**MARKING SCHEME**

**COMPUTER STUDIES PAPER 1**

**FORM FOUR**

1. State two objectives of normalization in Databases
* ***Eliminates redundant data in the database***
* ***Minimize data modification errors***
* ***Simplify the query process***

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

1. Give three qualities of a good system analyst
* ***Good problem solving skills***
* ***Innovative and creative***
* ***Good communication skills***
* ***Technical skills***
* ***Good interpersonal skills***
* ***Team player***

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

1. Explain how data in a computer system can be secured using
2. Security monitors
* ***Involve the use of hardware and software that monitor and keep track of all the activities performed using computer systems therefore unauthorized users will not gain access to the system***
1. Biometric systems
* ***Involve the use of human body attributes which are unique to authenticate users***

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

1. Name two inputs devices that may be used as output devices
* ***Touch screen***
* ***Interactive Whiteboard***

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

1. Give two limitations of voice input devices
* ***Speaker variability***
* ***Homophones***
* ***Limited vocabularies***
* ***Interference from the background***

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

1. Why is fibre optic more secure than Twisted pair and coaxial cables
* ***Data signals in fibre optic is in form of light which is very difficult to tap***

***Award 1 mark max 1***

1. State the function of the following features of a DTP publication window
2. Pasteboard
* ***A large blank area where you can place text and graphical objects before arranging them neatly on the printable area***
1. Master page
* ***Used to design a general layout that needs to be applied in all other pages of the publication***

***Award 2 marks each max 4***

1. Mention two effects of shutting down a computer using the wrong procedure
* ***Leads to data loss***
* ***Damage of hardware parts of the computer***

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

1. Levine is a System Analyst working with Victoria International Agencies. Levine was requested to develop a new information system to replace the current system in a stakeholder’s meeting chaired by the General Manager. Give three reasons to justify why the organization is in need of a new system yet there is one in place
* ***Directive may impose new requirements which the current may not address***
* ***Problems- the current system may present undesirable circumstances that prevent the organization from meeting its goals***
* ***The current system may not be able to exploit new opportunities***

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

1. Mention three disadvantages of GUI based operating systems
* ***Require a lot of memory***
* ***Slower as compared to CLI***
* ***More expensive***

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

1. Nairobi University ICT hub developed an Expert system to help in disease diagnosis. Describe three main components that developers must incorporate in this system to make it mimic human experts
* ***User interface- this is the display screen that enable the user to interact with the system***
* ***Inference engine- it is a search tool used to get information from the knowledge base***
* ***Knowledge base – it is a database of knowledge in a particular field of study***

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

1. Computer network technicians prefer to use command line based Operating systems when configuring networks. State three reasons for the preference
* ***Work well with monitors of low resolutions***
* ***Require limited space***
* ***Run very fast***

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

1. Explain the following limitations of Networking
2. Over reliance
* ***Organizations that purely rely on network to support their functions may suffer a great loss when there is a network failure***
1. Data security n
* ***Data held in network is always under constant security threats which may be inform of illegal access, theft of data or tapping by unauthorized persons during transmission***

***Award 2marks each max 4***

1. Give two reasons for extensive use of Electronic Fund Transfer in modern society
* ***Service flexibility***
* ***Diligent***
* ***Wide coverage***
* ***Instant feedback***
* ***Speedy transaction***
* ***Security***
* ***Cost effective***

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

1. State two ways of solving printing problem like lack of two way communication
* ***Reinstall the printer***
* ***Select the correct printer***
* ***Ensure the printer is on and correctly connected using the data cable***

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

1. Describe two challenges associated with the use of internet services like blogs, social media networks and instant messaging
* ***Spread of malicious software***
* ***Security and privacy***
* ***Access to inappropriate content***

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

1. What is test data as used in programming environment
* ***It is a set of inputs that are used to verify the correctness, performance, and reliability of a program***

***Award 2 marks max2***

1. State three ways employed by computer programmers to make the program code easier to understand and follow
* ***Use of comments within the codes***
* ***Code indentation***
* ***Use clear variable names***
* ***Break the codes into smaller function***

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

1. Describe a situation where a loop would be useful when writing a program code
* ***It is preferred when a give block of code is to be executed again and again until a condition is met***

***Award 2 mark max 2***

1. Study the pseudo code below and use it draw a flow chart that will represent in all aspects
2. Start
3. Count =1
4. Average =0
5. For Count =1 to 5 Do
6. Enter Mark1, Mark 2, Mark 3, Mark 4
7. Get the sum
8. Compute Average
9. Is average greater than or equal 50
10. Print Pass
11. Else
12. Output Fail
13. Average =average +Average
14. Count=count +1
15. Endfor
16. Mean score=Average/count
17. Stop

Count =1

Average=0

Count<5

 No

 yes

Mean Score=Average/count

Enter M1.M2,M3,M4

Sum=M1+M2+M3+M4

Average =sum/4

Average>50

 No Yes

Pass

Fail

Average=Average + Average

Count=count+1

***Start/stop =1mark***

***Initialization= ½mark***

***First Condition = ½mark***

***Input M1,M2,M3 and M4 = ½mark***

***Process sum and Average =1mark***

***Second condition = ½mark***

***Output fail and pass= 1mark***

***Increment count and average =1mark***

***Process Mean score 1mark***

***Logic = 1mark***

1. Perform the following number system conversion
2. 19.187510 to Binary

|  |  |
| --- | --- |
| 2 | 19 |
| 2  | 9 Rem 1 |
| 2  | 4 Rem 1 |
| 2 | 2 Rem 0 |
| 2 | 1 Rem 0 |
|  | 0 Rem 1 |

|  |  |
| --- | --- |
| 0.1875x2= | 0.375 |
| 0.375 x 2 = | 0.75 |
| 0,75 x 2 = | 1.5 |
| 0.5 x 2 = | 1.0 |

***Fraction part ½mark***

***Whole number part ½mark***

***Answer 1mark***

 Combine the fraction part and the whole number part

 10011+0.0011 = **10011.00112**

1. AB16 to Octal

***Assigning A and B Binary equivalent = ½mark***

***Grouping binary bits = ½mark***

***Answer =1mark***

 A = 1010

 B = 1011

 10 101 011

 2 5 3

  **2538**

1. Perform the twos complement on 1310 -2310, leaving your answer in decimal number system

|  |  |
| --- | --- |
| 2 | 23 |
| 2  | 11 Rem1 |
| 2  | 5 Rem1 |
| 2 | 2 Rem1 |
| 2 | 1 Rem0 |
|  | 0 Rem1 |

|  |  |
| --- | --- |
| 2 | 13 |
| 2  | 6 Rem 1 |
| 2  | 3 Rem 0 |
| 2 | 1 Rem 1 |
|  | 0 Rem 1 |
|  |  |

***Conversion of 13 and 23 = 1mark***

***1c and 2c =1mark***

***Adding 2c of 23 to 13 = 1 mark***

***Answer -10 = 1mark***

 **23 = 10111 13 =1101**

 **01000 ........ 1c**

 **01001 ......... 2c**

 **+ 1101**

 10110

 10110 – 1 = 10101 -----Recompliment

 01010

 **-1010**

1. Describe three challenges affecting electronic information processing
* ***Threats to data security***
* ***Lack of legal framework to support electronic processing activities***
* ***Lack of ICT skills***

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

1. Most organizations today are migrating from manual file system to computerized filling system so as to have a competitive advantages in discharging their functions. State four advantages of adopting this innovation
* ***It enhances security of data***
* ***Enhances data integrity and reduces duplication***
* ***Offer fast access and retrieval of data***
* ***Much easier to update and modify***
* ***Information take less space***

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

1. Give four command buttons from Picture tools used to make an image more visually appealing
* ***Adjust***
* ***Picture style***
* ***Arrange***
* ***Size***
* ***Rotate***
* ***Crop***

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

1. List four types of mail merge documents
* ***Letters***
* ***Envelopes***
* ***Mailing labels***
* ***Catalogues***
* ***E-mail messages***

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

1. Briefly describe the following features of Microsoft Excel screen layout
2. Formula bar
* ***A textbox in which a cell entry or a formula is displayed during typing or editing of cell content***
1. Name Box
* ***Used to display the cell address or name of the selected cells or range***

***Award 2 marks each max 4***

1. Describe three data management features supported by Microsoft Excel
* ***Sorting- arranging data items a particular order***
* ***Filtering –It is quick and easy way of finding and working with a subset of related worksheets***
* ***Validation –A facility that restrict invalid data entry in a cell***
* ***Subtotal and Grand total- used to summarize a worksheet list to display grouped subtotal and grand totals***

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

1. Mention three functions of a form in a database
* ***Links the user with the database***
* ***Make data entries in the underlying tables***
* ***View data***

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

1. Use an example to explain the following data types as used in DBMS
2. Calculated
* ***This data types is used to store data created from a formula. For example a field total can be set to calculated if the data stored in it comes from unit cost and quantity [Unit cost]\*[quantity]***
1. Yes/No
* ***This is a logical data type for an entry that is either yes or no, true or false. For example a field may require you to answer whether you are a male or female***

***Award 2 marks each max 4***

1. Describe the types of relationships depicted by the diagram below
2.



* ***The relationship here is one to one that is for a particular field in one table there is only one matching record in the related table and vice versa***
1.



* ***The relationship here is one to many , for a particular in one table there are several matching records in another table***

***Award 2marks each max 4***

1. The table below is an extract from a database table use it to answer the questions that follows

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Product Code | Product Name | Date of Birth | Unit cost | Quantity | Total  |
| 01001101 | Maize | 02/03/2002 | 2000 | 10 | 20000 |
| 01223030 | Millet | 12/12/2002 | 1000 | 20 | 20000 |
| 10239345 | Wallet  | 03/09/2005 | 100 | 10 |  1000 |
| 19019001 | Sweet  | 09/09/2006 | 1000 | 5 | 5000 |

1. Write an input mask that will display the product names as represented in the table
* ***>L<??????????????***

***Award 2 marks max 2***

1. Set a validation rule in the date of Birth column to

Restrict entries of future dates

* ***<=Date() – The date must be today or earlier date but cannot allow future date***

Accept year of Birth between 2002 and 2006

* ***>=#01/01/2002# AND <#31/12/2006#***

***Award 1 mark each max***

1. Explain the following terms as used in Data security
2. Exploits
* ***An exploit is a program, or piece of code, designed to find and take advantage of a security flaw or vulnerability in an application or computer system, typically for malicious purposes such as installing malware.***
1. Intellectual property right
* ***Intellectual property rights are the rights given to persons over the creations of their minds. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.***

***Award 2 marks each max 4***

1. State five measure against theft that school managers need to impose to safeguard their computer laboratories
* ***Employ security personnel***
* ***Reinforce weak access points like windows and doors using grilled doors***
* ***Insure the hardware resource***
* ***Motivate workers***
* ***Install alarm systems***
* ***Install cctv camera***
* ***Use Biometric system to access computer room***
* ***Use door that are opened using swipe cards***

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

1. Give three reasons for the adoption of e-commerce platform by most businesses
* ***No reach limitation***
* ***Product and price comparison***
* ***Flexibility for customers***
* ***Affordable advertising and marketing***
* ***Cost reduction***

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

1. Mention three factors to consider when choosing an ISP
* ***Cost***
* ***Speed***
* ***Connection Reliability***
* ***Customer support***
* ***Type of connection***

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