**BSJE 2021**

**COMPUTER STUDIES**

**PAPER 1**

**451/1**

**MARKING SCHEME**

| **Qn** | **Answers** | **Marks** |
| --- | --- | --- |
|  1  | Identify the transmission mode used when communicating with the devices listed below 1. Public address system
* **Simplex**
1. Phone chat via WhatsApp
* **Duplex/Half Duplex Award I mark each max 2**
 |  2 |
| 2 | Describe the evolution of computers based on the following 1. Memory capacity
* **Modern computers have a larger memory capacity that can hold large volumes of data as opposed the older computers**
1. Processing speed
* **Advancement in technology have led to development of computers that process data very fast that first generation computers**
1. Physical size
* **The size of the have reduced greatly modern computers are smaller in size as compared to earlier computers**

 **Award I mark each max 3** | 3 |
| 3 | Beryl does not understand why computers are said to be **Automatic** at th3e same time they have No Intelligent Quotient (**IQ)*** **It said to automatic because once it is given the correct it will be a position to execute numerous tasks without user intervention**
* **NO IQ because a computer purely depend on the installed program without the programs the computer cannot any task**

 **Award I mark each max 2** | 2 |
| 4 | Vero a student from Nyamira Girls lives in a house with full internet access. She spends most of her time on phone and Desktop computer. State any three social issues associated with doing this* **Dehumanization**
* **Internet addiction**
* **Flaming**
* **Drug trafficking**
* **Cyber terrorism**
* **Access to inappropriate content**
* **Intrusion to private information**
* **Fraud**

**Award I mark each max 3** | 3 |
| 5 | Computers are known to have created jobs to many people. Below are duties and responsibilities of different computer professionals. State the professionals who undertakes the duties and responsibilities listed below1. Troubleshooting Computer hardware and software related problems
* **Computer Technician**
1. Developing Training Reference materials
* **Computer Trainer**
1. Reengineer computer components to enhance its functionality and efficiency
* **Computer Engineer**

**Award 1 mark each max 3** | 3 |
| 6 | Give three reasons that might have necessitated the development of Second generation computers* **A lot of heat that was generated by the first generation computers**
* **High power consumption that was experienced with the first generation computers**
* **The large size of the first generation**
* **The vacuum tube which usually breaks**
* **Very low processing of capability of the first generation computer**
 |  |
| **Qn** | **Answers** | **Marks** |
| 8 | Describe two password options that Ms-Word employ to prevent unauthorized access to its* **Password open – This password grant access to the document**
* **Password to modify – This password give the authority to modify the content of the document**

**Award 1 mark each max 2** | 2 |
| 9 | Mention two limitations of using counterfeit software * **Introduce malware in your computer**
* **Malfunction**
* **Lack of essential components**
* **Incompatibilities issues**

**Award 1 mark each max 2** | 2 |
| 10 | Name the computer parts listed below Figure 1* **RAM**

Figure 2* **Processor**

**Award 1 mark each max 2** | 2 |
| 11 | Describe the following functions of the operating system1. Network management
* **The operating system is responsible for facilitating connectivity and managing communication using communication protocols**
1. Security
* **Operating system provide mechanism of protecting information and programs installed in the computer. This usually achieved through password, biometric systems, backup, system restore etc.**
1. Interrupt handling
* **Operating system have interrupt handler which study the cause of the interrupt and then take the necessary actions order to solve the interrupt without interfering with normal sequential execution**

**Award 1 mark each max 3** | 3 |
| 12 | State three ways in which computer virus infection can be prevented other than through restricting the usage of removable storage media* **Smart browsing**
* **Install latest antivirus versions and update regularly**
* **Always scan email attachment before downloading**

**Award 1 mark each maxk3** | 3 |
| 13 | 1. Define the term normalization
* **It is the process of decomposing fields into separate but related tables**

**Award I mark each max 1**1. State a reason to justify why database administrators usually perform normalization when creating a database for an organization
* **To minimize data redundancy in the database**

**Award 2 marks max 2** |  1 2 |
| 14 | Mention three factors to consider when choosing a file organization method* **Method of access**
* **Storage media**
* **Frequency of update**

**Award 1 mark each max 3** | 3 |
| 15 | What are the four challenges experienced in implementing e-learning in Kenya * **High initial cost of setup ICT infrastructure**
* **Unreliable internet connectivity**
* **Lack of standards**
* **Technophobia**

**Award 1 mark each max 4** | 4 |
| 16(a) | Describe the following qualities of an algorithm 1. Definiteness
* **Each step of an algorithm must be precisely defined; the actions to be carried out must be rigorously and unambiguously specified for each case**
1. Finiteness
* **An algorithm must always terminates after a finite number of steps**

**Award 1 mark each max 2** | 2 |
| (b) | The table below shows the monthly charges applicable to different amount of water consumed by clients in a particular town

|  |  |
| --- | --- |
| Volume of Water consumed in M3 | Consumption in Kshs |
| 0 – 10 | 200 |
| 10 - 20 | 350 |
| 20 – 30 | 500 |
| Over 30 | 1000 |

In addition to the consumption, the amount of the water bill will consist of a standing charge of Kshs 200 and a sewerage fee equivalent to 20% of the consumptionWrite a pseudo code for a program that prompts a user to enter the volume of water consumed per month. The program then computes and output the amount of the water bill in a year  **Start****Marking Points****Start =0.5****Variables initialization =0.5****Repeat =0.5****Volume Input =0.5****Results of 1st Condition =0.5****Results of 2nd Condition =0.5****Three Endif =0.5****Sewerage Computation =0.5****Bill computation =0.5****Until condition =0.5****Increment counter 0.5****Stop =0.5****Logic 1**  **Set counter =1** **Set S\_Charge= 200** **Set Bill =0** **REPEAT** **Enter Volume of Water** **IF Volume > 0 and <=10 Then** **Consumption =200** **Else**  **IF Volume >10 and <=20 Then** **Consumption =350** **Else** **IF Volume >20 and <=30**  **Consumption =500** **Else** **Consumption =1000** **Endif** **Endif** **Endif** **Sewerage = 0.2x Consumption** **Bill = Bill+S\_Charge+Consumption+Sewerage** **Counter = counter +1** **UNTIL Counter =12** **Print Bill** **Stop** |  |
|  | Draw a flowchart for the pseud code Set counter =1 Set S\_Charge= 200Set Bill =0Read Volume>20 and <=30>10 and <=20Volume > 0 and <=10C=1000C=500C=350C=200Sewerage= 0.02\*CBill =S\_Charge+C +SewarageCounter =Counter +1Start =0.5Initialization =`1Condition 1 =0.5Condition 2=0.5Bill computation =1Counter =1Stop =0.5Logic =1Counter =12Print Bill |  |
| 17 | 1. The table below is an extract from a spreadsheet use it to answer the questions that follow

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E | F |
| **1** | **Customer****Number** | **Product****Name** | **Quantity** | **Unit****Cost** | **Total** | **Type****Remark** |
| 2 | 145321 | Malomalo | 20 | 100 | 2000 | Bronze |
| 3 | 143561 | Kisambo | 40 | 200 | 8000 | Silver |
| 4 | 156784 | Weeti | 40 | 400 | 16000 | Gold |
| 5 | 123454 | Wheat | 20 | 50 | 1000 | Bronze |
| 6 | 453218 | Nyozi | 10 | 10 | 100 | Bronze |
|  | **GRAND TOTAL** | **27100** |  |

 |  |
|  | 1. Identify the Ms-Excel feature that is used in cell A1 and B1 to enable the texts appear the way they are
* **Wrap text**

**Award 1 mark max 1** | 1 |
|  | 1. Name the data type in cell E4 and F3
* **E4 Formula/Function**
* **F3 Function**

**Award 1 mark each max 2** | 2 |
|  | 1. Use absolute reference to represent a formula that is used to calculate total for wheat
* **=Product ($c$5:$D$5) or =$c$5:$D$5**

**Award 2mark max 2** | 2 |
|  | 1. Suggest how named reference can be used to calculate the GRAND TOTAL
* **Rename E2 to E6 as Total**
* **=Sum(Total )**

**Award 1 mark for renaming the range****Award 2 mark for correct function max 2**  | 3 |
|  | 1. Write a formula that will classify product type base on the total as shown in the table below

|  |  |
| --- | --- |
| Total | Type |
| 0-5000 | Bronze |
| 5001-10000 | Silver |
| 10001 and Above | Gold |

=**IF(E2>=10001,"Gold",IF(E2>=5001, "Silver", "Bronze"))****Award 1 correct function****Award 1mark bracket to bracket**  | 2 |
|  | (ii) State the difference between Cc and Bcc* **CC field to send a copy of the email to people just to keep them in the loop while the BCC field is used when you want to send an email to multiple recipients but do not want any of them to know about the other people you have sent them to**

**Award 2 marks max 2** | 2 |
|  |  (iii) Mention three factors to consider when choosing an ISP* **Cost**
* **Speed**
* **Cost**
* **Type of connection**
* **Reliability**
* **Customer support**

**Award 1 mark each max 3** |  |
| 18 | What is the binary equivalent of $^{12}/\_{32}$ base 10**It is the same as 0.34375 Writing the number in decimal =0.5** **0.34375 x 2 = 0.6875 Multiplying by =0.5** **0.6875 x 2 = 1.375 Reading correct values = 1** **0.375 x 2 = 0.75 Answer =1** **0.75 x 2 = 1.5** **0.5 x 2 = 1.0 = 0.010112**  | 3 |
|  | Determine the Hexadecimal equivalent of 44468 **4 =100 4=100 4=100 6=110 assigning binary equivalent =0.5** **1001 0010 0110 grouping the number in four bits =0.5** **9 2 6 = 926H Getting the Hexadecimal equivalent for each group= 1****Answer=1**  | 3 |
|  | Subtract 110012 from 1910 using twos complement and write your answer in decimal notation  **Rewrite the question as 19+(11001)**  **19 = 10011 Getting the binary equivalent of 19 0.5** **11001** **00110 ......... 1c Getting Ones complement =0.5** **+ 1** **+ 00111............ 2c Getting twos complement = 0.5** **10011** **11010 Adding 2C to 19 = 0.5** **- 1** **11001 Subtracting 1 = 0.5** **00110 = -610 Recompliment = 0.5**  | 3 |
|  | Evaluate 101101101+10101- 1011110 **101101101** **+ 10101** **110000010**  **- 1011110** **100100100** |  |
|  | With reference to DTP defined the following terms1. Gutter
* **The inside margins closest to the spine of a book or the blank space between two facing pages in the center of a newsletter or magazine is known as the gutter. The gutter space includes any extra space allowance needed to accommodate the binding of books**,
1. Stroke
* **Refer to a line style**

 **Accept the diagram with the outline pattern** **Award 1 mark each max 2** | 2 |
| 19 | 1. **State three circumstances under which a system analyst may prefer to use questionnaire instead of observation during facts finding**
* **When the people you need to gather information from are vastly dispersed**
* **When the analyst want to collect confidential information**
* **When limited amount of information is required from a large number of people**

**Award 1 mark each max 3** | 3 |
|  | 1. Mention three operational factors that a system analyst need to consider when sourcing for hardware and software to be used with the proposed system
* **Reliability**
* **Compatibility**
* **Upgradeability**
* **User needs**

**Award I mark each max 3** | 3 |
|  | 1. Describe three advantages of parallel changeover
* **Costly to run two systems**
* **Cross checking is difficult**
* **Require more staff hence training required for additional staff**
* **The benefits of the new system are not realized by the entire organization immediately**

**Award I mark each max 3** | 3 |
|  | 1. Define the following terms as used in Networking
2. Ionosphere

**The Ionosphere is part of Earth's upper atmosphere, between 80 and about 600 km where Extreme UltraViolet (EUV) and x-ray solar radiation ionizes the atoms and molecules thus creating a layer of electrons. the ionosphere is important because it reflects and modifies radio waves used for communication and navigation****Award I mark max 1**1. Line of sight

**Is a type of propagation that can transmit and receive data only where transmit and receive stations are in view of each other without any sort of an obstacle between them.****Award I mark max 1** | 2 |
|  | 1. Identify the OSI layer in which the following communication devices operates

Router* **Network layer**

NIC * **Physical layer**

**Award 1 each max 2** | 2 |
|  | 1. Describe two factors to consider when choosing a transmission media
* **Cost**
* **Bandwidth**
* **Attenuation rate**
* **Reliability**
* **Ease of Installation**
* **Distance**

**Award 1 mark ach max 2** | 2$Type equation here.$ |
| 20 | The following records were entered in a database

|  |  |  |
| --- | --- | --- |
| **Date** | **Class** | **Registration No** |
| 1/1/2007 | East | 1425-A |
| 1/1/2008 | North | 1426-A |
| 12/1/2008 | North | 1426-B |

1. Suggest a validation rule for date given that it should be not before 1/1/2006
* **<#01/01/2006#**

**Award 2 marks max 2** |  |
|  | 1. List the records that will be displayed after running the following criteria?
2. <>#1/1/2008 on date

|  |  |  |
| --- | --- | --- |
| **Date** | **Class** | **Registration No** |
| 1/1/2007 | East | 1425-A |
| 12/1/2008 | North | 1426-B |

**Award ½ for each record max 1** |  |
|  | 1. 1426-A on class

|  |  |  |
| --- | --- | --- |
| **Date** | **Class** | **Registration No** |
| 1/1/2008 | North | 1426-A |
|  |  |  |

**Award 1 mark max 1**1. Write the input mask for registration No
* **0000-L**

**Award 1 mark each max 1** | 11 |
|  | 1. Choose the most appropriate data type for Date and Registration No
* **Date –Date**
* **Registration No – Text**

**Award 1 mark each max 2** | 2 |
|  | 1. Explain the following terms as used in Word Processing

Word wrap* **The feature that automatically move a word or cursor to the beginning of the next line if does not fit at the end of the current line**

Orientation * **Refer to the position of the page in relation to the text which can either landscape or portrait**

Indenting * **Refer to moving the text way from the margin**

**Award 1 mark each max 3** | 3 |
|  | 1. A Student typed **Genge Ni Salima uta Do** during a practical lesson. State how the text will appear

|  |  |
| --- | --- |
| **Change case options** | **Appearance**  |
| **Upper Case**  | **GENGE NI SALIMA UTA DO** |
| **Sentence case** | **Genge ni salima uta do.** |
| **Toggle case** | **gENGE nI sALIMA UTA dO** |
| **Lower case** | **genge ni salima uta do** |
| **Capitalized Each Word** | **Genge Ni Salima Uta Do** |

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