use of computers. State two ways of minimizing each of the mentioned health problems

***Repetitive Strain Injuries***

* ***Provide standard furniture***
* ***Take regular breaks***
* ***Use devices that capture directly to reduce on the typing***

***Eye strain***

* ***Take regular breaks***
* ***Avoid using flickering screens***
* ***Adjust the screen brightness accordingly***
* ***The inner walls of the computer rooms should paint with dull colors***

***Award any two in each category @1 mark each max 4***

1. Describe the effects of the following actions in a computer laboratory
2. Drinking tea
* ***Tea may spill to metallic parts of the computer which cause rusting***
1. Cleaning the computer with soft cloth soaked in water
* ***Water particular may cause rusting***
* ***Water may cause electric shock***
1. Smoking
* ***Smoke particle may block the moving parts of the computer causing malfunction***

***Award 1each max 3***

1. Mr. J.O Were the Principal and the Basketball coach of Kisumu Day High school wants to invite several schools for Basketball tournament .He was advised to use mail merging technique to create invitation letters for the respective schools identified. Give three benefits of this technique **(3marks)**
* ***The Mail Merge feature makes it easy to send the same letter to a large number of people.***
* ***By using Mail Merge, we don’t have to type each recipient’s name separately in each letter.***
* ***We need to proofread only the main document.***
* ***It is economical and saves a lot of time.***
* ***It is one of the fastest ways to produce hundreds of personalized letters.***
* ***It is easy to edit the letter as a single change made in the main letter will be reflected in the letters meant for all other recipients***

***Award 1st three @1 mark each max 3***

1. A student from Maranda High School was typing a document using Ms-word. He typed Maseno School as the title of the document. He was requested by his teacher to insert High in between Maseno and School. Explain what will happen if the Ms-word editing mode is set to type over
* ***When text is typed between existing words or character, the new text automatically replaces existing text or delete them***

***Award 2 marks max 2***

1. Name three transformation techniques supported by Ms-Word which enable users to format graphic and fit them nicely in a document
* ***Rotate***
* ***Crop***
* ***Enlarge***
* ***Reduce***

***Award 1st three @1 mark each max 3***

1. Study Table A and B then use it to answer questions that follows

|  |
| --- |
| **Field Name** |
| ID Number  |
| Last Name |
| First Name |
| Address |
| Town  |

|  |
| --- |
| **Field Name** |
| ID Number |
| Product ID  |
| Product Name |
| Unit cost |
| Quantity |
| Date of Birth |
| Total |

**Table I Table II**

1. Identify the most appropriate data type for ID Number, Product Name and Quantity
* ***ID Number –Text***
* ***Product Name –Text***
* ***Quantity – Number***

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

1. Given that the data type for Total is calculated write an expression to be entered in the expression builder
* ***[Unit cost]\*[Quantity]***

***Award 2marks max 2***

1. Suggest how date birth can be validated to restrict entries of date that follow in 2010 only
* ***>=#01/01/2010# AND <#01/01/2010#***

***Award 2 marks max 2***

1. Explain how a relation can be created between Table A and B
* ***Set primary key as ID Number and Product ID in table And B respectively ............. @ ½ mark***
* ***Link table A and B by ID number field in both table ................................ @ ½ mark***
* ***Create One to Many relationship .............................. 1mark***

1. State the difference between line printer and page printer
* ***Line printer prints one line of text at a time while a page printer prints one page at a time***

***Award 2 marks max 2***

1. List four features of a laser printer
* ***High print quality***
* ***Fast***
* ***Quite while printing***
* ***Expensive***
* ***Printing of multiple copies not possible with Laser printer***
* ***Award 1st four @1 mark each max 4***