**PAPER 1 COMPUTER STUDIES MECS JOINT EVALUATION TEST – FORM 4**

**451/1 COMPUTER STUDIES**

**MARKING SCHEME**

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| **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 |
| 2a  b | **Categories of system software**  √ Firmware;  √ Networking software;  √ Operating system;  √ Utilities **(First 2 x 1)**  **Three factors to consider when evaluating warranty**  √ Period/duration/scope of cover: The warranty should specify the duration of  time covered.  √ Service agreement/level: The warranty should indicate the type of service to be provided.  √ Cost implication/ liability agreement: Cost sharing between the dealer and the  buyer in the event of any loss or malfunction.  √ Call out response. **(First 3 x 1)** | 2  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 | **Symbols of some keyboard keys:**  C:\Users\Main\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\012.jpg  **4 x ½ = 2 mks** | 2 |
| 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 (First 3 x 1)** | 3 |
| 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 system   1. 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 | 1. As Jayden was entering data into the computer, He typed byocott instead of boycott. 2. Identify the type of error made by Jayden   ***Transposition error* Error @ 1 Mark**   1. Other than using direct data entry devices, two other methods Jayden can use to avoid the error  * *Double entry of data for validation and verification* * *Using error detection and correction software*   Or any other correct response  **Method @ 1 Mark**  **Total = 2 \*1 Mark**  **= 2 Marks** | 1  2 |
| 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 |
|  | **SEQUENCE**  In Sequence control, the computer reads instructions from a program file line-by-line starting from the first line sequentially towards the end of the file. This is called ***Sequential program execution***.  Statement 1  Statement 2  Statement n  Start … End  **SELECTION (DECISION)**  **Selection** involves choosing a specified group of instructions/statements for execution.  In Selection control, one or more statements are usually selected for execution depending on whether the condition given is *True* or *False*.  **ITERATION (LOOPING / REPETITION)**  **Looping** refers to the repeated execution of the same sequence of statements to process individual data. This is normally created by an unconditional branch back to a previous/earlier operation. |  |
|  | **Advantagesof low - level languages**   * **The CPU can easily understand low - level languages without or with little translation** * **The program instructions can be executed by the processor much faster as complex instructions are already broken down into smaller simpler ones** * **They have a closes control over the hardware, are highly efficient and allow direct control of each operation** * **They require less memory space** * **They are stable i.e. do not crash once written** * **Not commonly used, hence can be used to code secret programs**   ***(Each 3correct @ 1mk x 3 = 3mks).*** | 3 |
| (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 consumption  Write 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**  **Set counter =1**  **Set S\_Charge= 200**  **Set Bill =0**  **REPEAT**  **Enter Volume of Water**  **IF Volume >0 and <=10 Then**  **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**  **Consumption =200**  **Else**  **IF Volume >10 and <=20 Then**  **Consumption =350**  **Else**  **IF Volume >20 and <=30**  **Consumption =500**  **Else**  **Consumption =1000**  **End if**  **End if**  **End if**  **Sewerage = 0.2x Consumption**  **Bill = Bill+S\_Charge+Consumption+Sewerage**  **Counter = counter +1**  **UNTIL Counter =12**  **Print Bill**  **Stop** | 7 |
| 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** | 3 |
| 18 | 1. What is the binary equivalent of base 10   **It is the same as 0.34375 Writing the number in decimal =1**  **0.34375 x 2 =0.6875 Multiplying by =1**  **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** | 4 |
|  | b) Decimal equivalent of the number 1.01112?  1 x 20 + 0 x 2-1 + 1 x 2-2 + 1 x 2-3 + 1 x 2-4  1 + 0 + 1 x ¼ + 1 x 1/8 + 1 x 1/16 = 1 + 0.25 + 0.125 + 0.00625  = 1.3812510  **Converting the whole number part=0.5**  **Converting the decimal number part=1**  **Addition =0.5**  **Answer =1** | 3 |
|  | c) Explain four control measures that can be taken to avoid unauthorized access to data in a  Computer system or data. (4 mks)   1. **Restricting access to the computer room**: It is done to ensure that only authorized people to the room 2. **Reinforcing weak access points**: Access points within a room can be the doors, windows, and the roof among others. 3. **Encryption of data transmitted through a network**: This is converting data to a type that only the sender and the receiver are able to understand. 4. **Use of password**: A password is a group of characters , numbers or both that is used to restrict access to a computer or file. 5. **Enforce network security**: In a network sharing of resources should be restricted.   **Award I mark each max 4** | 4 |
|  | List **four** career opportunities in the field of ICT.   * Database administrators * Network managers * Computer technicians * Trainers * System analysts   **Award 0.5 mark each max 2** | 2 |
|  | d) With reference to DTP defined the following terms   1. 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 two 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 2** | 2 |
|  | 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** | 2 |
|  | (iv) Name any two wireless communication devices   * **Access points.** * **Wireless Antennae** * **PCMCIA Card** | 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 |
|  | The Chairman IEBC has called upon a System Analyst to implement an electronic rating system. He intends to use voter’s fingerprints, Identity cards and voter’s cards as security measures to ensure free and fare elections. Recommend with reasons four input devices that they should use/buy.  **- Biometric scanner: It captures biometric details like fingerprints**  **- Digital camera: captures the voters photographs**  **- Keyboard: key in the voters details**  **- Mouse: issue command to the computer.**  **any other relevant input device.**  **Award 1 each max 4** | 4 |
| 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** | 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 |
|  | 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** | 1  1 |
|  | 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. **State three** specifications that should be set in the print dialog box when printing a document (3 marks)    * Number of copies    * Printer name    * Paper size    * Page range (First 3 × 1) | 3 |
|  | g) State two major reasons why organizations are opting for telecommuting.   * ***It saves on the office space and allows workers to work at their convenient times*** * ***It also reduces the office conflicts that may be encountered by staff*** | 2 |