**JOINT MOCK EXAMINATION**

**KENYA CERTIFICATE OF SECONDARY EDUCATION (KCSE)**

**451/1 - COMPUTER STUDIES - PAPER 1**

**(THEORY) – FORM FOUR**

**JUNE 2022 - 2 ½ HOURS**

**NAME: ...................................................... ADM NO.: ........... STREAM .................................**

**INDEX No ………………………………. Date: ……………….. SCHOOL: ……………………**

**Instructions to candidates**

1. Write your Name, Adm No., Stream, Index No., Date and Sign in the spaces provided above
2. The paper consists of two Sections A and B
3. Answer **ALL** questions in **Section A**.
4. Answer Question 16 **(COMPULSORY)** and any other three questions in **Section B**
5. All answers must be written in English
6. The paper consists of 14 printed pages
7. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing

**For examiner’s use only**

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| --- | --- | --- | --- |
| **Section** | **Question** | **Maximum Score** | **Candidate’s Score** |
| A | 1 – 15 | 40 |  |
| B | 16 | 15 |  |
| 17 | 15 |  |
| 18 | 15 |  |
| 19 | 15 |  |
| 20 | 15 |  |
| **TOTAL SCORE** | |  |  |

## © 2022 JOINT EXAMS

## Section A (40 marks)

## Answer all questions in this section on the spaces provided.

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| --- | --- | --- | --- |
| 1 |  | Why must food and beverages be kept out of the computer lab? | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 2 |  | State two key technological developments that occurred during the third generation of computers | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 3 |  | 1. What are toggle keys in relation to keyboards? | ***[1 marks]*** |
| ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………   1. What type of keyboard would you prefer for the following and why? ***[4 marks]***   i) Visually impaired users ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………  ii) Busy restaurant …………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 4 |  | State two differences between buffers and registers ***[4 marks]*** |  |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 5 |  | As a computer expert, you were approached by certain organization to help them secure some computers they require. You were keen at certain considerations based on the knowledge you have in computing. What would the following considerations imply? | ***[3 marks]*** |
| i) Software Authenticity ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………ii) Multi-media capability ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………  iii) Software portability ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 6 |  | During class discussion, a Form One student was asked to present his findings on what Operating Systems perform in a computer. Explain four key points he will address. | ***[4 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………........................................................................................................................................................................................ | | | |
| 7 | a | Differentiate between formula and function as used with spreadsheets. | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 8 | a | When working with database, one required to create relationship among the table structures. What is relationship in database? | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | b | State **three** purpose of establishing relationship among tables. | ***[3 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 9 |  | Most spreadsheets usually accept certain type of data to be entered into the worksheets. Outline four types of these data. | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 10 | a | Outline four benefits of using word processors over manual typewriters | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | b | Differentiate between the following |  |
|  |  | 1. Merging and splitting cells in word processor table | ***[2 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  |  | 1. Data source and main document in mail merge ***[2 marks]*** |  |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 11 |  | Why are system analysts referred to as change agents in an organization? | ***[1 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 12 |  | Why would one defragment his storage media? | ***[1 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 13 |  | What is the meaning of the phrase ‘syntax error’ as used with computer programming? | ***[1 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 14 |  | Why are repeaters necessary when setting up a large network? | ***[1 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
| 15 |  | State one major reason why organizations are opting for telecommuting . | ***[1 marks]*** |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |

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| Section B (60 marks)Answer question 16 and any other three questions | | | |
| 16 | a | State **two** distinct differences between compilers and interpreters. | ***[2 marks]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | b | 1. Outline three demerits of using low level programming languages |  | |
|  |  | …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….. | ***[3 marks]*** | |
|  |  | (ii) Differentiate between monolithic and modular programs | ***[2 marks]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | c | Study the following statements and answer the questions that follow | ***[7 marks]*** | |
| ***Start***  *Initialize x to 3 and y to 4*  *Count = 1*  *While Count <=10*  *Increment x by 1*  *Multiply y by 2 and subtract ½*  *Add x to y to attain z*  *Increase the value of Count by 2*  *Endwhile*  *Print the values for x, y and z*  ***Stop***  i) What does the above statements represents? ***[1 mark]***  ……………………………………………………………………………………………………………..  ii) What is the value for y and z ***[1 mark]*** ………………………………………………………………………………………………………………  ii) Implement the above statements using a program flowchart ***[6 marks]*** | | | |

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| 17 | a | Outline three ways +4 denary can be represented in a computer | ***[3 marks]*** | |
| ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | b | Use one’s compliment to represent -610 in 8-bits formation. | ***[2 marks]*** | |
|  | | | |
|  | c | Briefly explain how data are represented on a floppy disk | ***[2 marks]*** | |
| ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................ | | | |
|  | d | Differentiate between wavelength and frequency of a signal | ***[2 marks]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………......................................................................................................................................................................... | | | |
|  | e | Describe each of the following computer terminologies as used in data representation | ***[4 marks]*** | |
| 1. Word   …………………………………………………………………………………………………………………………………………………………………………………………………………………………   1. Bit   …………………………………………………………………………………………………………………………………………………………………………………………………………………………   1. Byte   …………………………………………………………………………………………………………………………………………………………………………………………………………………………   1. Nibble   ………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | f | Convert 9.62510 to binary | ***[2 marks]*** | |
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| 18 | i | A school intends to network its computers in the computer laboratory. Outline three benefits that this would bring to the lab users | ***[3 marks]*** | |
| …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | ii | 1. What is signal attenuation? | ***[1 mark]*** | |
| .................................................................................................................................................................................................................................................................................................................................................................... | | | |
|  |  | 1. State **three** advantages unbounded media | ***[3 marks]*** | |
| ...................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... | | | |
|  | iii | Network servers run a special type of operating system. State four key functions that this kind of operating system perform | ***[4 marks]*** | |
| …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | iv | International Organization for Standardization, ISO developed Open System Interconnection, OSI reference model to help in developing network protocols. State the first four layers of this model. | ***[4 marks]*** | |
| ........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................ | | | |
| 19 |  | Otieno was tasked with entering marks for a certain exam that was done by an entire class. |  | |
|  | a | State two types of errors he is likely to encounter during this exercise ………………………………………………………………………………………………………………………………………………………………………..……………………………………………………………………………………………………………… | ***[2 marks]*** | |
|  | b | How can the above identified errors be avoided? | ***[1 mark]*** | |
| ........................................................................................................................................................................................................................................................................................................................................ | | | |
|  | c | Other than the errors identified above, list two other errors that can be encountered during data processing | ***[1 mark]*** | |
| ........................................................................................................................................................................................................................................................................................................................................ | | | |
|  | d | 1. A certain research institution had his staff collect data from the field. The collected data are then surrendered to the central location where they are processed as a unit over a period of term. What processing mode is being used?   …………………………………………………………………………………………………………………………………………………………………………………………   1. State one merit of this mode. ***[1 mark]***   …………………………………………………………………………………………… | ***[1 mark]*** | |
|  | e | Describe data integrity. | ***[1 mark]*** | |
| ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | f | There are so many ways that can be used to reduce threat to data integrity. Mention any two | ***[2 mark]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | g | Give the best file organization employed by Magnetic tapes and SD Cards.  ………………………………………………………………………………………………………………………………………………………………………………………… | ***[2 mark]*** | |
|  | h | 1. The school’s LAN is done using UTP cable. List **two** advantages of using this type of cable.   ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………   1. List **two** advantages of using fibre optic cable in networking ***[2 marks]***   …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | ***[2 mark]*** | |
|  | i | Data flows in the school’s LAN in a duplex manner. List **two** other modes of data transmission in a network  ………………………………………………………………………………………………………………………………………………………………………………………… | ***[1 mark]*** | |

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| 20 | a | 1. Outline **three** threats to data stored in a computer | ***[3 mark]*** | |
| ..................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................... | | | |
|  |  | 1. Database design can take several forms depending on the user’s needs. Explain two models that one can use   ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | ***[2 marks]*** | |
|  | b | The following is a spreadsheet relating to a retailer.    If the Tax Rate is applicable to all items listed, write a formula that can be entered in cell E2 and can be copied along the column to get the tax for other items  ………………………………………………………………………………………………………………………………………………………………………………………… | ***[2 marks]*** | |
|  | c | 1. Study the passage below   **Raila Amolo Odinga** (born 7 January 1945) is a Kenyan politician who served as the [Prime Minister of Kenya](https://en.wikipedia.org/wiki/Prime_Minister_of_Kenya) from 2008 to 2013.He is assumed as the [Leader of Opposition](https://en.wikipedia.org/wiki/Leader_of_the_Opposition) in Kenya since 2013 as the [New Constitution of Kenya](https://www.klrc.go.ke/index.php/constitution-of-kenya/124-chapter-eight-the-legislature/part-3-offices-of-parliament/276-108-party-leaders) does not prescribe for such a position. He was the Member of Parliament (MP) for [Langata](https://en.wikipedia.org/wiki/Langata_Constituency" \o "Langata Constituency) from 1992 to 2007. Raila Odinga served in the [Cabinet of Kenya](https://en.wikipedia.org/wiki/Cabinet_of_Kenya) as Minister for Energy from 2001 to 2002, and as the Minister for Roads, Public Works and Housing from 2003 to 2005. Odinga was appointed [High Representative for Infrastructure Development](https://en.wikipedia.org/wiki/African_Union_High_Representative_for_Infrastructure_Development) at the [African Union Commission](https://en.wikipedia.org/wiki/African_Union_Commission) in 2018.  Outline four formatting styles that have been applied to the passage  …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | ***[2 marks]*** | |
|  | d | List **three** career opportunities in the field of ICT. | ***[3 marks]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |
|  | e | Outline **three** services offered on the internet. | ***[3 marks]*** | |
| ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | | | |

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