



THE UNITED REPUBLIC OF TANZANIA  
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY  
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



**CANDIDATES' ITEM RESPONSE ANALYSIS  
REPORT ON THE CERTIFICATE OF SECONDARY  
EDUCATION EXAMINATION (CSEE) 2022**

**INFORMATION AND COMPUTER STUDIES**



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**036 INFORMATION AND COMPUTER STUDIES**

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## TABLE OF CONTENTS

LIST OF ABBREVIATIONS.....	v
1.0 INTRODUCTION .....	1
2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 1 (THEORY).....	2
2.1 Question 1: Multiple Choice Items.....	2
2.2 Question 2: Computer Software .....	7
2.3 Question 3: Computer Handling.....	10
2.4 Question 4: Word Processing .....	12
2.5 Question 5: Computer Networks and Communication.....	16
2.6 Question 6: Spreadsheet .....	20
2.7 Question 7: The Internet .....	25
2.8 Question 8: Desktop Publishing .....	28
2.9 Question 9: Database Management System .....	31
2.10 Question 10: The Computer.....	36
2.11 Question 11: Presentation .....	39
2.12 Question 12: Multimedia .....	44
3.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 2 (PRACTICAL).....	48
3.1 Question 1: Web Development.....	48
3.2 Question 2: Database Management System (DBMS) .....	54
3.3 Question 3: Spreadsheet .....	62
4.0 THE PERFORMANCE OF CANDIDATES IN EACH TOPIC.....	68
5.0 CONCLUSION.....	69
6.0 RECOMMENDATIONS.....	69
Appendix: Analysis of Candidates Performance per Topic .....	70

## FOREWORD

This report presents Candidates' Item Response Analysis (CIRA) on Information and Computer Studies in the Certificate of Secondary Education Examination (CSEE) which was conducted in November 2022. The report aims to provide feedback to all educational stakeholders on the factors that contributed to the candidates' performance in Information and Computer Studies.

The Certificate of Secondary Education Examination (CSEE) is a summative evaluation which intends to provide feedback that teachers, students and other educational stakeholders can use to improve teaching and learning. This analysis shows justification for the candidates' performance in the Information and Computer Studies subject. The candidates who attained high scores had sufficient knowledge of creating simple website, preparation of a presentation, manipulation of database, ability of creating publications, and functions of software. However, the candidates who scored low marks had insufficient knowledge of identifying physical arrangements of computer used in the computer networks, editing and formatting a document typed in Microsoft word and the internet application.

This report will help students to identify strengths and weaknesses for them to improve learning before sitting for their Certificate of Secondary Education Examination (CSEE). The report will also help teachers to identify the challenging areas and take appropriate measures during teaching and learning.

The National Examinations Council of Tanzania (NECTA) expects that the feedback provided in this report will highlight the challenges which education stakeholders should take proper measures to improve teaching and learning the Information and Computer Studies subject. Consequently, students will acquire knowledge, skills and competence indicated in the syllabus for better performance in future examinations.

The Council appreciates the contribution of all those who prepared this report.



Said A. Mohammed  
**EXECUTIVE SECRETARY**

## **LIST OF ABBREVIATIONS**

- ALU – Arithmetic Logical Unit
- CIRA – Candidates’ Item Response Analysis
- CPU – Central Processing Unit
- CSEE – Certificate of Secondary Education Examination
- CU – Control Unit
- DTP – Desktop Publisher
- ICT – Information and Communication Technology
- LAN – Local Area Network
- MAN – Metropolitan Area Network
- OS – Operating System
- PC – Personal Computer
- RAM – Random Access Memory
- ROM - Read Only Memory
- WAN - Wide Area Network

## 1.0 INTRODUCTION

The Information and Computer Studies papers for the year 2022 were set according to the examination format which was developed in accordance with the 2005 Information and Computer Studies syllabus for Ordinary Secondary Education.

The examination had two papers, namely Information and Computer Studies 1 (theory) and Information and Computer Studies 2 (practical). The theory paper had three sections: A, B and C. Section A consisted of two objective questions. The first question was a multiple choice question with ten items weighing one mark each. The second one was a matching items containing five premises, each carrying one mark. Section B had eight short answer questions, including seven questions with 10 marks each, and one question with five marks. All questions in sections A and B were compulsory. Section C had two optional essay questions. The candidates were required to attempt only one question. The practical paper had three questions with 25 marks each. The candidates were required to attempt any two questions.

In 2022, a total of 3,067 candidates sat for the Information and Computer Studies examination. Out of these candidates, 2,805 (91.5%) passed and 262 (8.5%) failed. In 2021 a total of 2,696 candidates sat for this examination. Of these candidates, 2,525 (93.7%) passed and 175 (6.3%) failed. This implies that the performance in 2022 has decreased by 2.2 per cent compared to that of 2021.

The candidates' performance in each question/topic is considered good, average or weak if the percentage of the candidates who scored 30 per cent or more of the marks allocated for the question falls in the intervals 0 to 29, 30 to 64 and 65 to 100 respectively. In this report, the candidates' performances are also presented in form of charts with red, yellow and green colours which stand for weak, average and good performances respectively.

The analysis highlights question demands, what the candidates wrote, the mistakes they made while attempting the questions and the factors which contributed to their weak, average or good performance. Furthermore, extracts of responses from candidates' scripts are used to illustrate the

arguments given about the candidates' performance. Finally, the report presents conclusions and recommendations.

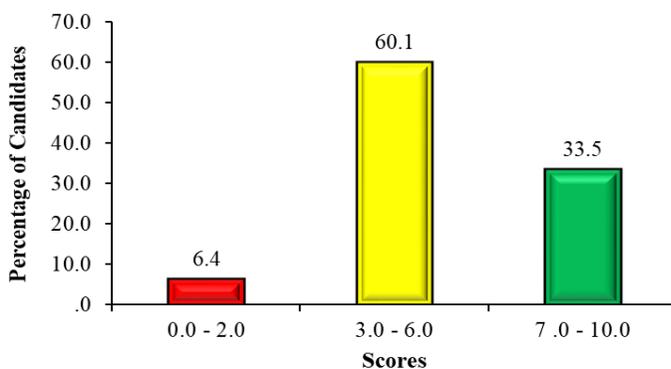
## 2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 1 (THEORY)

The theory paper had three sections: A, B and C. Section A had two objective questions. The first question consisted of 10 multiple choice items with one mark each. The second was a matching item containing five premises each carrying one mark. Section B had eight short-answer questions. Seven questions had 10 marks each and one question had five marks. All questions in sections A and B were compulsory. Section C had two essay questions. The candidates were required to attempt only one question.

### 2.1 Question 1: Multiple Choice Items

The question consisted of ten (10) multiple choice items which were composed from eight topics. The topics were *Computer Evolution, Database as Information System, Computer Networks and Communication, The Computer, Web Development, Word Processing, Presentation and Multimedia*. The candidates had to choose the correct answer out of the five alternatives (A – E) given.

All 3,067 (100%) candidates attempted this question, out of which 196 (6.4%) scored from 0 to 2 marks, 1,843 (60.1%) scored from 3 to 6 marks whereas 1,028 (33.5%) scored from 7 to 10 marks. The candidates' performance in this question was generally good as 93.6 per cent of the candidates scored above 2 marks as shown in Figure 1.



**Figure 1:** *The candidates' performance in question 1*

The following analysis shows the candidates' responses to each item in this question:

Item (i): *Which device is used to connect home computers to the internet?*

- A Router      B Gateway      C Switch  
D Hub          E Modem

The item tested the candidates' knowledge of using internet at home. The correct answer was E, *Modem*. The candidates who scored zero chose other alternatives which were wrong. Options A, *Router* and B, *Gateway* interconnects different networks and directs the transfer of data packets from source to destination. Other candidates selected alternatives C, *Switch* and D, *Hub* which were also wrong because they are used to connect computer to one network but not to the internet.

Item (ii): *Joha wants to buy a computer for her new secretarial office. What is she supposed to consider in selecting the computer?*

- A UPS durability      B CPU speed      C Monitor speed  
D RAM type          E Screen shape

The item tested candidates' knowledge of identifying the criteria for selecting the computer. The correct answer was B, *CPU speed* because the processor, also known as the CPU, provides the instructions and processing power the computer needs to do its work. A few candidates selected alternative A, *UPS durability* which help in backing up the power to computer in case of power failure. It is thus not related with the criteria for selecting a new computer. Alternative C, *Monitor speed* was also wrong because the monitor speed depends on the CPU speed. Moreover, the analysis showed that most of the candidates selected alternative D, *RAM type* which was not correct because RAM depends on storage capacity and not its type. Lastly, option E, *Screen shape* was also wrong because a good computer depends on the type of screens not its shape.

Item (iii): *What is the difference between “form” and “report” in database?*

- A *Report is an output while form is an input object*
- B *Report has header while form has footer*
- C *Report is an input while form is an output object*
- D *Report can be printed while form cannot be printed*
- E *Report has footer while form has header*

This item tested the candidates’ knowledge of distinguishing database objects “form” from “report”. The correct answer was A, *Report is an output while form is an input object*. Most of the candidates attempted this item correctly. Other candidates confused the concept of “report” with “form” by selecting option C, *Report is an input while form is an output object*. Moreover, some of the candidates selected option D, *Report can be printed while form cannot be printed*. These candidates did not know that a form is used to enter data in a database table while a report displays the information entered in a table but, both can be printed. This shows that the candidates had insufficient knowledge of creating database.

Item (iv): *Why Charles Babbage is considered to be a forefather of computer?*

- A *He was a founder of analytical engine*
- B *He was a founder of Napier’s bones*
- C *He introduced tabulating machine*
- D *He discovered ENIAC*
- E *He created punching cards*

This item tested the candidates’ knowledge of computer evolution. The correct answer was A, *He was a founder of analytical engine*. Majority of the candidates selected alternative B, *He was a founder of Napier’s bones*. These candidates failed to differentiate between John Napier who is a founder of Napier’s bones and Charles Babbage. Other candidates selected alternative D, *He discovered ENIAC*. These candidates failed to recall that ENIAC is an example of first generation computer which was discovered by different people, not a single person.

Item (v): Which one is the correct syntax for creating a link on a web page in HTML?

- A <LINK SRC = "abd.html">      B <A HREF = "abd.html">  
C <BODY LINK = "abd.html">      D <A SRC = "abd.html">  
E <LINK IMG = "abd.html">

This item tested the candidates' knowledge of creating link on a web page using HTML code. The correct answer was B, <A HREF = "abd.html">. Most of the candidates attempted this question correctly. However, some of them failed as they selected options, A, <LINK SRC= "abd.html">; C, <BODY LINK = "abd.html"> or E, <LINK IMG = "abd.html">. The candidates who chose these options were attracted by the term "link" used in the stem. This shows that these candidates had insufficient knowledge of HTML codes.

Item (vi): How are the commands  and  used in Microsoft word?

- A To decrease and increase indent      B To minimize and decrease indent  
C To reduce and raise indent      D To raise and reduce indent  
E To maximize and increase indent

This item tested the candidates' skills on formatting the documents typed in Microsoft word. The correct answer was A, To decrease and increase indent. The analysis showed that some of the candidates chose options C, To reduce and raise indent and D, To raise and reduce indent which were not correct. These candidates failed to differentiate the term "reduce and decrease" from "raise and increase". Other candidates selected option, B, To minimize and decrease indent and E, To maximize and increase indent. These candidates failed to understand that maximizing and minimizing involve increasing and decreasing the size of the shape while indenting means increasing and decreasing the space.

Item (vii): The type of computer which is used for prediction of the weather conditions worldwide is called

- A laptop computer      B supercomputer      C mainframe computer  
D microcomputer      E minicomputer

This item tested the candidates' knowledge of types of computer and their uses. The correct answer was B, *Supercomputer*. Most of the candidate who got it wrong selected option C, *Mainframe computer*. These candidates failed to understand that mainframe computer is mostly used in large businesses as a network server. Others selected option E, *minicomputer* which was wrong because it is mainly used to automate processes in manufacturing industries on the production line. In addition, other candidates who selected option D, *microcomputer* these candidates were also wrong because these are smaller and cheap computers such as laptops and desktop computers which cannot be used to predict weather condition.

Item (viii): *Which of the following are the types of computers according to their functionality?*

- A *Digital and analog computers*
- B *Supercomputer and minicomputers*
- C *Hybrid and microcomputers*
- D *Analog and special purpose computers*
- E *Digital and general purpose computers*

This item tested the candidates' knowledge of computer types according to their functionality. The correct answer was A, *Digital and analog computers*. Most of the candidates attempted this question correctly. It was noted that some of the candidates chose option B, *Supercomputer and minicomputers* which were not correct because these are classified according to their physical size and not their function or performance. Other candidates selected option D, *Analog and special purpose computers* and E, *Digital and general purpose computers* which were also wrong. This shows that the candidates failed to distinguish different types of the computers according to their functionality and purpose.

Item (ix): *A type of multimedia which contains animations, sound and video elements is known as*

- A *hypertext*
- B *hypermedia*
- C *hyperlink*
- D *mixed media*
- E *visual media*

This item tested the candidates' knowledge of different types of multimedia. The correct answer was B, *Hypermedia*. The candidates who selected alternative A, *hypertext* were not correct because hypertext is the

standard used to connect the resources to the particular website. On the other hand, the candidates who selected C, *hyperlink* failed to understand that hyperlink refers to links which connect a person from one website to another. Furthermore, the candidates who selected options D, *Mixed media* and E, *Visual media* were not correct because these two terms are not types of multimedia.

Item (x): *Which Microsoft PowerPoint document views allow a user to change the position of slides?*

- A *Slide show and normal/slide view*
- B *Outline and slide show*
- C *Outline and slide sorter*
- D *Slide sorter and normal/slide view*
- E *Outline and normal/slide view*

This item tested the candidates' knowledge of identifying functions of different Microsoft PowerPoint document views. The correct answer was D, *Slide sorter and normal/slide view*. Some of the candidates selected option A, *Slide show and normal slide view* which were wrong because they are used to display the slides during presentation. Moreover, other candidates selected options B, *Outline and slide show*; C, *Outline and slide show* and E, *Outline and normal/slide view* which were also not correct because outline view is responsible for slide editing and not for changing the position of slides.

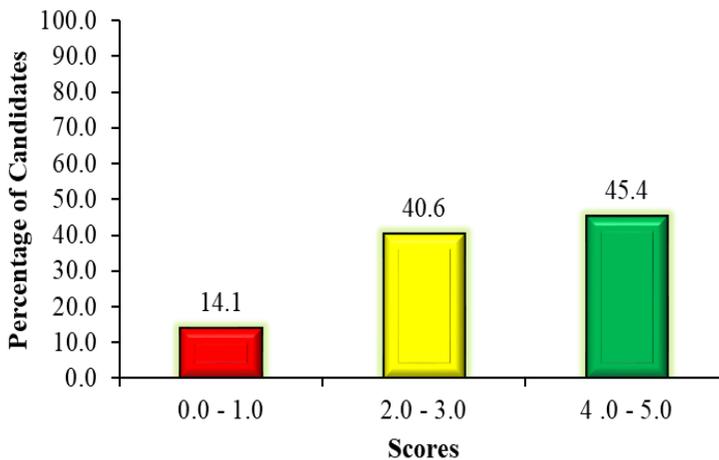
## 2.2 Question 2: Computer Software

In this question, the candidates were required to match the functions of software in **List A** with their corresponding names in **List B** by writing the letter of the correct response beside the item number in the answer booklet provided. The question intended to assess the candidates' ability to identify the functions of different software.

<b>List A</b>	<b>List B</b>
(i) A special program that makes certain services of computing goes on smoothly.	A Operating system B Malware
(ii) A set of complex program that manages input, output and storage operations in a	C Application software

computer.	D Open source software
(iii) A program that is designed to help a user to accomplish specific tasks.	E Firmware
(iv) A type of software which is used to establish communication between two or more computers.	F Utility software
(v) A type of system software which is recorded permanently on an electronic chip.	G Storage software
	H Networking software

A total of 3,067 (100%) candidates attempted this question, out of whom 431 (14.1%) scored from 0 to 1 mark, 1,245 (40.6%) scored from 2 to 3 marks and 1,391 (45.4%) scored from 4 to 5 marks out of 5 marks. Figure 2 presents the candidates' performance in this question.



**Figure 2:** *The candidates' performance in question 2*

The general performance in this question was good since 86 per cent of the candidates scored more than 1 mark. This performance implies that the candidates had sufficient knowledge about the functions of software. A few candidates who scored low marks failed to respond correctly to most of the items. The candidates' responses to each item in this question are analysed as follows:

Item (i) required the candidates to identify a special program that makes certain services of computing go smoothly. The correct answer was F, *Utility software*. Some of the candidates selected option A, *Operating system*. Because both operating system and utility software are examples of system software, therefore, these candidates failed to differentiate them. Other candidates selected option E, *Firmware*. The candidates failed to understand that firmware is the type of system software which is recorded permanently on an electronic chip.

Item (ii) required the candidates to identify a set of complex programs that manage input, output and storage operations in a computer. The correct answer was A, *Operating system*. Most of the candidates answered this question correctly. However, some of the candidates selected option F, *Utility software*. These candidates confused the function of operating system with utility software. Other candidates selected option B, *Malware*. These candidates did not understand that malware presents malicious software such as virus, Trojan horses and spyware which usually affect smooth running of the computer system. Moreover, other candidates chose option G, *Storage software*. The candidates misconceived the term “storage” as used in the premises.

Item (iii) required the candidates to identify a program that is designed to help a user to accomplish a specific task. The correct response was C, *Application software*. The analysis shows that most of the candidates managed to attempt this question correctly. However, some candidates selected alternative B, *Malware* which is the short form of malicious software. This indicates that the candidates failed to differentiate between application software and malware.

Item (iv) required the candidates to identify the type of software which is used to establish communication between two or more computers. The correct response was H, *Networking software*. Most of the candidates attempted wrongly by selecting option D, *Open source software* which is the type of free software that anyone can use, modify and re-distribute. Other candidates chose option B, *Malware*, which was also wrong. This

shows that the candidates did not understand the meaning of the term malware.

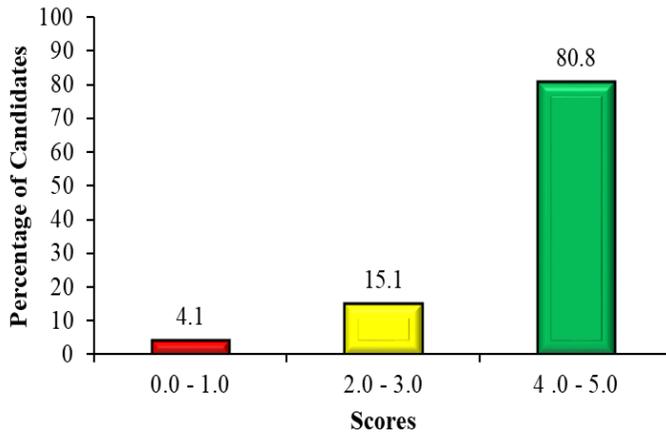
Item (v) required the candidates to identify the type of system software which is recorded permanently on an electronic chip. The correct answer was E, *Firmware*. The analysis showed that majority of the candidates selected option G, *Storage software*. This option attracted the candidates due to the presence of the term “recorded” used in the premise. On the other hand, some of the candidates selected option F, *Utility software*. These candidates failed to understand that both utility software and firmware are system software but they perform different activities.

### 2.3 Question 3: Computer Handling

The question consisted of five (5) jumbled sentences describing the steps required to create backup of data stored in a computer Local Disk (C:). The candidates were required to re-arrange the given sentences in a sequential order beginning with the first step to the last step. The question intended to assess the candidates’ ability to create backup. The following steps were given.

- A Click tools and then click backup now.
- B In the properties dialog box, click tools.
- C In my computer window, right click the Local Disk (C:).
- D From the shortcut menu, click properties.
- E Open my computer.

The statistics show that all 3,067 (100%) candidates attempted this question. Out of these, 126 (4.1%) scored from 0 to 1 mark, 463 (15.1%) scored from 2 to 3 marks and 2,478 (80.8%) scored from 4 to 5 marks. Generally, the candidates’ performance in this question was good because 95.9 per cent scored above 1 mark. Figure 3 presents the candidates' performance in this question.



**Figure 3:** *The candidates' performance in question 3*

The analysis of the candidates' responses revealed that majority of the candidates (80.8%) arranged correctly the steps required for creating backup of data stored in a computer. Majority of these candidates recognized that the first step was indicated by letter E, *Open my computer* followed by step C, *In my computer window, right click the Local Disk (C:)*, D, *From the shortcut menu, click properties*, B, *In the properties dialog box, click tools* and A, *Click tools and then click backup now*. However, some of the candidates interchanged the second steps C, *In my computer window, right-click the Local Disk (C:)* with the fourth step B, *In the properties dialog box, click tools*. The candidates did not know that the properties dialog box is obtained within my computer window. This shows that, the candidates had insufficient knowledge of data backup.

Although the performance of the candidates in this question was generally good, some candidates (4.1%) scored low marks since they failed to arrange the steps for creating backup in sequence. Most of them interchanged the first step E, *Open my computer* and last step A, *Clicks tools and then click backup now*. Other candidates interchanged the second step C, *In my computer window, right click the Local Disk (C:)* with the third step D, *From the shortcut menu, click properties*. Moreover, some of the candidates failed to differentiate the third step D, *From the shortcut menu, click properties* from the fourth step B, *In the properties dialog box,*

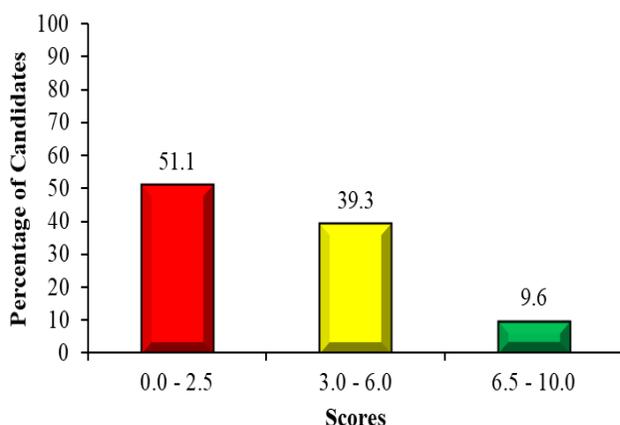
*click tools*. This shows that the candidates had insufficient knowledge of creating back up data stored in a computer Local Disk (C:).

## 2.4 Question 4: Word Processing

The question was as follows:

- (a) Joshua has a problem when typing. Every time he wishes to type the word "Goods", he mistakenly types "Gods". How can he assure himself that he has written the word Goods correctly without reading the whole document?
- (b) Explain the procedures of inserting "page number" and "header and footers" into a Microsoft word document. Give the importance of each.

The question was attempted by 3,067 (100%) candidates, out of which 1,567 (51.1%) scored from 0 to 2.5 marks, 1,205 (39.3%) candidates scored from 3.0 to 6.0 marks and 295 (9.6%) candidates scored from 6.5 to 10 marks. Generally, this question had an average performance because 48.9 per cent of the candidates scored above 2.5 marks. Figure 4 presents the candidates' performance in this question.



**Figure 4:** *The candidates' performance in question 4*

The statistics reveal that 51.1 per cent of the candidates scored low marks. The analysis of the candidates response showed that majority of the candidates faced difficulties in identifying features that can be used to correct the word "Gods" typed mistakenly in part (a). Some candidates explained the use of spelling and grammer checker instead of "Autocorrect" or "Find and Replace" features. These candidates failed to

differentiate the function of “spelling and grammar checker” on the one hand from “Autocorrect or Find and Replace” on the other hand. The features identified were inappropriate because there is no spelling issue in the word "Gods". Other candidates wrote *thesaurus* which is the program for listing synonyms and antonyms of words, not for correcting words. Moreover, some of the candidates wrote manual instead of automatic features. For example, one candidate wrote, *He can correct the word through reading the document and typing the correct word carefully.*

Moreover, in part (b), most of the candidates combined the steps for inserting “page number” and “header and footer” contrary to the requirement of the question. For example, some of the candidates wrote *insert page number, Click header or footer.* However, some candidates wrote correctly two or three steps for inserting page number but could not give the correct steps for inserting header and footer. Furthermore, most of the candidates could not write the importance of inserting “page number” and “header and footers”. It was observed that some candidates wrote the importance of word processor instead of inserting the given features. Others wrote the steps of opening computer. This shows that the candidates had insufficient knowledge about word processing. Extract 4.1 presents a sample of such incorrect responses.

4.	<p>(a) Joshua he can assure himself that he has written the word <i>Goods</i> correctly without reading the whole document? is <i>Spelling and Grammar checker</i>.</p> <p><i>Spelling and grammar checker; is the process of checking whether the spelling are well written.</i></p>
	<p>(b) <i>Procedures used in inserting "page number".</i></p> <ol style="list-style-type: none"> <li>①. <i>Highlight the text</i></li> <li>②. <i>Go to the tool bar</i></li> <li>③. <i>Click tool bar</i></li> <li>④. <i>Select page number you want.</i></li> <li>⑤. <i>Click OK.</i></li> </ol> <p><i>Importances of inserting "page number"</i>  → <i>Early identify number of pages written in a script work.</i></p> <p><i>Procedures used in inserting "header and footer"</i></p> <ol style="list-style-type: none"> <li>①. <i>Highlight the document.</i></li> <li>②. <i>Go to the menu bar.</i></li> <li>③. <i>Click properties then tools.</i></li> <li>④. <i>Click header and footer tab.</i></li> <li>⑤. <i>Click OK.</i></li> </ol> <p><i>Importances of inserting "page (header and footer)"</i>  → <i>so as can easily know the individual ownership.</i></p>

Extract 4.1: A sample of the candidate's incorrect responses to question 4

Extract 4.1 presents the response of the candidates who wrote *grammar checker* which was wrong because it cannot correct the misspelled word "Goods" in part (a). In part (b), the candidate listed unclear steps for inserting "page number" and "header and footer" and their respective importance.

Further analysis showed that most of the candidates (39.3%) who scored average marks described correctly how to correct the word "Goods" in part (a). However, some of the candidates mentioned spelling and grammar checker as the means to correct the word "Goods" to "Goods". In part (b), some of the candidates listed the correct steps of inserting page number but others faced difficulties in giving steps for inserting header and footer and their importance. For example, one candidate wrote *Header and footer helps to save time* while some candidates explained header as a title and

*footer as a conclusion.* This signifies that the candidates had insufficient knowledge of the application of word processing.

Moreover, a few candidates (9.6%) who scored high marks correctly explained how to correct the word “Gods” to “Goods” in part (a). Most of them wrote correctly procedures for inserting “page number” and “header and footers” in part (b). Some of them wrote steps of clicking “page layout” instead of “inserting” menu to find “page number” and “header and footers”. Other candidates wrote the importance of only one feature. This led them to lose some marks. Extract 4.2 presents a sample of such correct responses.

04	<p>cas Joshua can enable Autocorrect and Autotext editing feature.</p> <p>(b) Page Number:</p> <ol style="list-style-type: none"> <li>i) Open the Microsoft Word Document</li> <li>ii) On the menu bar, select "insert"</li> <li>iii) Select "page number" on the toolbar</li> <li>iv) Modify and format the page number</li> <li>v) Click "ok" when finished.</li> </ol> <p>Header and footer:</p> <ol style="list-style-type: none"> <li>i) Open the Microsoft Word Document</li> <li>ii) On the menu bar, select "insert"</li> <li>iii) Select "Header and footer" on the toolbar</li> <li>iv) Modify, format and enter the respective headers and footers</li> <li>v) Click "ok" when finished.</li> </ol> <ul style="list-style-type: none"> <li>• Page Number is important to allow the reader to know how many pages the document has, what page certain information is found and also for future reference purposes. For example, page number in books.</li> <li>• Headers and footers are important in displaying essential information consistently throughout the document or for decorative purposes. For example, "CSE 2022" footer in examination documents.</li> </ul>
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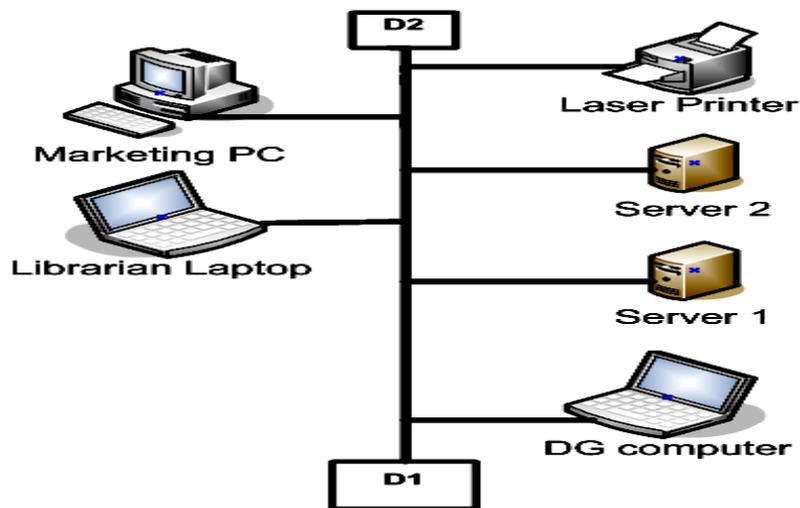
Extract 4.2: A sample of the candidate’s correct responses to question 4

Extract 4.2 shows the response of a candidate who explained correctly the method to correct the word “Gods” to “Goods” in part (a). In part (b), the candidate wrote correct steps to insert “page number” and “header and footers”. The candidates also explained the importance of each feature correctly.

## 2.5 Question 5: Computer Networks and Communication

This question tested the candidates’ ability to identify physical arrangements of computer used in computer networks. The question was as follows:

Study carefully Figure 1 and then answer the questions that follow:

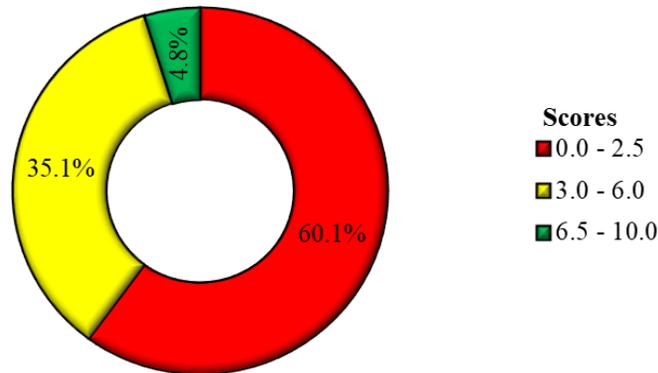


**Figure 1**

- What is the type of the network presented in Figure 1? Explain three disadvantages of using this kind of network.
- Which device should be connected at D2? Give one importance of this device.
- What will happen when a cable between the printer and marketing PC breaks?

The analysis of the candidates’ performance showed that out of 3,067 (100%) candidates who attempted this question, 1,843 (60.1%) scored from 0 to 2.5 marks, including 334 (10.9%) who scored 0 out of 10 marks

allocated. A total of 1,077 (35.1%) candidates scored from 3 to 6 marks, whereas 147 (4.8%) scored from 6.5 to 10 marks, as shown in Figure 5. Generally, this question had an average performance because 39.9 per cent of the candidates scored above 2.5 marks.



**Figure 5:** *The candidates' performance in question 5*

The analysis of candidates responses show that most of the candidates (60.1%) who performed low marks failed to identify the appropriate network presented in the figure presented in part (a). Some candidates failed to differentiate between types of network and physical arrangement of computer (topology). For example, some candidates identified the types of network such as *LAN, MAN* and *WAN* instead of *Bus network topology*. In addition, some of them had an idea of network topology but could not differentiate the structure of Bus topology from other types of network topology. For example, some of the candidates wrote *tree* and *mesh* topology. The candidates failure to identify the appropriate topology resulted in giving incorrect disadvantages of using network. In part (b), some of the candidates could not identify the device connected at D2; some of them wrote a *server* instead of a terminator. These candidates also wrote the importance of a server instead of terminator. For example, one candidate wrote *server provides services to clients*. Other candidates wrote *coaxial cable* and explained its importance. In part (c), some of the candidates explained correctly what would happen if a cable between a printer and marketing PC breaks. However, other candidates wrote irrelevant explanations. For example, one candidate wrote *If the cable between printer and market PC break the power will went off*. This showed that the

candidate could not differentiate electrical cable from the network cable. Extract 5.1 presents a sample of such incorrect responses.

5)	a) It is a bus topology network. The disadvantages are: - When one computer device fails <del>all the</del> the others functioning will be disturbed. - It is complex in connecting the devices due to the design or arrangement of the network - Difficult to install and remove devices on the network without disturbing the connections of the other devices.
	b) Uninterrupted Power Supply (UPS) - It will give more time, when power goes off, for users to save their data.
	c) The other remaining components will function but the marketing PC and printer will not function.

Extract 5.1: A sample of the candidate's incorrect responses to question 5

Extract 5.1 is the response of the candidate who managed to identify the given type of network but failed to state its disadvantages in part (a). In part (b), the candidate could not differentiate a UPS from a terminator. In part (c), the candidate explained that the marketing printer will not function instead of stating that the whole network will go down when a cable between a printer and marketing PC breaks.

On the other hand, 35.1 per cent of the candidates scored average marks. Majority of the candidates correctly identified the network presented in the given figure but failed to explain its disadvantages in part (a). Some of them wrote correctly only one or two disadvantage of the Bus topology. This implies that the candidates had partial understanding of networking. In part (b), most of the candidates identified the communication devices and

explained their importance. For example, some of the candidates wrote *switch: The device used to connect other devices, router connects different networks and hub connects devices in the same network*. In addition, some of the candidates wrote correctly the name of the device connected at D2 but failed to give its importance. In part (c), most of the candidates correctly explained what would happen when a cable breaks.

Furthermore, 4.8 per cent of the candidates who scored high marks answered correctly parts (a), (b) and (c). However, some of the candidate failed to state one disadvantage of using bus network topology in part (a). Other candidates managed to identify the device D2 but gave a wrong importance of the device. For example, one candidate wrote *terminator allows transmission of resources from one device to another*. This candidate wrote the importance of a main cable instead of a terminator. Extract 5.2 presents a sample of such correct responses.

5.	Q Bus topology:
	Disadvantage.
	• <u>Damage of a cable can isolate the computer.</u>
	This is where by when a cable break other computer can't work.
	• <u>The increase of devices can slow down the network.</u>
	When can use many devices the more of network can be slow.
	• <u>It cover a small area.</u>
	This can not be used in large place like city so it can be used in school
	Q Terminator - Importance -
	- It used to store the flow of signal do not loose
	- It contains signal which flow to all devices
	Q <u>It can isolate the computer.</u>
	Because these transfer signal in series so when a
	cable break other devices can not work or performing

Extract 5.2: A sample of the candidate's correct responses to question 5

The responses of a candidate provided in Extract 5.2 shows that the candidate managed to identify the given type of network and to explain its disadvantage in part (a). In part (b), the candidate identified correctly device D2 and explained its importance. Moreover, the candidate explained clearly what would happen if a cable between printer and marketing PC breaks in part (c).

## 2.6 Question 6: Spreadsheet

This question had five parts: (a), (b), (c), (d) and (e). The question was as follows:

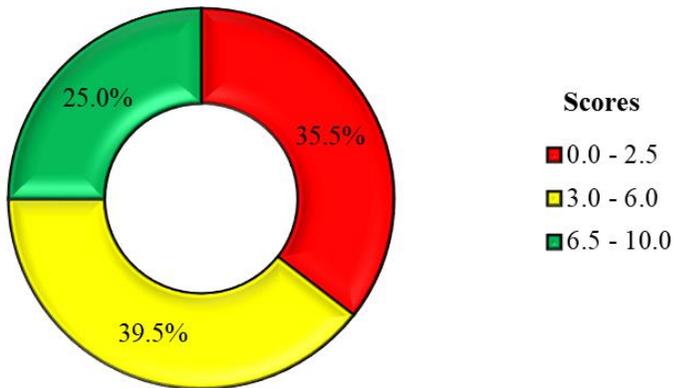
In a survey conducted on the flood which occurred in Tanzania in 2018, a worksheet was designed to record the height of flood as reported from different places around the country. The data is entered in the following worksheet. Study the following worksheet and then answer the questions that follow:

	A	B	C	D
1	<b>Tanzania Floods in 2018</b>			
2	<b>Sites</b>	<b>Floods Height (cm)</b>	<b>Damage</b>	<b>Lives Loss</b>
3	Kigogo	600	Yes	
4	Msimbazi	650	Yes	
5	Kitunda	500	Yes	
6	Tegeta	400	Yes	
7	Wazo	350	Yes	
8	Liwale	59	No	
9	Mbeya	45	No	

- What are the cell references of Sites, Floods Height, Damage and Lives Loss? Give the name of the formatting done in row 1.
- It was noted that the flood with a height of 200 cm or above had caused the loss of lives. Write an IF function to be used in cell D3 which will display “Yes” or “No” according to the given flood height.
- Which function can you apply to find the number of sites surveyed?

- (d) Suppose you are required to generate a pie chart that displays the names of the site and the floods heights, which steps would you follow to generate the pie chart?
- (e) If the value in cell B4 is to be changed to 115, how many cells altogether will change?

All 3,067 (100%) candidates attempted this question, out of whom 1,088 (35.5%) scored from 0 to 2.5 marks, 1,211 (39.5%) scored from 3 to 6 marks and 768 (25%) scored from 6.5 to 10 marks. The general performance in this question was good because 65 per cent of the candidates scored above 2.5 marks. Figure 6 presents the candidates' performance in this question.



**Figure 6:** *The Candidates' Performance in Question 6*

The analysis of data revealed that majority of the candidates (39.5%) who scored average marks gave correct names of cell references in part (a). However, some of the candidates failed to give the correct formatting done in row 1. Some of them wrote *wrap text* feature instead of merge and centre. In part (b), some of the candidates gave the correct condition function applied in cell D3 that displays “Yes” or “No” damage according to the given flood height. The candidates who wrote wrong function lacked the knowledge of syntax and cell reference of the function. For example, some candidates wrote `=height of flood >= 200cm “Yes”, if(height of flood <= 200 “No”)`. These candidates failed to identify the cell reference of the height of flood. In part (c), most of the candidates gave the function that

computes the summation of sites instead of counting them. For example, some candidates wrote  $=SUM(A3:A9)$  instead of  $=COUNT(A3:A9)$ . Other candidates wrote  $=TOTAL(A3:A9)$ . These candidates were supposed to understand that the function cannot compute the data entered in the first column because they are labels (texts). In part (d), most of the candidates wrote correct steps of generating pie chart. However, some of the candidates failed to arrange steps in sequential order. For example, some of the candidates wrote the step of *clicking insert menu* before selecting *Floods Height column*. In part (e), some of the candidates wrote the required number of cells to be changed after changing the value entered in cell B4. Moreover, other candidates listed cells B4, C4 and D4 instead of counting the number of cells. This implies that the candidates did not understand the requirement of the question.

On the other hand, most of the candidates (35.5%) who scored low marks failed to identify the name of cell references for given titles in part (a). They also gave a wrong name of the formatting feature applied in row 1. Some of the candidates wrote the name of the title instead of the formatting feature. For example, some of the candidates wrote *Tanzania Floods in 2018*. In part (b), most of the candidates lacked the knowledge of syntax of function, as a result they gave the incomplete or irrelevant function. For example, one candidate wrote  $=(A3:D4)$ . In part (c), some candidates wrote the correct range of cells with incorrect function name. For example, some candidates wrote  $SUM=(A3:A9)$  as the function of counting of sites surveyed instead of  $=COUNT(A3:A9)$ . In part (d), most of the candidates wrote the steps for inserting a circle shape instead of generating pie charts. This indicates that the candidates lacked practical skills of using spreadsheet. Furthermore, a few candidates wrote correctly only one step of inserting pie chart. The step provided by these candidates was *click insert*. In part (e), most of the candidates wrote four which was the number of columns in the worksheet provided instead of two cells that will change after changing the value entered in cell B4. Extract 6.1 shows a sample of incorrect responses from one of the candidates.

06	(a). The name of the formatting done in row 1 is Merge Cell. The cell reference of sites, Flood Height, Damage and lives loss are
	(b). IF function to be used in cell D3 which will display "Yes" or "No"
	$= (IF B3:D3 \geq 200 "Yes", (IF B3:D3 \leq 200 "No"))$ .
	(c).
	(i). click "Cell" in the menu bar then
	(ii) Choose charts. The table will appear.
	(iii) On the table appear select pie chart
	(iv). In pie chart there the place of writings formula of things you want to display then
	(v) click next
	(vi). Select the sheet you want our work to appear.
	<del>(vii) then click finish. save the</del>
	(viii) then click finish
	(ix) click save.
	(e). The value in cell B4 changed to 115 One cell in Damage will change to be No which are C4

Extract 6.1: A sample of the candidate's incorrect responses to question 6

In extract 6.1, the candidate managed to identify the formatting feature applied in row 1 but failed to identify cell references in part (a). In part (b), the candidate gave a wrong syntax of the function. The candidate also gave a wrong answer to part (e).

On the other hand, 25 per cent of the candidates scored high marks. Some of these candidates wrote correctly cell references of sites, floods height, damage and lives loss in part (a). They also managed to give the correct name of the formatting done in row 1. Some of the candidates had an idea of the merge feature but failed to identify the center feature. In part (b),

most of the candidates wrote the correct function required to display “Yes” or “No”. However, some of the candidates wrote the function without including an equal sign. Other candidates lacked mathematical skills, consequently they failed to distinguish a greater than sign “>” from “>=” sign. In part (c), most of the candidates wrote the correct function that counts the number of sites. However, some of the candidates did not include an equal sign in the function provided. Other candidates wrote “=COUNTIF(A3: A9)” instead of =COUNT(A3:A9). The candidates failed to understand that the function COUNTIF( ) counts data within the worksheet under a certain condition. In part (d), majority of the candidates gave the correct steps of generating a pie chart. In part (e), most of the candidates were able to state number of cell which will change after changing the value entered in cell B4. However, some candidates counted cell B4, C4 and D4 as the number of cell that will change, thus they wrote 3 instead of 2. These candidates were supposed to know that cell C4 cannot be affected by changing the value entered in B4. Extract 6.2 provides a sample of correct responses.

6.a,	Cell references of sites is A2, of Floods Height is B2 and of Damage is C2 and of Lives Loss is D2. - Formatting done in row 1 is merge cells
6.b,	The function is =IF(B3>=200,"Yes",IF(B3<200,"No"))
6.c,	The function is =COUNT(A3:A9)
6.d,	- first highlight the sites and Floods Height (cm) columns - In the menu bar, click charts and graphs - Then select a pie chart that you want (3D-pie chart or plane pie chart) - After that pie chart will appear on the worksheet and you can enlarge it or drag it using mouse anyhow you want
6.e,	Two cells altogether will change which are C4 or D4

Extract 6.2: A sample of the candidate’s correct responses to question 6

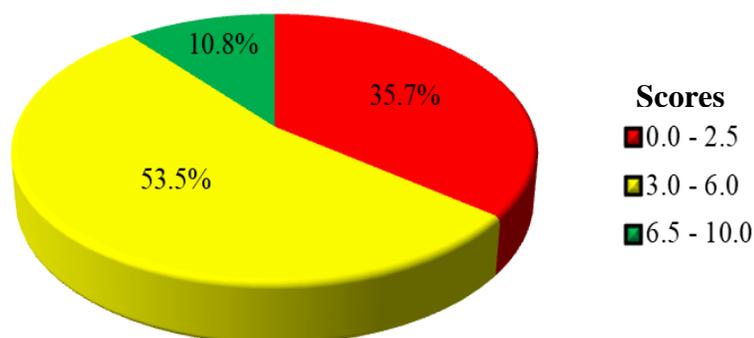
Extract 6.2 shows the response of a candidate who correctly identified cell references but failed to identify the features required to format row 1 in part (a). The candidates also answered correctly parts (b), (c), (d) and (e).

## 2.7 Question 7: The Internet

This question had two parts: (a) and (b). The candidates were required to answer the following question:

- (a) What is search engine as used in ICT?
- (b) Email is one of the methods used to spread viruses. Briefly explain other four limitations of using email as a means of communication.

The candidates who attempted this question were 3,067 (100%), of whom 1,094 (35.7%) scored from 0 and 2.5 marks, 1,641 (53.5%) scored from 3 to 6 marks, and 332(10.8%) scored from 6.5 to 10 marks. The general performance in this question was average because 64.3 per cent of the candidates scored above 2.5 marks. Figure 7 presents the candidates' performance in this question.



**Figure 7:** The candidates' performance in question 7

The analysis shows that majority of the candidates (53.5%) who scored average marks wrote correctly the meaning of search engine in part (a). Other candidates gave unclear explanations because they lacked knowledge of key terminologies. For example, one candidate wrote *Search engine is an area in a computer where a user can easily search for any information on the internet*. This candidate did not understand that a search engine is not an area but it is software. It was further noted that some of the candidates failed to relate search engine with the internet in their explanations. In part (b), most of the candidates wrote the disadvantages of

search engine instead of limitations of using email. For example, one candidate wrote *E-mail consumes a lot of time*. Such the candidates confused between limitations and disadvantages of using e-mail. However, some candidates wrote correctly one or two limitations of using email.

Furthermore, some of the candidates (35.7%) had weak performance as they scored from 0 to 2.5 marks. In part (a), most of the candidates in this category failed to define the term “search engine” as used in ICT. Some of them defined the term “e-mail” instead of “search engine” while others wrote the definition of a computer. Moreover, some candidates failed to differentiate search engine from website. In part (b), most of the candidates wrote the effects of using internet to users instead of limitations of email. For example, one candidate wrote *Email cause moral decay*. Other candidates wrote the importance of email instead of its limitations. This signifies that the candidates did not understand the question. On the other hands, some candidates wrote only one correct limitation. Extract 7.1 shows the sample of incorrect responses from one of the candidates.

7	a) Search engine is the software used to display the content. for example of the search engine is google
	b) i) It is easy to protect the data
	ii) It is more efficiency
	iii) Led to the occurrence of crimes
	iv) Spread of information either <del>to</del> wrong or trusted information

Extract 7.1: A sample of the candidate’s incorrect responses to question 7

Extract 7.1 shows responses of a candidate who managed to identify search engine as a software but failed to give correct function of search engine in part (a). Moreover, the candidate wrote advantages instead of limitations of email in part (b).

On the other hand, some candidates (10.8%) who scored high marks attempted correctly part (a). They also explained correctly more than two

limitations of email in part (b). Some candidates combined limitations and disadvantages of email, which made them fail to score full marks. Moreover, few candidates wrote examples of search engine, such as google instead of defining the term search engine. Extract 7.2 presents a sample of such correct responses.

7:	a): Search engine is a specialized program that provide access to information via the internet
	<u>OR</u> .
	Is an application software that provides access to <sup>database</sup> information through <del>web</del> World Wide Web <sup>to users query</sup> according.
	<u>Example</u> Bing, Yahoo, Google and Msn.
	(b): i. It Can be hacked by haackers. <hacking>.
	- sending informations through e-mails may sometimes be hacked by hackers and be modified or surfted hence leading to crimes.
	ii. E-mails can not be used with people with no Computer or electronic Knowledge.
	- e-mails are used by people who are skilled on IT knowledge hence those with no IAT knowledge can not use it.
	E-mail is only available electronically or
	iii. E-mails can not be found on terrestrial enviroment < barrier on human contact surmundings >
	- People on land cannot obtain e-mail information since it is available electronically people cannot use it as normal newspapers.
	iv. E-mails requires software and can be used in areas which are accessed by internet.
	- Areas with no internet can not be able to get E-mail services and hence need to have internet service provider like Airtel and Vedacom.

Extract 7.2: A sample of the candidate's correct responses to question 7

The responses of a candidate provided in Extract 7.2 shows that the candidate defined correctly the term search engine in part (a) and managed

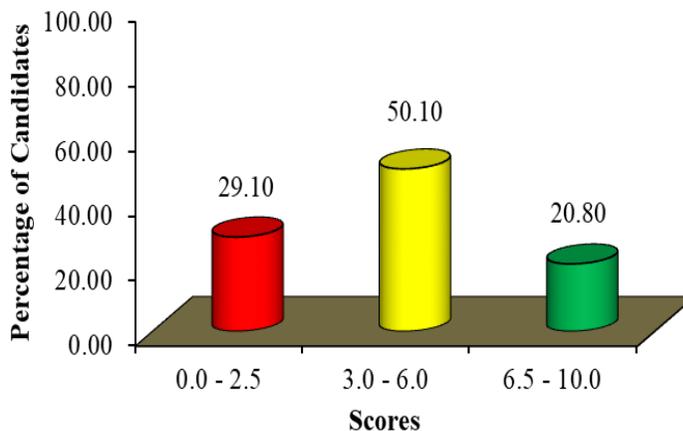
to clearly explain its three limitations in part (b) but the explanation provided in (iii) was not clear.

## 2.8 Question 8: Desktop Publishing

This question tested the candidates' to create publication and it had three parts: (a), (b) and (c). The question was as follows:

- (a) Bahati wishes to create his own business card but he does not know the appropriate software to use. Which four software would you advice him to choose?
- (b) Most of Desktop Publisher software have various tools for designing, manipulating and editing a publication. What are the functions of three common tools provided in the Microsoft Desktop Publisher?
- (c) Suppose you have been given a task to insert a clip art graphic into a publication in Microsoft Publisher, which steps would you follow to perform the given task?

This question was attempted by all 3,067 (100%) candidates, out of whom 894 (29.1%) scored from 0 to 2.5 marks, 1,537 (50.1%) scored from 3 to 6 marks, and 636 (20.8%) scored from 6.5 to 10 marks out of 10 marks. This question had good performance because 70.9 per cent of the candidates scored above 2.5 marks. Figure 8 summarizes the candidates' performance in this question.



**Figure 8:** *The candidates' performance in question 8*

The analysis of the candidates' responses showed that most of the candidates (50.1%) who scored average marks identified correctly only one software required in designing cards in part (a). The common software identified by these candidates was *Microsoft Publisher*. It was observed that some of the candidates wrote DTP publication documents such as *brochures, flyers* and *business cards* while others wrote *Mozilla Firefox, Google Chrome* and *Safari* which are examples of web browsers. In part (b), most of the candidates wrote functions of desktop publishing program instead of tools used in Microsoft publisher. Further analysis showed that some candidates failed to specify the appropriate tools used in Microsoft publisher, consequently they give the general features used in Microsoft word. For example, some of the candidates wrote editing, formatting and inserting tools. In part (c), most of the candidates wrote correctly the steps for inserting clip art graphic. However, some of them skipped the first step and others did not include the last step.

Majority of the candidates (29.1%) who scored low marks failed to differentiate between software used for creating cards and other application software in part (a). For example, some of the candidates identified *Ms-word, Ms-excel* and *Ms-PowerPoint* instead of Microsoft Publisher, QuarkXpress, Adobe PageMaker and Adobe InDesign. Moreover, some candidates identified correctly only one example of software required which is Ms-Publisher. In part (b), some of the candidates wrote the functions of desktop publishing software instead of common tools used in the Microsoft Publisher. For example, one candidate wrote *Used for designing and editing publication*. Other candidates wrote *Textbox* and *WordArt* which are tools of Microsoft word program and not Microsoft Desktop Publisher. In part (c), some candidates wrote correctly only one or two steps of inserting a clip art. Other candidates wrote two or three steps of inserting a clip art but failed to arrange them in a correct order. Further analysis showed that some candidates wrote the steps of copying and pasting a document while others wrote the steps of opening Microsoft Publisher. This indicates that the candidates did not understand the question. Extract 8.1 presents a sample of such incorrect responses.

5.	(a) - Microsoft Power point
	- Adobe photoshop
	- Adobe
	- Venture
	Microsoft publisher
	(b) 1. Layouts.
	- A Desktop publisher has a variety of layouts which are used to create a beautiful and presentable publisher.
	2. Font.
	A desktop publisher has a variety of fonts such as font size, font colour, font type.
	3. Bold.
	this is used in bolding of texts in a desktop publisher
	(c) Steps on how to insert a clip art graphic
	1. On the left hand side of the publication there are many icons click on the Clipart icon.
	2. A list type the clip art required.
	3. A list of many clip arts will be displayed based on the required one.
	4. Choose the required clip art and click OK.

Extract 8.1: A sample of the candidate's incorrect responses to question 8

In extract 8.1, the candidate gave correctly only two DTP software in part (a). In part (b), the candidate wrote formatting features instead of DTP tools. The candidate also gave wrong procedures for inserting clip art graphics into publication of Ms-publisher.

Furthermore, most of the candidates (20.8%) who scored high marks answered correctly all parts of the question. However, some of them mentioned correctly only three DTP software required to design card in part (a). Other candidates wrote the tools provided in Microsoft Desktop Publisher but failed to give their function, which resulted in failure to score full marks. Extract 8.2 shows a sample of correct responses to this question.

08.	(a) (i) Microsoft publisher
	(ii) Adobe pagemaker
	(iii) Adobe Indesign.
	(iv) Serif page design.
	(b) (i) Rotating tool - used for rotating text, objects and other graphical things.
	(ii) Select tool - used for choosing the selected objects by highlight them within their shape. eg. text select
	(iii) Shape tools - used for displaying various shapes that can be achieved (for example rectangle, square and oval).
	(c) (i) On the menu bar, I will click insert menu,
	(ii) On insert menu, I will click clip arts
	(iii) I will choose the clip arts I need together with formatting them
	(iv) I will click OK.

Extract 8.2: A sample of the candidate's correct responses to question 8

Extract 8.2 shows responses of a candidate who answered parts (a), (b) and (c) correctly.

## 2.9 Question 9: Database Management System

This question had two parts, (a) and (b). The question was as follows:

- (a) A librarian at your school wants to change the students and teachers' record keeping system from manual to electronic database. He proposed the type of database which contains tables.
- (i) Identify the name of the database model proposed.

- (ii) Provide three advantages of a new system of record keeping.
- (b) The following snapshot shows information about students who borrowed different books from the school library. Study carefully the objects given and then answer the questions that follow:

The screenshot shows a Microsoft Access application. At the top, there is a table named 'Library' with the following data:

ID	FirstName	LastName	BookName	BorrowingDate	ReturningDate	NumberOfBooks
1	Ally	Mta	Physics Book 1	3/13/2019	7/31/2019	2
2	Zai	Hassan	Computer Science Book 4	3/13/2019	3/13/2019	1
3	Vero	John	Civics Book 3	3/23/2019	10/31/2019	1
4	Angel	Marco	Mathematics Book 2	7/27/2019	1/31/2020	3

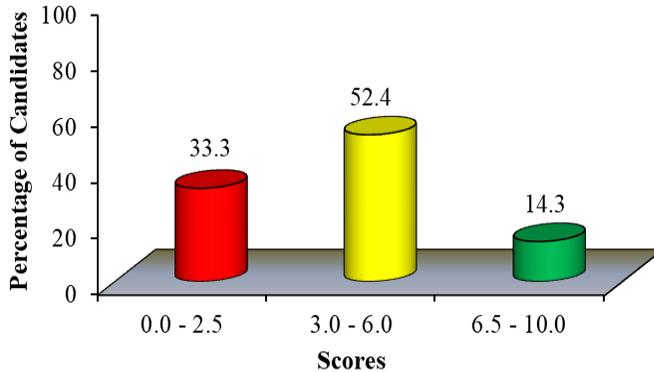
Below the table is a form titled 'Library1'. The form has the following fields:

- ID: 3
- FirstName: Vero
- LastName: John
- BookName: Civics Book 3
- BorrowingDate: 3/23/2019
- ReturningDate: 10/31/2019
- NumberOfBooks: 3

A dialog box titled 'Microsoft Office Access' is open, displaying a warning icon and the message: 'You have More than 3 Books!'. The dialog box has 'OK' and 'Help' buttons.

- (i) What are the objects labelled with letters A and B? Give their names.
- (ii) Why is an object B very important in creating the database?
- (iii) Write the validation rule and the validation text used in the 'NumberOfBooks' field.

This question was attempted by all 3,067 (100%) candidates. A total of 1,021 (33.3%) scored from 0 to 2.5 marks, 1,607 (52.4%) scored from 3 to 6 marks and 439 (14.3%) scored from 6.5 to 10 marks. Figure 9 summarizes the candidates' performance in this question.



**Figure 9:** The candidates' performance in question 9

The statistics show that the performance of the candidates in this question was good because 66.7 per cent scored above 2.5 marks. Although the candidates' general performance was good, most of the candidates (52.4%) scored average marks. In part (a) (i), some of these candidates wrote the name of the software used in creating the objects displayed in the screenshot instead of the name of the database model. For example, some of the candidates wrote *Microsoft access* instead of relational database. Other candidates wrote objects of DBMS such as table, query, and form. In part (a) (ii), most of the candidates managed to give the advantages of the given system. However, some candidates wrote correctly only two advantages of using electronic database. Other candidates wrote advantages of DBMS instead of advantages of relational database. In part (b) (i), some of the candidates identified correctly the objects labelled with letters A and B but could not write their names. Further analysis showed that there were candidates who failed to differentiate “form” from “query” object as they named the object labelled with letter B *Query* instead of form. In part (b) (ii), some of the candidates who identified correctly the name of the object labelled with letter B also explained its importance in creating database. In part (b) (iii), some candidates gave the correct validation text but failed to give its validation rule. This shows that the candidates had insufficient knowledge of database designing.

Some of the candidates (33.3%) who scored low marks faced difficulties in identifying the type of the database model proposed in part (a) (i). Majority

of these candidates wrote *electronic database* instead of relational database while others wrote *Librarian database*. In part (a) (ii), some of the candidates wrote advantages of using Microsoft excel while other candidates wrote advantages of using Microsoft word instead of relational database. For example, one of the candidates answered that *it has different formatting tools*. In part (b) (i), most of the candidates wrote the position of the labelled letter instead of the name of the object labelled with letters. For example, some of the candidates wrote, *objects A and B are header* while other candidates wrote, *A and B are title bar*. These candidates failed to relate the questions with the given objects in the snapshot. In part (b) (ii), some of the candidates gave the importance of the table instead of form object. For example, one of the candidates wrote *It shows all information entered in the table*. Other candidates did not attempt this part at all. In part (b) (iii), some of the candidates gave the definition of validation rule and validation text instead of writing the validation rule and text used to display the alert message labelled with letter C. Moreover, other candidates wrote irrelevant rules. For example, one candidate wrote *Validation rule: from 1 to 3*. Extract 9.1 presents a sample of such incorrect responses to this question.

9a)	i) The name of the data base model proposed are Microsoft Access.
	ii) - It store data - It developed new knowledge, - It help to add and other table.
b)	i) Data type record of library 2- ii) Form design of library 2. iii) Validation rule - $\geq 3$ validation text - <del>More</del> You have more than 3 Books!

Extract 9.1: A sample of the candidate's incorrect responses to question 9

Extract 9.1 shows responses from a candidate who wrote the name of the program used to create the objects instead of relational database in part (a).

The candidate also gave the advantages of computer instead of electronic database. Furthermore, the candidate gave the correct validation text but with an incorrect validation rule.

Further analysis showed that 14.3 per cent of the candidates scored high marks. Majority of the candidates identified correctly the name of their database model proposed in part (a). However, some of them wrote the general advantages of database instead of relational database in part (a) (ii). Some of these candidates gave the correct advantages of using electronic database in part (b). Other candidates wrote the correct validation text but with an incorrect validation rule in part (b)(iii). Moreover, some candidates wrote “No validation text” to validation text with the correct validation rule. Extract 9.2 presents a sample of correct responses to this question.

9	a) i) Relational database model
	ii) - It <del>is</del> controls data duplication.
	• it is easy to add, erase and modify data.
	• It is easier to secure information/data.
	b) i) Object A is a table
	• Object B is a form
	ii) This is because a form helps to entering, <del>editing</del> in the database.
	ii) This is because a form helps to enter, edit and remove data in the database.
	iii) validation rule: $> 3$ " $< 3$ "
	Validation text: "You have more than 3 Books!"

Extract 9.2: A sample of the candidate's correct responses to question 9

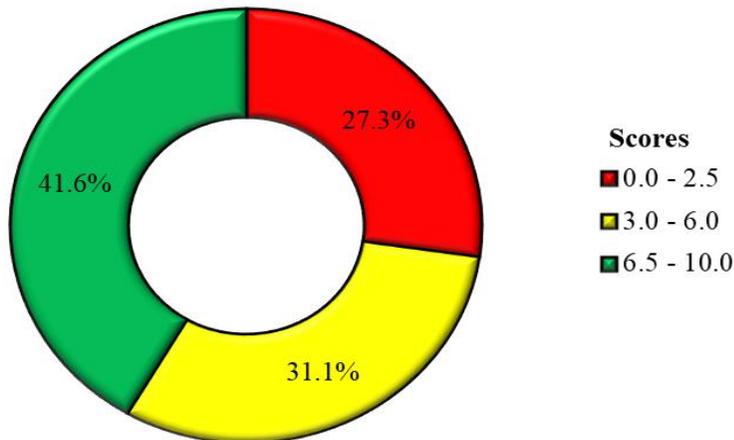
Extract 9.2 shows the responses of a candidate who managed to respond correctly to part (a). In part (b)(i), the candidate correctly identified the objects labelled A and B but failed to write their names. The candidates also attempted correctly part (b) (ii) and (iii).

## 2.10 Question 10: The Computer

The question was as follows:

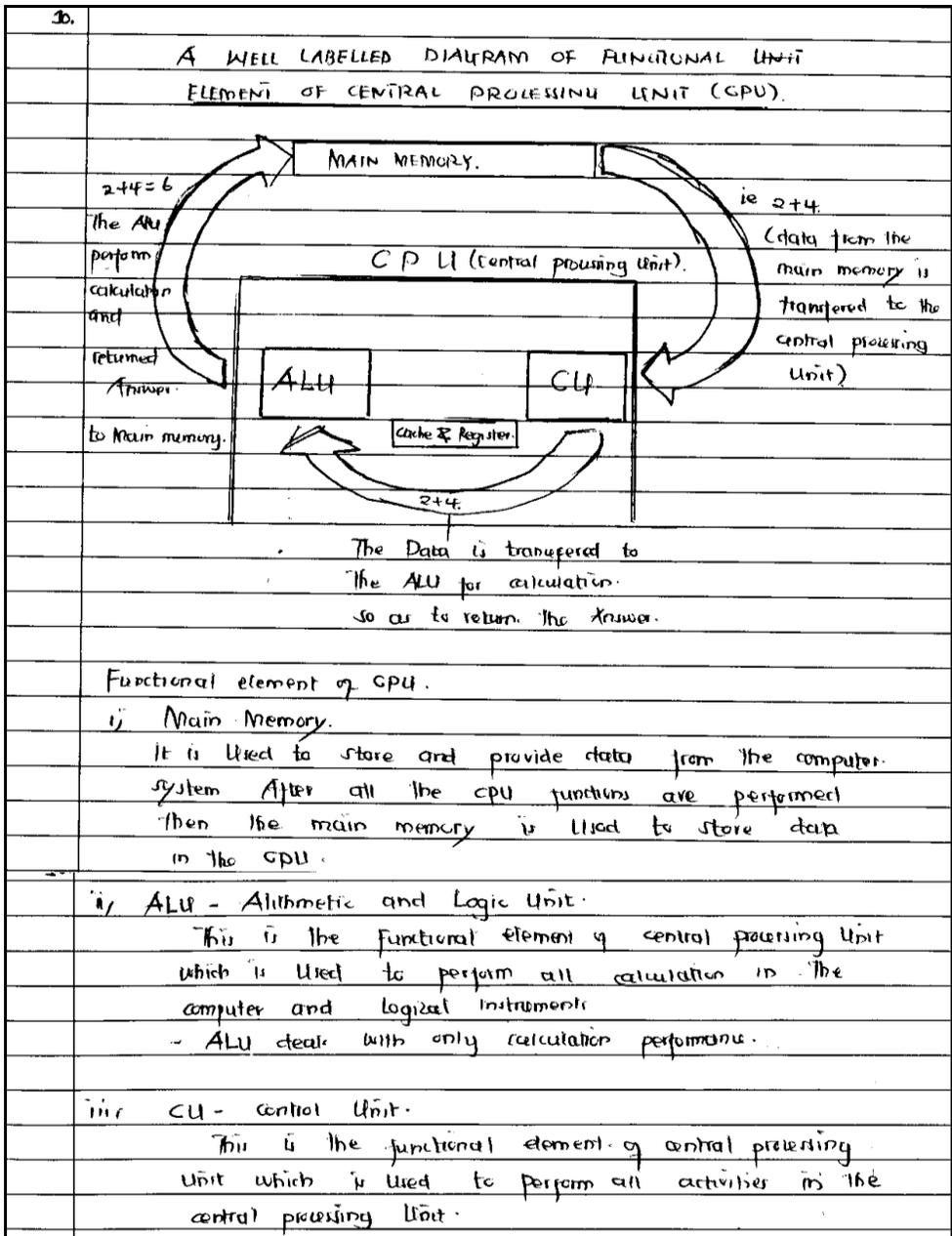
Draw a well labelled diagram of the functional elements of the Central Processing Unit (CPU) and explain the function of each element.

A total of 3,067 (100%) candidates attempted this question, of whom 836 (27.3%) scored from 0 to 2.5 marks, 954 (31.1%) scored from 3 to 6 marks, and 1,277(41.6%) scored from 6.5 to 10 marks. This question had good performance because 72.7 per cent scored above 3 marks. Figure 10 summarizes the candidates' performance in this question.



**Figure 10:** *The candidates' performance in question 10*

The analysis of the candidates' responses revealed that majority of the candidates (41.6%) scored above 6 marks. Most of these candidates drew correctly the diagram of functional elements of the CPU. They also explained correctly the function of CU, ALU and memory as elements included in the CPU. However, a few candidates drew correctly the structure of CPU but failed to indicate the direction of arrows between CU and ALU. They also faced difficulties in describing the arrows that show the data flow within the CPU. Extract 10.1 presents a sample of correct responses to this question.



Extract 10.1: A sample of the candidate's correct responses to question 10

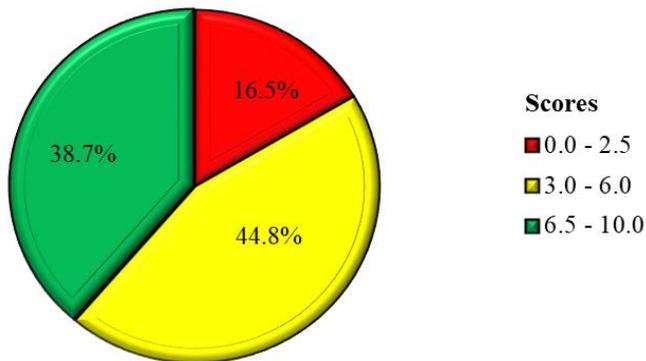
In extract 10.1, the candidate drew correctly the functional elements of the CPU, and explained correctly the function of each element.

On the other hand, majority of the candidates (31.1%) who scored average marks drew correctly each element but failed to indicate arrows that show

the flow of data within the CPU. They also gave the correct function of only one or two elements of the CPU. The elements explained by most candidates were CU and ALU. However, some candidates failed to recognize the memory included in the CPU. For example, some of them wrote *storage memory* instead of main memory. Other candidates did not include arrows in their drawings. Additionally, it was observed that some of the candidates wrote the function of CPU instead of elements within the CPU while others listed the correct elements of CPU without giving explanations. Further analysis showed that, some candidates explained the functions of input, output and storage devices instead of functional elements of CPU. This indicates that the candidates had insufficient knowledge about the Central Processing Unit.

Moreover, some of the candidates (27.3%) who scored low marks confused the term CPU with system unit; as a result they drew the structure of system unit instead of functional elements of the CPU. The analysis showed that other candidates drew a block diagram of the CPU instead of functional elements of the CPU. These candidates failed to differentiate between the block diagram that show communication of the CPU with input, output and storage device from the functional elements diagram that show how the CPU accesses data from the main memory. Moreover, a few candidates drew the correct elements of the CPU but failed to indicate data flow. Other candidates pointed arrows in a wrong direction. Further analysis showed that, some of the candidates explained the functions of peripheral devices such as mouse, keyboard, monitor and speaker while others explained the importance of using computer. It was observed that, the candidates who drew system unit wrote function of its parts. For example, some candidates wrote the function of USB ports, power button, disk ports and HDMI. This shows that such candidates did not understand the requirement of the question. Extract 10.2 presents the sample of incorrect responses to this question.





**Figure 11:** *The candidates' performance in question 11*

Figure 11 shows that 44.8 per cent of the candidates who scored average marks explained correctly two or three factors to be considered during preparation of a presentation. However, some of them failed to give clear introductions, explanations as well as conclusions. On the other hand, some candidates explained the characteristics of a good presentation instead of the factors to consider in preparing a presentation. For example, one of the candidates wrote *Presentation should be short and clear*. Other candidates gave the steps for preparing presentation such as planning a presentation, creating a presentation, practising a presentation and presenting. This shows that the candidates had insufficient knowledge of preparation of presentation

On the other hand, most of the candidates (38.7%) who scored high marks explained correctly four factors required during preparation of a presentation. They also managed to give correct introductions and conclusions. However, some of the candidates gave partial explanations on some factors while others repeated the same points in different explanations. This made them fail to score full marks. On other hand, some candidates did not give clear conclusion while others gave correct factors without providing an introduction and a conclusion. Extract 11.1 presents one of the correct responses.

11:	<p>Presentation refers to the process of representing ideas and information to the audience, example can be provision of education or entertainment to the people. In computer presentation is prepared by the use of software program called Ms. power-point. The following are the factors that a person can consider during preparation of presentation.</p> <p><b>Aim:</b> this refers to the general purpose of the presentation to the society if it is provision of education or entertainment to the audience should be recognized firstly during presentation is prepared.</p> <p><b>Content of the presentation;</b> also the factor that should be considered in the presentation by which presentation should carry message to the audience so as to develop audience's minds in the society.</p> <p><b>Nature of audience;</b> also is a factor when preparing presentation by which a speaker should determine the nature of audience if it is sad or happy so as to know a good presentation that is good for them.</p> <p><b>Body language to use;</b> for preparation of a presentation, the language should be well chosen by the speaker with response to the respective audience in the presentation, hence being as a factor for presentation.</p> <p><b>Generally;</b> presentation is very important to our daily life since people had and enable speak to represent their ideas and views to the audience in the society easily.</p>
-----	---

Extract 11.1: A sample of the candidate's correct responses to question 11

Extract 11.1 shows the response of a candidate who described correctly the factors to be considered during preparation of a presentation. The candidate also gave the correct introduction and conclusion.

Moreover, 16.5 per cent of the candidates scored low marks. Some of these candidates gave only the correct introduction of presentation but failed to explain any factor required during preparation of a presentation. It was noted that some of them explained factors to be considered during presentation instead of preparation of a presentation. For example, some candidates explained *self-confidence*, *facial expression* and *maintain eye contact*. Other candidates explained the importance of preparing a presentation. Moreover, some candidates explained the requirements of creating a presentation such as *Microsoft powepoint software*, *projector*, *eletrical power* and *computer*. Further analysis showed that some candidates described the structure of a presentation such as *introduction*, *main body* and *conclusion*. This indicates that, the candidates did not understand the question. Extract 11.2 presents one of such incorrect responses.

11-	<p>Power point presentation is one of software used in presentation of information and data. Presentation is the act of expressing or showing ideas and work to people. For the presentation to occur, it requires different factors to be conducted. Presence of electronic devices. For the presentation to occur different electronic devices are needed to bring easy flow of presentation, this <del>pre</del> electronic devices are required to as to change input to output data, the electronic <del>diff</del> device need to conduct the presentation mostly are output such as and input devices, like, projector, computer, mic, speaker and electronic screen. So electronic devices are needed for presentation of <del>dat</del> of a given work.</p>
	<p>Software Application. Presentation of a certain work needs a software which can to present a work of a good and attractive way, since software contains tools <del>pro</del> which provides pictures, charts and other graphics. This helps people to present the presentation in more attractive and understandable means. So presentation needs software to run all programmes, example of software used is Power point presentation.</p>
	<p>Internet and computer network. Presentation of a certain work, not need a good supply of internet which will give a smooth access for programmes at presentation, also the computer network which <del>also</del> allows the access of sharing, resources and information about the presentation.</p>
	<p>Good supply of electricity. Presentation of data and information depends on good and <del>are</del> ensure supply of electricity on the environment, since electricity is the most dependence all all electronic devices which <del>is</del> are used on the presentation. So electricity is the basic and <del>four</del> <del>operation</del> of electronic devices to run smoothly.</p>
	<p>Presentation of data is <del>or</del> very important to different</p>

Extract 11.2: A sample of the candidate's incorrect responses to question 11

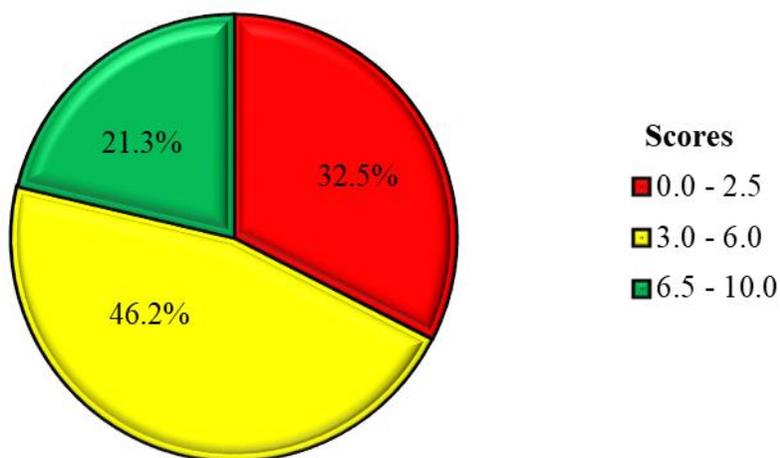
Extract 11.2 shows the response of a candidate who explained factors based on PowerPoint presentation instead of presentation in general. The candidate also wrote introduction based on PowerPoint presentation.

## 2.12 Question 12: Multimedia

This was also an essay question which required the candidates to read the following scenario and answer the question that follows:

Multimedia is very popular in designing advertisements and website nowadays. Explain four advantages of using multimedia in web designing.

This question was attempted by 1,232 (40.2%) of the candidates. A total of 400 (32.5%) scored from 0 to 2.5 marks, 570 (46.2%) scored from 3 to 6 marks and 262 (21.3%) scored from 6.5 to 10 marks out of 10 marks allocated. The candidates' general performance in this question was good because 67.5 per cent scored above 2.5 marks. Figure 12 summarizes the candidates' performance in this question.



**Figure 12:** The candidates' performance in question 12

Most of the candidates (67.5%) who scored above 2.5 marks had an idea of multimedia as they gave a clear introduction. They also explained correctly two or three advantages of using multimedia in web designing but they could not give a clear conclusion. Likewise, 21.3 per cent of the candidates scored high marks because they explained clearly the advantages of using multimedia in web design. They also gave the correct introduction and conclusion. However, some of the candidates mixed the advantages of website with advantages of multimedia in designing a website. For example, some of the candidates *wrote enhance efficiency communication*.

Consequently they failed to score full marks. Extract 12.1 presents the sample of a correct response.

12)	<p>Multimedia refers to audio, visual features in a device. Multimedia can be incorporated in websites, advertisements etc. The following explain advantages of using multimedia in web designing;</p> <p>To decorate the website. This can be done through adding Gifs, Pictures, sound effects and more into the web design.</p> <p>To capture the attention of the audience; Use of multimedia aids in capturing the attention of the audience as it enhances the effect of the web design.</p> <p>To provide more insight on the main topic of the webpage or website. Through pictures or videos, one can fully understand the topic being presented thro by using audio and visual aids.</p> <p>To differentiate items through use of pictures and videos. Some items in a webpage or website may have similarities and be hard to differentiate hence those of pictures and videos.</p> <p>In conclusion, multimedia is advantageous in web design as it allows one to incorporate pictures and videos which aid in capturing and preserving the attention of the audience.</p>
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Extract 12.1: A sample of the candidate's correct responses to question 12

Extract 12.1 shows the response from one of the candidates who explained correctly the advantages of using multimedia in web designing. The candidate also gave the correct introduction and conclusion.

On the other hand, most of the candidates (32.5%) who scored low marks failed to give clear introduction of multimedia. Some of these candidates

wrote only one or two advantages without giving explanations while others listed only the components of multimedia, such as sound, text, video, graphics and animations. Moreover, some of the candidates explained the application of multimedia in *schools, hospitals* and *entertainments* instead of focusing on web design. It was noted that some candidates explained the importance of multimedia to the society instead of multimedia in web design. For instance, some of the candidates wrote it *provides employment, it increases income* etc. This implies that the candidates did not understand the question. Lastly, other candidates explained the advantages of mass media such as television and radio. This shows that the candidates did not understand the requirement of the question. Extract 12.2 presents a sample of such an incorrect response.

12.	<p>Web site is the collection of many web pages linked together. Nowadays, web sites are mostly found in different multimedia. Multimedias are different ways which are used in information dissemination. The following are the importances of using multimedia in web designing.</p> <p>Easy access to users (customers), Multimedia have many users so the use of Multimedia in the designing of web sites helps easy access or the spread of web site advertisements to many people at once so, it eases the accessibility.</p> <p>It saves time of searching, Multimedia used in different advertisement designing helps in saving time which may be used during spread. So Multimedias help to reduce time for the spread of web site to many people. So, it is more important.</p> <p>Gives a wide access to users, Multimedia have got many users, so when you use them in website design, it leads to be the large website accessibility to a wide area. This is caused because of being used by many people so Multimedia leads to wide access to users.</p> <p>Reduce cost, Different multimedia are used in designing of advertisements and web sites because they are less cost full so they intend to use them. When you compare Multimedia and Other ways of designing web sites you find that they are costful and not having many followers. compared to Multimedia which have many followers or users in the world. So the use of Multimedia reduces cost of advertisement.</p> <p>To conclude, Multimedia is very popular in designing advertisements and websites nowadays because of the importances or advantages of using Multimedia in web designing explained above so the above are only some of the advantages. So Multimedia is more important in web designing.</p>
-----	--

Extract 12.2: A sample of the candidate's incorrect responses to question 12

Extract 12.2 shows the response from one of the candidates who explained the advantage of multimedia in general instead of focusing on website design. The candidate also defined the term website but failed to relate it with multimedia.

### 3.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 2 (PRACTICAL)

The practical paper had three questions with 25 marks each. The candidates were required to attempt any two questions.

#### 3.1 Question 1: Web Development

In this question, the candidates were required to demonstrate their competences on creating a web page, apply different formatting tags, linking different web pages, adding picture and creating forms by using HTML language. The question was as follows.

Suppose a director at Mwenge High School requests you to create a Library System (LS) which will enable the librarian to add new books and students to borrow and return books;

(a) Use the basic HTML codes to create the following home page.

<h1>MWENGE HIGH SCHOOL</h1> <hr/> <h2>Library Management System</h2>	
	<p><i>Process task by clicking any of these links</i></p> <p><input type="checkbox"/> <a href="#">New books</a></p> <p><input checked="" type="checkbox"/> <a href="#">Borrowing</a></p> <p><input type="checkbox"/> <a href="#">Returning</a></p>

HINT: Use a table to create a homepage.

## Page descriptions

- The table height and width should be 300 and 450 respectively.
  - The background colour of the heading should be silver.
  - The size of the heading “MWENGE HIGH SCHOOL” should be level 1.
  - The width of the horizontal line after the heading should be 300.
  - The size of the texts “Library Management System” should be level 2.
  - The picture should have the width of 100 and height of 100.
  - Use any picture from picture folder.
  - The texts “Process task by clicking any of these links” should be italicized and bolded with font size 12.
  - The heading for each linked page should be level 3.
- (b) (i) Activate the link “New books” to display the following form which enables the librarian to add new books with their details:

### Add New Books

---

<b>Book Number</b>	<input style="width: 150px; height: 20px;" type="text"/>
<b>Title</b>	<input style="width: 150px; height: 20px;" type="text"/>
<b>Purchase Price</b>	<input style="width: 150px; height: 20px;" type="text"/>

- (ii) Activate the link “Borrowing” so as to display the following form which enables a librarian to add the borrower’s details:

### Borrow Books

---

**StudentID**   
**Student Name**   
**Class**       1  2  3  4  
**Stream**        
**Book Borrowed**   
**Date Borrowed**

(iii) Activate the link “Returning” in order to display the following form which will enable the librarian to add the details of the students who returns the books:

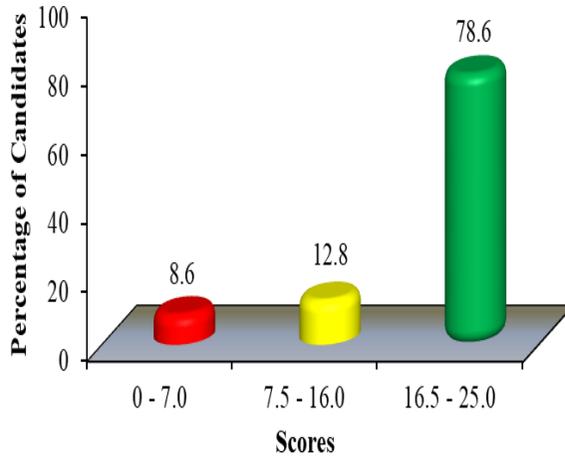
### Return Books

---

**StudentID**   
**Return Date**

(c) Print your work.

This question tested the candidates’ knowledge of webpage design. The candidates who attempted this question were 1,050 (34.2%), of whom 90 (8.6%) scored 0 to 7 marks, 135 (12.8%) scored from 7.5 to 16 marks and 825 (78.6%) scored from 16.5 to 25 marks. The performance in this question was good because majority of the candidates (91.4%) scored above 7 marks as shown in Figure 13.



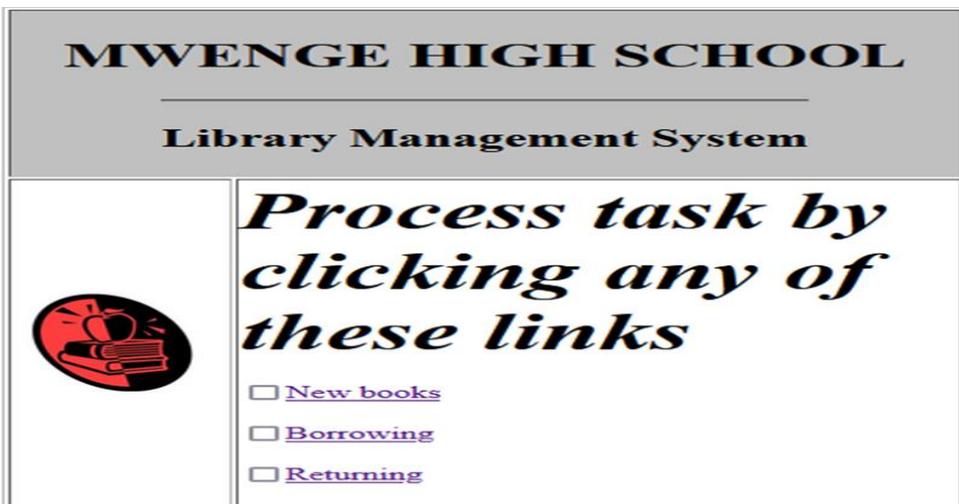
**Figure 13:** *The candidates' performance in question 1*

The analysis showed that the candidates (91.4%) who scored high marks wrote the correct HTML codes required to create a Library System (LS). They also managed to link three web pages, add pictures into web pages and create forms. It was observed that, some candidates typed correctly the codes for displaying forms with different input type text, selected, radio button, and submit button. Moreover, the candidates managed to merge columns of the table by using “colspan” attribute. They also typed correctly the codes for inserting checkbox, activating links “New books”, “Borrowing” and “Returning” to their respective web pages as it was instructed. This shows that, such candidates had sufficient knowledge of creating web pages. However, some candidates typed correctly the codes to create library system, but failed to include appropriate font size for the text “*Process task by clicking any of these links*”. Other candidates typed incorrect codes for inserting picture on the home page. Likewise, few candidates failed to add appropriate heading levels to the linked texts. Extract 13.1 presents a sample of the correct codes from one of the candidates.

```

<html>
  <head><title></title></head>
  <body>
  <center>
  <table width="450" height="300" border="1">
  <tr>
    <td bgcolor="silver" colspan="2">
      <center>
      <h1>MWENGE HIGH SCHOOL</h1>
      <hr width="300">
      <h2>Library Management System</h2>
      </center>
    </td>
  </tr>
  <tr>
    <td>
      </td>
    <td>
      <font size="12"><b><i>Process task by clicking any of these links</i></b></font><br><br>
      <input type="checkbox"><a href="New books.html"><u>New books</u></a><br><br>
      <input type="checkbox"><a href="Borrowing.html"><u>Borrowing</u></a><br><br>
      <input type="checkbox"><a href="Returning.html"><u>Returning</u></a><br><br>
    </td>
  </tr>
  </table>
  </center>
  </body>
</html>

```



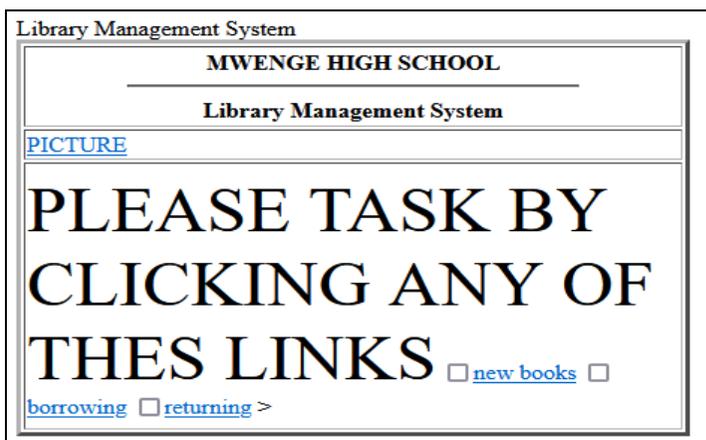
Extract 13.1: A sample of the candidate’s incorrect responses to question 1 of paper 2

Extract 13.1 shows a sample of response from a candidate who wrote correct HTML codes to create Library System. The candidate managed to apply table, insert a picture, activate links, change background colour, and set font size as it was instructed.

Apart from general good performance, 8.6 per cent of the candidates scored low marks. Some of these candidates failed to merge table using “colspan” attribute, and to create activate links. They also failed to set the required heading level, insert image, insert form, and draw horizontal line on each page webpage.

Furthermore, some candidates inserted a picture without setting the required width and height. It was noted that, some candidates failed to score any mark, because they applied irrelevant application software such as Ms-word instead of notepad to create a web page. Such candidates lacked practical skills on creating web pages. Extract 13.2 presents a sample of incorrect responses.

```
<HTML>
<HEAD><TITLE></TITLE></HEAD>
<BODY>
<TABLE>
<TABLE BORDER=3 HEIGHT=300 WIDTH=450>
<TC><TH><BGCOLOR=SILVER><SIZE=1>MWENGE HIGH SCHOOL</SIZE></COLOR><HR WIDTH=300>
<SIZE=2>Library Management System</SIZE></TH></TC>
<SIZE=2>Library Management System</SIZE></TH></TC><br>
<TR><TD><A HREF=PICTURE.PNG WIDTH 100 HEIGHT=100>PICTURE</TR></TD></A>
<TR><TD><FONT SIZE=12>PLEASE TASK BY CLICKING ANY OF THES LINKS</FONT>
<foam>
<input type=checkbox><a href=new books.html>new books</a>
<input type=checkbox><a href=borrowing.html>borrowing</a>
<input type=checkbox><a href=returning.html>returning</a>
</foam>
</BODY>>
</HTML>
```



Extract 13.2: A sample of the candidate’s incorrect responses to question 1 of paper 2

Extract 13.2 shows the sample of responses from a candidate who wrote incorrect HTML codes to create library system. The candidate failed to use table to create layout of the home page. The candidate also failed to insert a picture and set appropriate heading levels. However, the candidates successfully created activate links to other web pages and created codes for adding horizontal line.

### 3.2 Question 2: Database Management System (DBMS)

This question required the candidates to demonstrate the skills on manipulation of data in the database. The question given to the candidate was as follows:

The school manager at Chakechake Secondary School (CSS) asks you to generate a database which consists of student details and examination results. You are required to create a successful database to assist the manager. Proceed as follows:

- (a) Create a database called ExamResults.
- (b) Create two tables named Student\_Details and Examination\_Results with the following fields:

<b>Student_Details</b>	<b>Examination_Results</b>
StudentsID	ExamID
StudentName	StudentID
Age	Physics
Gender	Computer
Class	Mathematics
Combination	Biology
	Chemistry
	Average

- (c) Create forms using wizard which will be used to add the following data in the tables. Each form must be named by using its respective table name.

#### **Student\_Details**

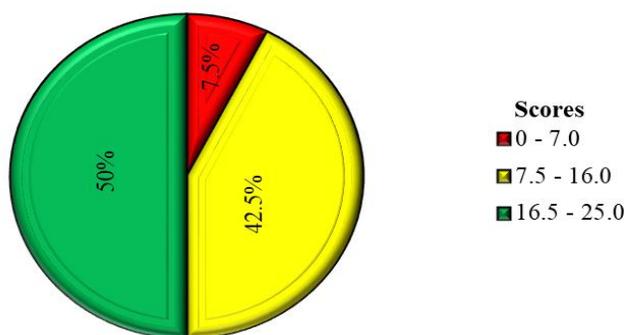
STUDENT ID	STUDENT NAME	AGE	GENDER	CLASS	COMBINATION
2010-01	WILLY	12	M	4E	PCB
2010-02	LOYCE	14	F	4C	PCM
2010-03	MARTINE	15	M	4A	PCB
2010-04	DAUD	17	F	4E	PGM
2010-05	DENNIS	12	M	4B	CBG

### Examianation\_Results

EXAM ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMAT	BIOLOGY	CHEMISTRY	AVERAGE
001	2010-01	70	60	80	90	40	
002	2010-02	85	85	77	46	39	
003	2010-03	77	75	85	85	9	
004	2010-01	45	56	29	19	6	
005	2010-05	70	60	80	90	56	
006	2010-02	80	50	65	45	60	

- (d) Validate the “Gender“ field in the “Student\_Details” table so that only “M” and “F” letters should be used to specify gender, otherwise the field should display a message “No such gender”.
- (e) Use the Examination\_Results table to create a query that will calculate the average scores for each student. Save it as Average.
- (f) Create a query that returns students with an average of 40 and above. Save it as Passed
- (g) Create a query called “Failed” which display the students who scored an average of below 40 marks.
- (h) Create a relationship between the given tables.
- (i) Generate reports for passed and failed students and save them as their query names.
- (j) Print your work.

Majority of the candidates, that is 2,262 (73.8%) attempted this question, out of whom 169 (7.5%) performed poorly by scoring from 0 to 7 marks while 961 (42.5%) had an average performance by scoring from 7.5 to 16 marks. Majority of the candidates 1,132 (50%) had good performance as they scored from 16 to 25 marks. Figure 14 illustrates the candidates’ performance in this question.



**Figure 14:** *The candidates' performance in question 2*

The majority of the candidates (92.5%) who scored high marks managed to create the database “Exam Results” in part (a). The candidates also created Student\_Details and Examination\_Results table with appropriate field names, data types and primary key for each table. It was noted that some of these candidates created correctly Student\_Details and Examination\_Results forms in part (c) which were used to enter data into their respective records. In part (d), some candidates managed to validate “Gender” field in the Student\_Details table so that only “M” or “F” letters applied to specify gender, otherwise, “No such gender” message is displayed when different letters entered. Furthermore, in part (e), most candidates created correctly and saved an “Average” query that displays average scores for each student. Likewise, in part (f), some candidates created correctly the query that displays students with an average of 40. They also managed to create a query of students who scored an average of below 40 marks and save it as “Failed” in part (g).

Moreover, in part (h), some of the candidates created correctly the relationship between the Student\_Details and Examination\_Results table using primary and foreign keys. The candidates also created and saved the report for passed and failed students. This showed that the candidates had sufficient knowledge of database designing.

On the other hand, some candidates failed to score full marks because they faced difficulties in assigning appropriate data type in the created fields in part (b). They also failed to create forms and validate gender field in the Student\_Details table. Other candidates calculated average score manually instead of applying the appropriate formula. Moreover, some of the candidates lacked mathematical skills, thus they typed incorrect criteria for assigning the

“Passed” and “Failed” students. For example, some of the candidates typed the criteria > “40” instead of  $\geq 40$  while others typed  $\leq 40$  instead of  $< 40$  in query (f) and (g) respectively. Furthermore, some candidates created relationship using primary key (StudentID) from Student\_Details and (ExamID) given in the Examination\_Details table instead of using primary (key StudentID) and foreign key (StudentID). Furthermore, some of the candidates created reports using Student\_Details and Examination\_Results table instead of generating them from “Passed” and “Failed” queries. This shows that the candidates failed to understand the requirement of the questions. Extract 14.1 shows a sample of the correct responses from one of the candidates.

Student_Details						
	STUDENT ID ▾	STUDENT NAME ▾	AGE ▾	GENDER ▾	CLASS ▾	COMBINATION ▾
+	2010-01	WILLY	12	M	4E	PCB
+	2010-02	LOYCE	14	F	4C	PCM
+	2010-03	MARTINE	15	M	4A	PCB
+	2010-04	DAUD	17	F	4E	PGM
+	2010-05	DENNIS	12	M	4B	CBG

Student_Details	
Field Name	Data Type
STUDENT ID	Short Text
STUDENT NAME	Short Text
AGE	Number
GENDER	Short Text
CLASS	Short Text
COMBINATION	Short Text

General		Lookup
Field Size	255	
Format		
Input Mask		
Caption		
Default Value		
Validation Rule	"M" Or "F"	
Validation Text	No such gender	
Required	No	
Allow Zero Length	Yes	
Indexed	No	
Unicode Compression	Yes	
IME Mode	No Control	
IME Sentence Mode	None	
Text Align	Center	

Examination_Results								
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMAT	BIOLOGY	CHEMISTRY	AVERAGE	
001	2010-01	70	60	80	90	40		
002	2010-02	85	85	77	46	39		
003	2010-03	77	75	85	85	9		
004	2010-01	45	56	29	19	6		
005	2010-05	70	60	80	90	56		
006	2010-02	80	50	65	45	60		

Examination_Results		
Field Name	Data Type	
EXAM-ID	Short Text	
STUDENT ID	Short Text	
PHYSICS	Number	
COMPUTER	Number	
MATHEMATICS	Number	
BIOLOGY	Number	
CHEMISTRY	Number	
AVERAGE	Number	

**Student\_Details FORM**

## Student\_Details

STUDENT ID:	2010-01
STUDENT NAME:	WILLY
AGE:	12
GENDER:	M
CLASS:	4E
COMBINATION:	PCB

**Examination\_Results FORM**

## Examination\_Results

EXAM-ID:	001
STUDENT ID:	2010-01
PHYSICS:	70
COMPUTER:	60
MATHEMATICS:	80
BIOLOGY:	90
CHEMISTRY:	40
AVERAGE:	

AVERAGE							
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMAT	BIOLOGY	CHEMISTRY	AVERAGE
001	2010-01	70	60	80	90	40	68
002	2010-02	85	85	77	46	39	66.4
003	2010-03	77	75	85	85	9	66.2
004	2010-01	45	56	29	19	6	31
005	2010-05	70	60	80	90	56	71.2
006	2010-02	80	50	65	45	60	60

Field:	EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMATICS	BIOLOGY	CHEMISTRY	AVERAGE: ([PHYSICS]+[COMPUTER]+[MATHEMATICS]+[BIOLOGY]+[CHEMISTRY])/5
Table:	Examination_Results	Examination_Results	Examination_Results	Examination_Results	Examination_Results	Examination_Results	Examination_Results	
Sort:								
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
Criteria:								
or:								

Passed							
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMAT	BIOLOGY	CHEMISTRY	AVERAGE
001	2010-01	70	60	80	90	40	68
002	2010-02	85	85	77	46	39	66.4
003	2010-03	77	75	85	85	9	66.2
005	2010-05	70	60	80	90	56	71.2
006	2010-02	80	50	65	45	60	60

Field:	EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMATICS	BIOLOGY	CHEMISTRY	AVERAGE: ([PHYSICS]+[COMPUTER]+[MATHEMATICS]+[BIOLOGY]+[CHEMISTRY])/5
Table:	Examination_Results							
Sort:								
Show:	<input checked="" type="checkbox"/>							
Criteria:								>=40
or:								

Failed							
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMAT	BIOLOGY	CHEMISTRY	AVERAGE
004	2010-01	45	56	29	19	6	31

Field:	EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMATICS	BIOLOGY	CHEMISTRY	([PHYSICS]+[COMPUTER]+[MATHEMATICS]+[BIOLOGY]+[CHEMISTRY])/5
Table:	Examination_Results							
Sort:								
Show:	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
Criteria:								<40
or:								

Passed REPORT							
 Passed		Saturday, December 17, 2022					
		11:54:35 AM					
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMATICS	BIOLOGY	CHEMISTRY	AVERAGE
001	2010-01	70	60	80	90	40	68
002	2010-02	85	85	77	46	39	66.4
003	2010-03	77	75	85	85	9	66.2
005	2010-05	70	60	80	90	56	71.2
006	2010-02	80	50	65	45	60	60
5							

Failed REPORT							
 Failed		Saturday, December 17, 2022					
		11:52:45 AM					
EXAM-ID	STUDENT ID	PHYSICS	COMPUTER	MATHEMATICS	BIOLOGY	CHEMISTRY	
004	2010-01	45	56	29	19	6	
1							

Extract 14.1: A sample of the candidate’s correct responses to question 2 of paper 2

Extract 14.1 shows the sample of response from the candidate who created correctly “Student\_Details” and “Examination\_Results” table with their appropriate data types and primary keys. The candidate also created correctly the relationship between tables, and the required forms and queries.

Apart from the candidates’ good performance revealed, a few candidates scored low marks. Some of these candidates created the correct database but failed to assign the data type in the fields of the tables. However, some candidates created database with incorrect name. For example, one candidate wrote the name of the table as *table 1* instead of *Student\_Details table*. Other candidates created a database without including any records. It was observed that some of the candidates failed to rename fields and used the default field names like “ID”, “field1” instead of renaming the required fields according to the appropriate names. Likewise, some of the candidates failed to validate the “Gender” field and gave wrong formula for computing average scores. Moreover, some of the candidates created two tables but failed to create the relationship between them because they failed to recognize the primary and foreign keys. It was also noted that most of these candidates failed to create query, forms and reports. This

indicates that the candidates lacked enough knowledge of database designing. Extract 14.2 shows a sample of incorrect responses to this question.

A screenshot of a database form titled "Copy of EXAM RESULT". The form has a header bar with a grid icon and the title. Below the header, there are several dropdown menus and text fields. The first dropdown is labeled "STUDENT DETAILS" and contains the text "MASANJA SINGU MACHEMBE". The second dropdown is labeled "19 YEARS". The third dropdown is labeled "D SALMIN AMOUR SEC SCHOOL". The fourth dropdown is labeled "MALE". The fifth dropdown is labeled "FORM FOUR 'A'". The sixth dropdown is labeled "PMC". There is a "\*" symbol in a small box on the left side of the form.

Copy of EXAM RESULT	
Field Name	Data Type
STUDENT DETAILS	AutoNumber
MASANJA SINGU MACHEMBE	Short Text
19 YEARS	Short Text
D SALMIN AMOUR SEC SCHOOL	Short Text
MALE	Short Text
FORM FOUR "A"	Short Text
PMC	Short Text

Examination results	
Field Name	Data Type
Exam -ID	Short Text
Student ID	Short Text
PHYSICS	Short Text
COMPUTER	Short Text
MATHEMATICS	Short Text
BIOLOGY	Short Text
CHEMISTRY	Short Text
AVERAGE	Short Text

Extract 14.2: A sample of the candidate's incorrect responses to question 2 of paper 2

In extract 14.2, the candidate managed to create two tables but with incorrect table name, field name, primary keys and data types. The candidate also failed to create a query and relationship between tables.

### 3.3 Question 3: Spreadsheet

This question tested the candidates' practical skills in spreadsheet program. The question was as follows.

Kilimani Electronics Ltd is a company that sells mobile phones and accessories in Tanzania. The following is a screenshot of a worksheet

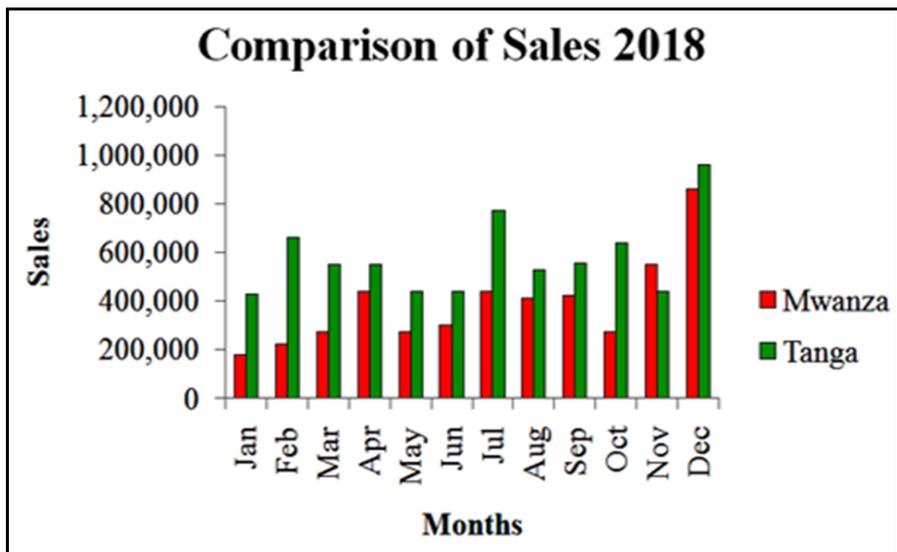
which shows sales records from its three branches of Arusha, Mwanza and Tanga for the year that ended 2018. As an IT expert at Kilimani Company, you are required to study the following worksheet and answer the questions that follow:

	A	B	C	D	E	F	G	H
1	<b>Kilimani Electronics Ltd.</b>							
2	<b>Summary of Sales Report in the Year 2018</b>							
3	<b>Months</b>	<b>Arusha</b>	<b>Mwanza</b>	<b>Tanga</b>	<b>Total Sales</b>	<b>Average</b>	<b>VAT</b>	<b>WCF</b>
4	Jan	630,000	180,000	430,000				
5	Feb	770,000	220,000	660,000				
6	Mar	800,000	270,000	550,000				
7	Apr	670,000	440,000	550,000				
8	May	660,000	270,000	440,000				
9	Jun	870,000	300,000	440,000				
10	Jul	490,000	440,000	770,000				
11	Aug	440,000	410,000	530,000				
12	Sep	664,000	420,000	556,000				
13	Oct	780,000	270,000	640,000				
14	Nov	770,000	550,000	440,000				
15	Dec	110,000	860,000	960,000				
16								
17	<b>Yearly Sales</b>							
18	<b>Minimum Sale</b>							
19	<b>Average Sales</b>							
20	<b>Deductions</b>	<b>VAT</b>	<b>18%</b>	<b>WCF</b>	<b>2%</b>			

### Worksheet descriptions

- The font size for the first and second heading should be 14.
  - VAT means Value Added Tax and WCF Means Work Compensation Fund.
- (a) Create a workbook named KILIMANI. Use the screenshot of the worksheet given to create a landscape worksheet in sheet1. Rename Sheet1 as Sales Report.
- (b) Use appropriate function to compute Minimum Sales in Mwanza region, Total Sales and Average for each month.

- (c) VAT and WCT are obtained from Total Sales. Use absolute cell reference to calculate VAT which is 18% of the total sales and WCF which is equal to 2% of the total sales.
- (d) Format the average column to display values into two decimal places.
- (e) Type your Examination Number at the centre section of the page header and insert page number at the left section of footer area.
- (f) Use the Months and Sales in Mwanza and Tanga regions to create the following column chart. Save the chart to a separate worksheet as Sales Chart.



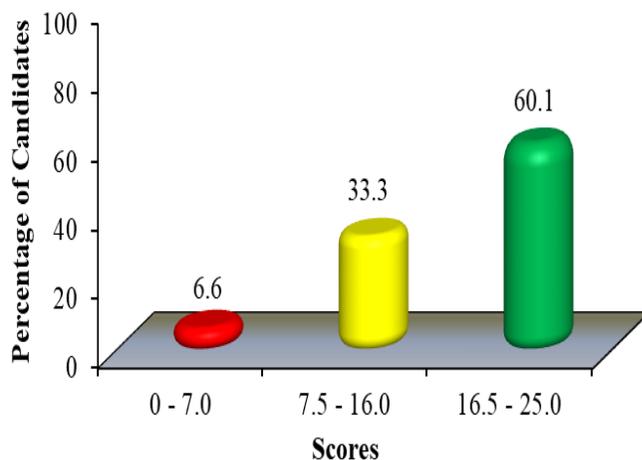
**Chart descriptions**

- The font style and size of the heading should be Calibri and 18 respectively.
- The font style and size of the Months, Sales and legend should be Times New Roman and 12 respectively.
- The colour for Mwanza and Tanga bars should be red and green respectively.

- (g) Print your work.

This question tested the candidates’ knowledge of spreadsheet. Majority of the candidates that is 2,822 (92.0%) attempted this question, among them 185 (6.6%) scored from 0 to 7 marks, 942 (33.3%) scored from 7.5 to 16 marks and 1,695 (60.1%) scored from 16.5 to 25 marks. The candidates’

general performance was good because 93.4 per cent of the candidates scored above 16 marks. Figure 15 presents a summary of the candidates' performance in this question.



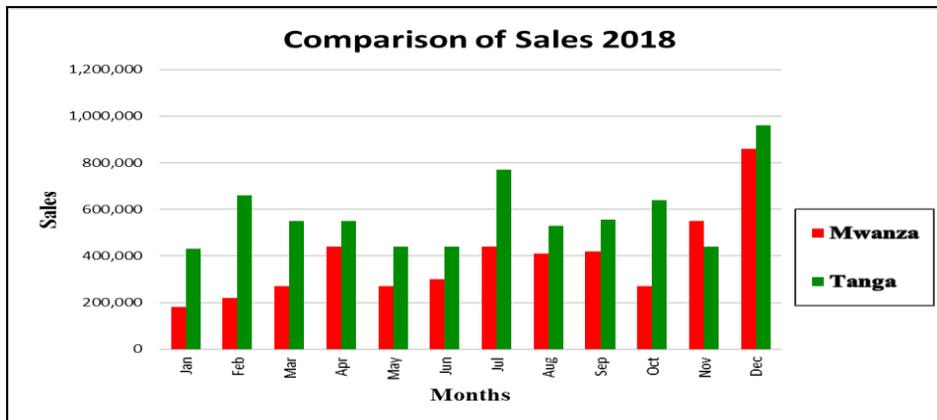
**Figure 15:** The candidates' performance in question 3

Figure 15 shows that most of the candidates (60.1%) scored high marks. Majority of these candidates created correctly the workbook with font size 14 in rows 1 and 2. They also set the orientation to *landscape* and renamed correctly Sheet1 as *Sales Report*. It was observed that the candidates had sufficient knowledge of performing formatting such as merging cells and bolding titles as required. Additionally, some of these candidates typed the appropriate function that computes Total sales, Average sales for each month, and the minimum sale in Mwanza region. Moreover, they correctly formatted the numbers to two decimal places in the average column. Lastly, they correctly inserted *index numbers* to the header of the worksheet.

Further analysis showed that the candidates created a column chart accordingly. However, some of the candidates faced difficulties in using the absolute cell reference. For example, some of the candidates typed the formula  $=18\%*E4$  for computing VAT instead of  $=\$D\$20*E4$  while others used  $=2\%*E4$  instead of  $=\$F\$20*E4$  for computing WCF. Extract 15.1 shows the correct response from one of the candidates.

	A	B	C	D	E	F	G	H
1	<b>Kilimani Electronics Ltd</b>							
2	<b>Summary of Sales Report in the Year 2018</b>							
3	Months	Arusha	Mwanza	Tanga	Total Sales	Average	VAT	WCF
4	Jan	630000	180000	430000	=SUM(B4:D4)	=AVERAGE(B4:D4)	=PRODUCT(\$D\$20,E4)	=PRODUCT(\$F\$20,E4)
5	Feb	770000	220000	660000	=SUM(B5:D5)	=AVERAGE(B5:D5)	=PRODUCT(\$D\$20,E5)	=PRODUCT(\$F\$20,E5)
6	Mar	800000	270000	550000	=SUM(B6:D6)	=AVERAGE(B6:D6)	=PRODUCT(\$D\$20,E6)	=PRODUCT(\$F\$20,E6)
7	Apr	670000	440000	550000	=SUM(B7:D7)	=AVERAGE(B7:D7)	=PRODUCT(\$D\$20,E7)	=PRODUCT(\$F\$20,E7)
8	May	660000	270000	440000	=SUM(B8:D8)	=AVERAGE(B8:D8)	=PRODUCT(\$D\$20,E8)	=PRODUCT(\$F\$20,E8)
9	Jun	870000	300000	440000	=SUM(B9:D9)	=AVERAGE(B9:D9)	=PRODUCT(\$D\$20,E9)	=PRODUCT(\$F\$20,E9)
10	Jul	490000	440000	770000	=SUM(B10:D10)	=AVERAGE(B10:D10)	=PRODUCT(\$D\$20,E10)	=PRODUCT(\$F\$20,E10)
11	Aug	440000	410000	530000	=SUM(B11:D11)	=AVERAGE(B11:D11)	=PRODUCT(\$D\$20,E11)	=PRODUCT(\$F\$20,E11)
12	Sep	664000	420000	556000	=SUM(B12:D12)	=AVERAGE(B12:D12)	=PRODUCT(\$D\$20,E12)	=PRODUCT(\$F\$20,E12)
13	Oct	780000	270000	640000	=SUM(B13:D13)	=AVERAGE(B13:D13)	=PRODUCT(\$D\$20,E13)	=PRODUCT(\$F\$20,E13)
14	Nov	770000	550000	440000	=SUM(B14:D14)	=AVERAGE(B14:D14)	=PRODUCT(\$D\$20,E14)	=PRODUCT(\$F\$20,E14)
15	Dec	110000	860000	960000	=SUM(B15:D15)	=AVERAGE(B15:D15)	=PRODUCT(\$D\$20,E15)	=PRODUCT(\$F\$20,E15)
16								
17	Yearly sales							
18	Minimum Sale		=MIN(C4:C15)					
19	Average Sales							
20	Deductions		VAT	0.18	WCF	0.02		

	A	B	C	D	E	F	G	H
1	<b>Kilimani Electronics Ltd</b>							
2	<b>Summary of Sales Report in the Year 2018</b>							
3	Months	Arusha	Mwanza	Tanga	Total Sales	Average	VAT	WCF
4	Jan	630,000	180,000	430,000	1,240,000	413,333.33	223,200	24,800
5	Feb	770,000	220,000	660,000	1,650,000	550,000.00	297,000	33,000
6	Mar	800,000	270,000	550,000	1,620,000	540,000.00	291,600	32,400
7	Apr	670,000	440,000	550,000	1,660,000	553,333.33	298,800	33,200
8	May	660,000	270,000	440,000	1,370,000	456,666.67	246,600	27,400
9	Jun	870,000	300,000	440,000	1,610,000	536,666.67	289,800	32,200
10	Jul	490,000	440,000	770,000	1,700,000	566,666.67	306,000	34,000
11	Aug	440,000	410,000	530,000	1,380,000	460,000.00	248,400	27,600
12	Sep	664,000	420,000	556,000	1,640,000	546,666.67	295,200	32,800
13	Oct	780,000	270,000	640,000	1,690,000	563,333.33	304,200	33,800
14	Nov	770,000	550,000	440,000	1,760,000	586,666.67	316,800	35,200
15	Dec	110,000	860,000	960,000	1,930,000	643,333.33	347,400	38,600
16								
17	Yearly sales							
18	Minimum Sale		180,000					
19	Average Sales							
20	Deductions		VAT	18%	WCF	2%		



Extract 15.1: A sample of the candidate’s correct responses to question 3 of paper 2

In extract 15.1, the candidate created the workbook named KILIMANI and applied the correct formula that computes Minimum sales, Total sales, Average, VAT and WCT. The candidate also created correctly the column chart as required.

On the other hand, 6.6 per cent of the candidates scored low marks. Some of the candidates created two workbooks instead of combining “sales records” and “column chart” in the same workbook. Other candidates created a graph within the “sales records” worksheet instead of saving it to the separate worksheet. Moreover, some candidates inserted page number to the right position of footer area. This indicates that the candidates did not understand the requirements of the question.

Further analysis showed that, some candidates did not use functions to calculate the Average, VAT and WCF. These candidates calculated manually all values in the worksheet. Furthermore, some of the candidates inserted the outside borders instead of merging the cells. Moreover, some candidates had knowledge of creating the bar chart but failed to include axis titles (sales and months). Other candidates created the legends but failed to position them to the right side of the graph. Additionally, some candidates created the legends but failed to put the specified colours which were red for Mwanza and green for Tanga. Lastly, the analysis showed that other candidates used text boxes to type the titles for horizontal and vertical axis. These candidates lacked the knowledge of using the layout feature in

inserting the axis. This signifies that the candidates lacked the practical skills of creating, modifying, editing and formatting the graph. Extract 15.2 shows sample of incorrect answers to question 3.

	A	B	C	D	E	F	G	H
1	<b>Kilimani Electronics Ltd</b>							
2	<b>Summary of Sales Report in the Year 2018</b>							
3	<b>Months</b>	<b>Arusha</b>	<b>Mwanza</b>	<b>Tanga</b>	<b>Total sales</b>	<b>Average</b>	<b>VAT</b>	<b>WCF</b>
4	Jan	630000	180000	430000	=SUM(B4:D4)	=AVERAGE(E4)/2	=(18%*E4)	=(2%*E4)
5	Feb	770000	220000	660000	=SUM(B5:D5)	=AVERAGE(E5)/2	=(18%*E5)	=(2%*E5)
6	Mar	800000	270000	550000	=SUM(B6:D6)	=AVERAGE(E6)/2	=(18%*E6)	=(2%*E6)
7	Apr	670000	440000	550000	=SUM(B7:D7)	=AVERAGE(E7)/2	=(18%*E7)	=(2%*E7)
8	May	660000	270000	440000	=SUM(B8:D8)	=AVERAGE(E8)/2	=(18%*E8)	=(2%*E8)
9	Jun	870000	300000	440000	=SUM(B9:D9)	=AVERAGE(E9)/2	=(18%*E9)	=(2%*E9)
0	Jul	490000	440000	770000	=SUM(B10:D10)	=AVERAGE(E10)/2	=(18%*E10)	=(2%*E10)
1	Aug	440000	410000	530000	=SUM(B11:D11)	=AVERAGE(E11)/2	=(18%*E11)	=(2%*E11)
2	Sep	664000	420000	556000	=SUM(B12:D12)	=AVERAGE(E12)/2	=(18%*E12)	=(2%*E12)
3	Oct	780000	270000	640000	=SUM(B13:D13)	=AVERAGE(E13)/2	=(18%*E13)	=(2%*E13)
4	Nov	770000	550000	440000	=SUM(B14:D14)	=AVERAGE(E14)/2	=(18%*E14)	=(2%*E14)
5	Dec	110000	860000	960000	=SUM(B15:D15)	=AVERAGE(E15)/2	=(18%*E15)	=(2%*E15)
6								
7	<b>Yearly sales</b>							
8	<b>Minimum sale</b>	180000						
9	<b>Average sales</b>				=AVERAGE(E4:E15)			
0	<b>Deductions</b>	<b>VAT</b>	<b>0.18</b>	<b>WCF</b>	<b>0.02</b>			

Extract 15.2: A sample of the candidate's incorrect responses to question 3

Extract 15.2 shows responses of the candidate who typed the correct formula that calculates “Total sales”. The candidate failed to use the function that computes the “Average” and “Minimum Sale” in Mwanza region. The candidates also failed to include absolute cell references in VAT and WCF formula.

#### 4.0 THE PERFORMANCE OF THE CANDIDATES' IN EACH TOPIC

The analysis of the candidates' performance in each topic showed that most of the candidates performed well (93.6%) in the Multiple Choice Items which were composed from the topics of *Computer Evolution, Database as Information System, Computer Networks and Communication, The Computer, Web Development, Word Processing, Presentation, and Multimedia*. The candidates also attained good performance on the questions set from the following topics: *Computer Handling (95.9%), Web Development (91.4%), Computer Software (86.0%), Presentation (83.6%), Database as Information System (79.6%), Spreadsheet (78.9%), The*

*Computer* (72.7%), *Desktop Publishing* (70.9%), and *Multimedia* (67.5%). The good performance is a result of the correct interpretation of the questions and sufficient knowledge of the tested topics such as creating simple website, preparation of a presentation, manipulation of database, ability of creating publications and functions of software.

Conversely, the candidates attained average performance on the topics of *The Internet* (64.3%), *Word processing* (48.9%), and *Computer Networks and Communication* (39.9%). This average performance was attributed to insufficient knowledge about identifying physical arrangements of computer used in the computer networks, editing and formatting a document typed in Microsoft word, and the internet application. However, no topic had weak performance. The performance of the candidates in each topic is summarized in the Appendix attached with this report.

## **5.0 CONCLUSION**

The results of the 2022 CSEE in the Information and Computer Studies Examination subject demonstrated good performance. The data analysed indicated that 91.5 per cent of the candidates who sat for the examination passed, which is the decrease of 2.2 per cent of the candidates who passed compared to the year 2021. The reasons for this performance include sufficient knowledge and practical skills in the tested concepts. Another reason was ability to give satisfactory explanations of the tested concepts.

## **6.0 RECOMMENDATIONS**

In order to improve the candidates' performance in the Information and Computer Studies subject, the following are recommended:

- (a) Teachers should demonstrate how to edit and format a document typed in Microsoft word.
- (b) Students should practice using predefined functions in real-world situations.
- (c) Teachers should lead students in identifying physical network topologies.

### Appendix: Analysis of Candidates' Performance per Topic

S/n	Topic	No. of Questions	Percentage of Candidates who Scored an Average of 30% Marks or Above	Remarks
1.	Computer Handling	1	95.9	Good
2.	Computer Evolution, Database as Information System, Computer Networks and Communication, The Computer, Web Development, Word Processing, Presentation, and Multimedia	1	93.6	Good
3.	Web Development	1	91.4	Good
4.	Computer Software	1	86.0	Good
5.	Presentation	1	83.6	Good
6.	Database as Information System	2	79.6	Good
7.	Spreadsheet	2	78.9	Good
8.	The Computer	1	72.7	Good
9.	Desktop Publishing	1	70.9	Good
10.	Multimedia	1	67.5	Good
11.	The Internet	1	64.3	Average
12.	Word Processing	1	48.9	Average
13.	Computer Network and Communication	1	39.9	Average



