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

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

INFORMATION AND COMPUTER STUDIES

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137 INFORMATION AND COMPUTER STUDIES

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TABLE OF CONTENTS

FOREWORD

With pleasure, the National Examinations Council of Tanzania has issued the Advanced Certificate of Secondary Education Examination (ACSEE) 2022 Candidates' Item-Response Analysis (CIRA) report in Information and Computer Studies. The purpose of the analysis is to give students, teachers, parents, policy makers, and other stakeholders in education feedback on how the candidates answered the questions.

The candidates' general performance in the 2022 Information and Computer Studies Examination was average as 38.4% per cent of the candidates passed. The analysis of the candidates' responses in each topic showed that only one topic of Fundamentals of Data Processing had good performance. The topic of Multimedia had an average performance. The candidates' performance was weak in six topics which were; Website Development, Elementary Programming, Database Management Systems, Networking and Data Communication, Generic Application Software and Application Areas of ICT. Weak performance in these topics were attributed by inability of creating simple publishing document, lack of knowledge in creating simple website by using HTML, lack of knowledge about different levels of programming languages and its types, lack of ability in developing a database step by step by using DBMS software, inability of exploring the concept of multimedia and its importance in daily life.

It is expected that the feedback provided by this report will facilitate the process for educational administrators, school administrators, teachers, and candidates to device appropriate measures to be take to enhance the candidates' performance in future examinations administered by the Council.

Finally, the National Examinations Council of Tanzania would like to thank the examiners, examination officers and all other personnel who participated in the preparation of this report.

Athumani S. Amasi
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report presents an analysis of the candidates' performance in the 2022 Information and Computer Studies in the Advanced Certificates of Secondary Education Examination (ACSEE). The examination assessed knowledge and competences acquired by the candidates at the advanced level of secondary education.

The Information and Computer Studies examination had one paper which consisted of two (2) sections; A and B, with a total of ten (10) questions. Section A consisted of eight (8) compulsory questions carrying 10 marks each and section B had two (2) optional questions carrying 20 marks each. The candidates were asked to attempt one (1) question.

A total of 622 candidates sat for the Information and Computer Studies examination in 2022. Out of these, 236 (38.4%) passed the examination and 382 (61.6 %) failed. In 2021, a total of 2,610 candidates sat for the Information and Computer Studies examination, of these candidates, 796 (30.5%) passed the examination and 1,814 (69.5 %) failed. This means that there is an increase in performance by 7.9 per cent in 2022.

The requirements of the questions, what the candidates wrote, and the mistakes they made while answering the questions are provided in the following section. To further illustrate the cases displayed, extracts from the candidates' responses are also presented. The candidates' performance is grouped into the ranges of 0 to 34 (poor performance), 35 to 59 (average performance), and 60 to 100 (high performance). These ranges represent the percentage of candidates who scored 35% of the marks or higher on the different questions. This report has also various charts and tables that are coloured red, yellow, and green, which represent weak, average, and good performances, respectively. Finally, the report presents conclusions and recommendations.

2.0 ANALYSIS OF THE CANDIDATES' RESPONSE PER QUESTION

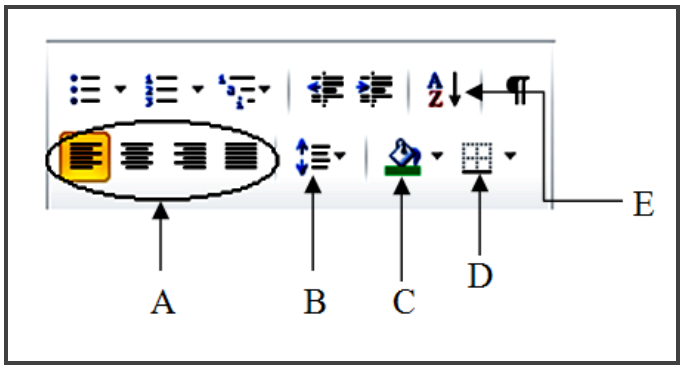
2.1 Section A: Short answer questions

Section A of the Information and Computer Studies subject examination had a total of eight (08) questions. Each question has a total of 10 marks.

The performance of the candidates in this section was divided into three groups according to the scores obtained by the candidates. Candidates were considered to have performed poorly on the question if their scores ranged from 0 to 3. Candidates who scored from 3.5 to 5.5 marks were regarded to have performed averagely, while those who scored from 6 to 10 marks were refereed to have performed well.

2.1.1 Question 1: Generic Application Software

This question assessed the candidate's understanding on Microsoft word. They were given a part of the Microsoft Word window shown in the following figure.



The questions given were as follows;

(a) What are the names of parts **B**, **C**, **D** and **E** in Figure 1?

(b) Outline each type of alignment presented in part **A**.

(c) Explain one function of each feature labelled with letters **B**, **C**, **D** and **E**.

This question was attempted by all candidates 622 (100%) whereby 499 (80.20%) scored low marks, 94 (15.10%) scored average, and 29 (4.7%) scored high marks. Figure 1 illustrates the candidate’s performance in this question.

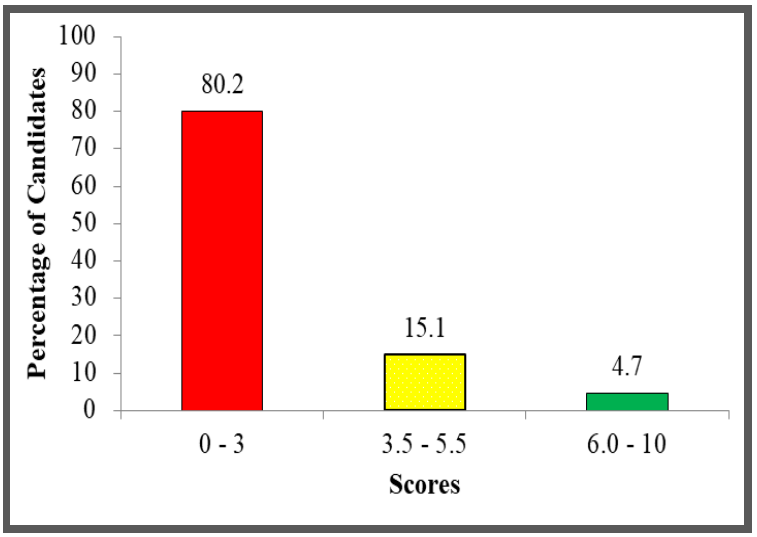
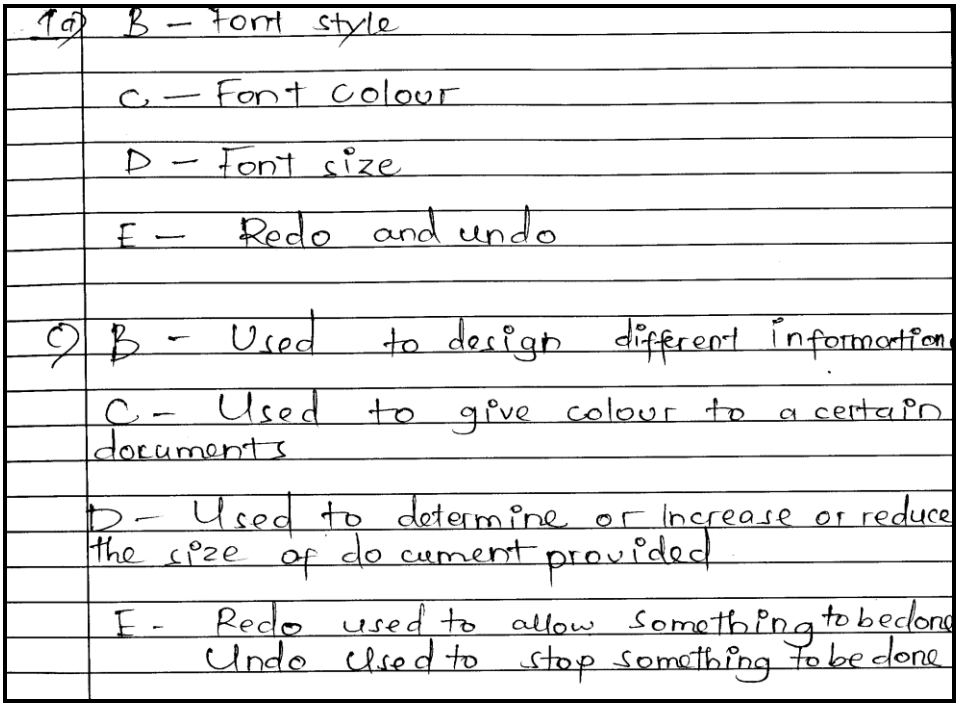


Figure 1: *The Candidate's Performance on Question 1*

Generally, this question had weak performance because majority of the candidates (80.20%) scored less than 3.5 marks as shown in Figure 1. The analysis show that these candidates lacked basic knowledge of the Microsoft word. Consequently, they responded wrongly in all parts and some skipped this question. Additionally, some of the candidates wrote the computer terms instead of parts of Microsoft word window in part (a). For instance, some candidates wrote *software, hardware, generic software* and *Microsoft.* Others wrote formatting tools such as *bold, underline and Italicize*. For example, one candidate wrote B *is Excel, C is power point, D is spreadsheet* instead of B - Line and Paragraph Spacing, C - Shading/Fill colour, D - Bottom Border and E - Sort.

In part (b), most of the candidates listed different computer terminologies such as hyperlink, home, create, enlargement etc. instead of outlining types of alignment presented in part A. Moreover, some of the candidates failed to understand the requirement of the question as they wrote types of computer networks while others wrote types of physical arrangements in the network. For example, one of the candidates wrote LAN, WAN, MAN as the types of alignment presented in part A. A few candidates had idea of types of alignment available in Microsoft word window but interchanged the explanations. For example, one of the candidates wrote *Justify: align the text at center*. The candidates could not score any mark

in part (c) because they failed to identify parts of the Microsoft word window in part A. Moreover, a few candidates explained correctly the function of a feature labeled with letter E (sort). These candidates associated the letters (a - z) appeared in the feature with sorting of text. Extract 1.1 represents a sample of such incorrect response.

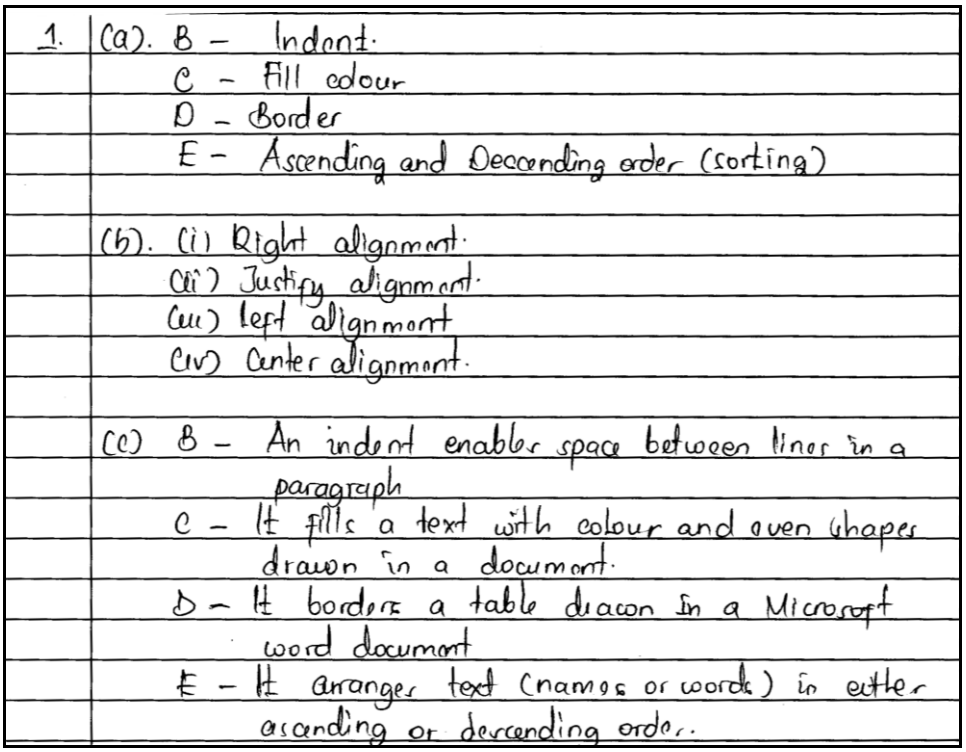


Extract 1.1: A sample of incorrect responses to question 1

In Extract 1.1, the candidate wrote the names of text format instead of parts of Microsoft word window in part (a). In part (c), the candidate also had an idea of the feature C (Shading) that concerns with filling colour but lacked clear knowledge of what and where the colour is filled.

On the other hand, some of the candidates (19.8%) who scored from 3.5 marks gave correctly the names of part B, C, D and E in part (a). The responses provided by the candidates were; line and paragraph spacing, shading, bottom boarder and sort respectively. Moreover, some of them outlined correctly the types of alignment labelled with letter A in part (b). Others outlined correctly left and right alignment but could not outline the center and justify alignment. However, some of candidates did not

know the name and the function of "Justify" feature. For-example, one candidate wrote *full page alignment* instead of justify alignment. Lastly, in part (c), few candidates gave at least two correct functions of features labelled with letter B, C, D and E. Others explained correctly only the feature labelled with letter E (sort) but failed the rest. Moreover, Extract 1.2 presents a sample of such correct answer from one of the candidates.


1. (a). B – Indent.
C – Fill colour
D – Border
E – Ascending and Decending order (sorting)

(b). (i) Right alignment.
(ii) Justify alignment.
(iii) left alignment
(iv) Center alignment.

(c) B – An indent enable space between liner in a paragraph
C – It fills a text with colour and even shapes drawn in a document.
D – It borders a table drawn in a Microsoft word document
E – It arranges text (names or words) in either ascending or descending order.

Extract 1.2: A sample of correct answer in question 1

In Extract 1.2 a candidate identified correctly the names of the features labelled with letters C, D and E in part (a). The candidate also gave the correct type of alignment but failed to outline them. In part (c), the candidate wrote indent as feature B instead of line and paragraph spacing. However, the explanations of all features were correct.

2.1.2 Question 2: Application Areas of ICT

This question tested the candidate's knowledge on generic and specialised software for providing customer services. In this question the candidates were required to: -

(a) explain how generic and specialized software differ from each other and giving one example for each type.

(b) explain the three possible security risks that are likely to be faced by those companies in their day to day operations.

A total of 622 (100%) candidates attempted this question out of whom 500 (80.4%) scored from 0 to 3 marks, 91 (14.6%) scored from 3.5 to 5.5 marks and 31 (5%) scored from 6 to 10 marks. Figure 2 illustrates the candidates' performance in this question.

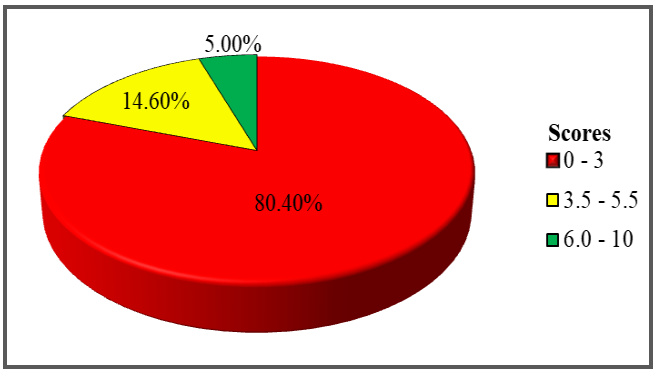
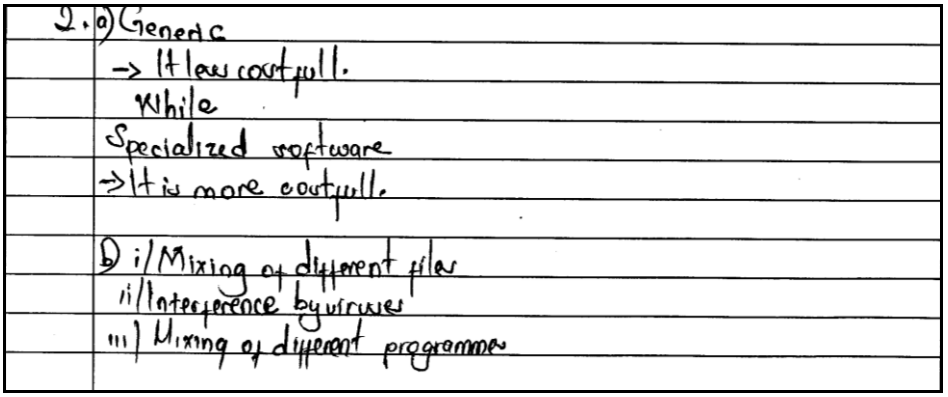


Figure 2: *The Candidates' Performance on Question 2*

The candidates' general performance in this question was weak because 80.4 per cent of the candidates scored less than 3.5 marks as shown in Figure 2. The analysis showed that many candidates failed to differentiate generic from specialised software in part (a) because they lacked knowledge of the computer software. Lack of knowledge led the candidates to guess the answers by interpreting the term general and specialisation used in the question. For example, some candidates wrote that *generic software is the software used to serve every one* while *specialized software used to serve special customers*. Others related the term "generic" with a group and "specialised" to individual. For example, some of the candidates wrote *generic software is prepared by a group of people* while *specialised software is prepared by a single person*. Others wrote *generic software provides data and documents to all people while specialised software provides data and documents to one person*. Moreover, they also provided wrong examples such as *Facebook*,

Instagram and *YouTube*. Majority of these candidates could not explain correctly the possible security risks that are likely to be faced by the companies in part (b). The analysis showed that some of the candidates wrote the ways of preventing data stored in a computer. For example, one of the candidates wrote *using strong password* and *installing antivirus*. This is attributed to the fact that they did not know the functions performed by generic and specialised software. However, some of the candidates explained correctly only one security risk. The most common security risk provided by these candidates is attack of hackers. This indicates that the candidates lacked knowledge of other principles of data security such as confidentiality, accuracy and availability. Extract 2 presents a sample of incorrect response from one of the candidates.


2. a) Generic
→ It less costfull.
While
Specialized software
→ It is more costfull.

b) i) Mixing of different files
ii) Interference by viruses
iii) Mixing of different programmes

Extract 2: A sample of incorrect response to question 2

In Extract 2, the candidates differentiated wrongly the generic software from specialised software in part (a). The candidate also wrote the effect of computer virus instead of possible security risks in part (b).

Apart from weak performance, 19.6 per cent of the candidates scored above 3 marks. A few candidates differentiated correctly the generic from specialisation software in part (a). However, some of them had insufficient knowledge which led them to give unclear explanations. For example, one of the candidates wrote *generic software is the type of system software which performs many different tasks* while *specialised software is the type of application software which performs different activities*. This candidate did not know that both generic and specialised

software are application software whereby generic software performs many different tasks and specialised software is designed to perform specific purpose. Further analysis revealed that some of them explained correctly the possible security risks that are likely to be faced by those companies in their day to day operations. The common security risks explained by candidates were hacking and cracking, piracy, data modification/Manipulation and attack by malicious programs like worms and Trojan horse.

2.1.3 Question 3: Multimedia

In this question candidates were required to describe five components of multimedia system that should be considered by the company to increase the functionalities when designing computer games.

A total of 622 (100%) candidates attempted this questions. Out of whom 500 (80.4%) scored 0 to 3 marks, 91 (14.6%) scored from 3.5 to 5.5, marks and 31 (5%) scored 6 to 10 marks. Figure 3 summarizes the candidates' performance in this question.

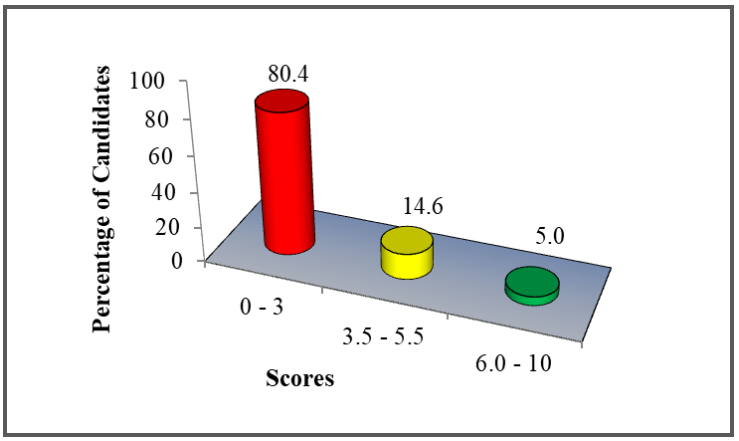
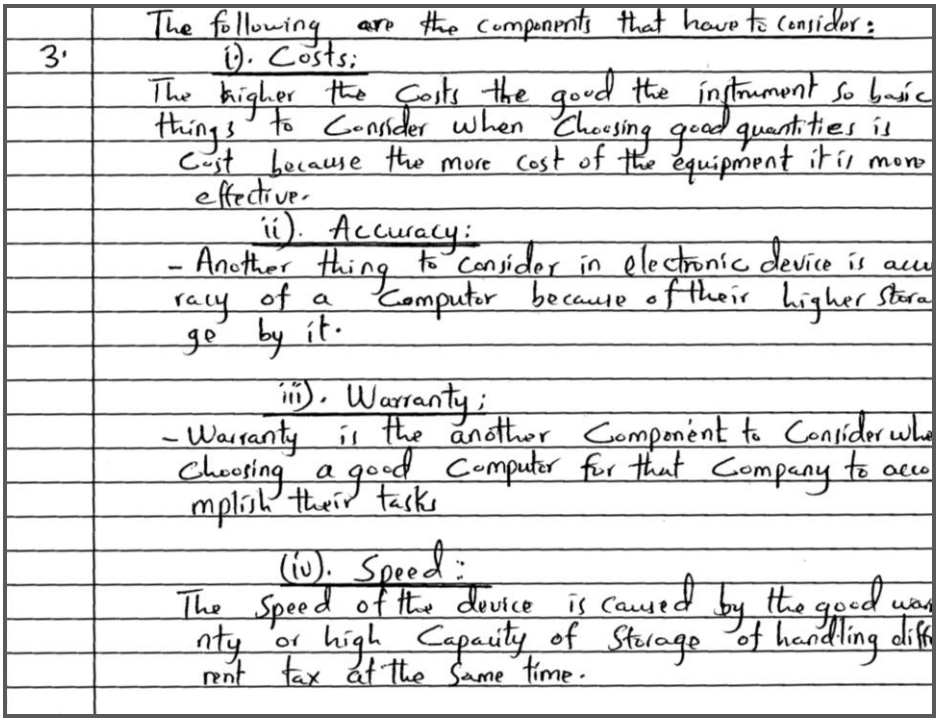


Figure 3: *The candidates' performance on question 3*

This question had weak performance because 80.4 per cent scored below 3.5 marks as revealed in Figure 3. Among these candidates 44.7 per cent scored zero mark. Some of them described the *hyperlink*, *hypertext*, *hypermedia* which is the version of hypertext which contains different forms of media such as text, audio and video. Others described the

components of multimedia instead of factors to consider when purchasing multimedia system such as high processing power, storage and memory, sound and display cards, software tools and operating system. For example, some of the candidates described the t*ext, audio, video, animation and graphic*s. This revealed that these candidates failed to understand the requirement of the questions. Additionally, there were candidates who described the components of the communication such as *sender, message, channel, receiver* and *feedback as components of the multimedia system* as the components of multimedia system. However, a few candidates listed correctly only two components of multimedia without giving explanations. This indicates that the candidates had insufficient knowledge about components of multimedia system. Extract 3 represents a sample of incorrect responses.


3'

The following are the components that have to consider:

i). Costs;

The higher the Costs the good the instrument so basic things to Consider when Choosing good quantities is Cost because the more cost of the equipment it is more effective.

ii). Accuracy:

- Another thing to consider in electronic device is accuracy of a Computer because of their higher Storage by it.

iii). Warranty;

- Warranty is the another Component to Consider when Choosing a good Computer for that Company to accomplish their tasks

(iv). Speed:

The Speed of the device is caused by the good warranty or high Capacity of Storage of handling different tax at the same time.

Extract 3: Candidates' incorrect response to question 3

In Extract 3, the candidate wrote the factors to be considered when purchasing computer hardware instead of the components of multimedia system.

On the other hand, 19.6 per cent of the candidates scored above 3 marks. Some of these candidates described correctly two components of multimedia system. However, some of them mixed up the components of multimedia system with the components of computer system. For example, some of the candidates described *human ware* which is not the component of multimedia system. Further analysis revealed that there were candidates who had knowledge about factors required in purchasing the effective multimedia system but could not give correct descriptions. For example, one of the candidates wrote *processor is the organ which used to store data, so multimedia system requires a processor with a big space*. This candidate was supposed to know that a multimedia system requires high processing power with a minimum processing speed of 500 MHz to deal with large data processing and real-time delivery of the media. Others described only one part of the multimedia system (input/output devices) as they listed the monitor, projector, keyboard, mouse digital camera, speaker and microphone. This shows that candidates lacked the knowledge of other components like high processing power (processor speed), storage and memory (RAM, ROM and HDD), Operating system, software tools and network support.

Moreover, a few candidates accurately described the factors required for the company to increase functionalities when producing computer games. High processing power, storage and memory, an operating system, software tools, sound and display cards, effective input/output devices, and network support are the responses given by the candidates.

2.1.4 Question 4: Database Management System

In this question, the candidates were required to;

(a) identify the key steps to be followed to create a password in Microsoft Access Database.

(b) explain three importance of traditional file system over Database Management System (DBMS).

This question was attempted by 622 (100%) candidates, out of whom 557 (89.50%) scored 0 to 3 marks, 51 (8.20%) scored from 3.5 to 5.5, marks

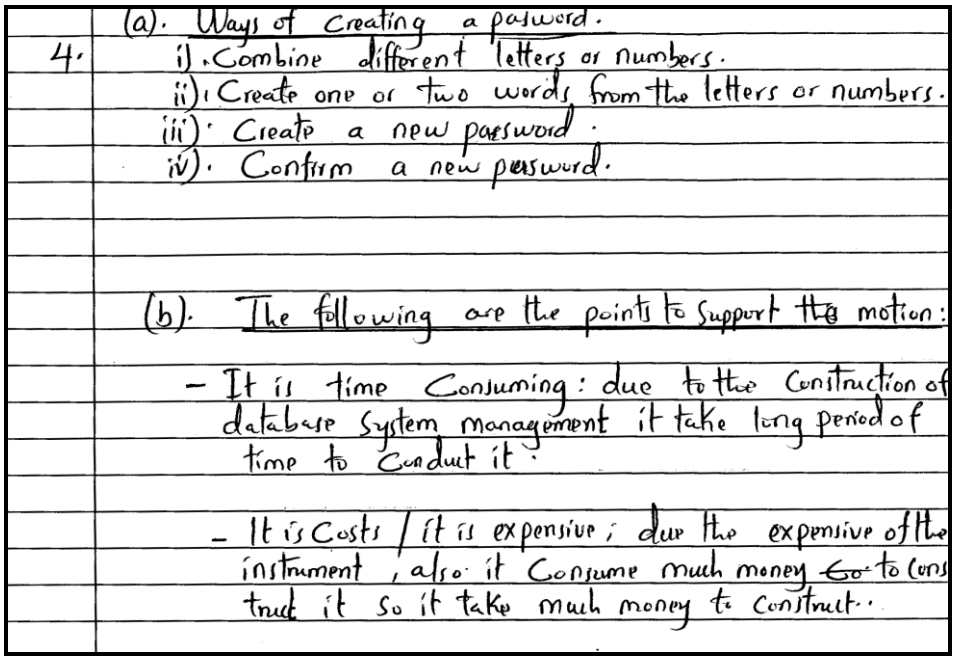
and 14 (2.3%) scored 6 to 10 marks. Table 1 presents the candidates' performance in this question.

Table 1: Summary of the Candidates' Performance in Question 4

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	557	89.50
3.5 - 5.5	51	8.20
6.0 - 10	14	2.30

Generally, the candidates' performance on this question was weak because 89.50 per cent of the candidates scored 3 marks or less as illustrated in Table 1. Among these candidates 55.6 per cent scored zero mark. It was observed that some candidates wrote *steps of creating password in computer/mobile phone* instead of creating password in the database in part (a). Others wrote steps of opening Microsoft access. For example, some candidates wrote *click start button, click all programs, select Microsoft office to be opened and click Microsoft access.* Furthermore, it was noted that majority of the candidates skipped this part.

In part (b), the candidates did not understand the requirement of the question as some of them wrote *the advantages of electronic database* instead of the importance of traditional database. For example, some of the candidates wrote *it is easy to search the file, store many documents and reduce redundancy* instead of traditional database is cheap in implementation because DBMS involve computer hardware and software which are expensive to purchase. It was also noted that some candidates wrote the general importance of database such as storing document for future use. However, few candidates wrote correctly one importance of traditional database that is less cost. This indicates that these candidates had insufficient knowledge of the database management system. Extract 4 represents a sample of such incorrect response.



Extract 4: A sample of incorrect response to question 4

In Extract 4, the candidate wrote characteristics instead of steps of creating password in part (a). The candidate also wrote the disadvantage of DBMS instead of advantage of traditional database in part (b).

Although this question had weak performance, 10.5 per cent of the candidates scored above 3.5 marks. Some of these candidates gave the correct steps of creating password in part (a) but failed to give the importance of tradition file system over DBMS in part (b). Others gave two advantages of traditional file system over DBMS with wrong steps of creating password in Ms. Access. A few candidates listed the advantages of traditional database without giving explanations. Further analysis show that some of the candidates had insufficient knowledge which led them to give unexhausted explanations. For example, one candidate wrote *It does not need much skills rather than Database Management System (DBMS) through traditional file system It is easy to save.* A few candidates (0.6%) wrote correctly steps to be followed when creating password in part (a). In part (b) these candidates explained correctly the importance of traditional file system over DBMS. Furthermore, some of these

candidates failed to score full marks because explanations provided were not clear.

2.1.5 Question 5: Elementary Programming

The question intended to measure the candidates understanding on the concepts of interpreters, compilers and programming languages. The question was as follows;

Programs developed by using programming language need to be translated by interpreters and compilers in order to be executed. Currently, most programmers use high level languages that do not need these tools.

(a) How would you differentiate interpreters from compilers? Give two differences.

(b) Why programmers prefer high level language than low level language in coding. Give two reasons.

(c) Briefly justify the statement, "Early computers work well with interpreters".

Statistics shows that 622 (100%) candidates attempted this question, out of whom 560 (90%) scored from 0 to 3 marks, 11(8.8%) scored from 3.5 to 5.5 marks, and 3 (1.2%) scored from 6 to 8 marks. However, no any candidate scored 10 marks in this question. Table 2 presents the candidates performance in this question.

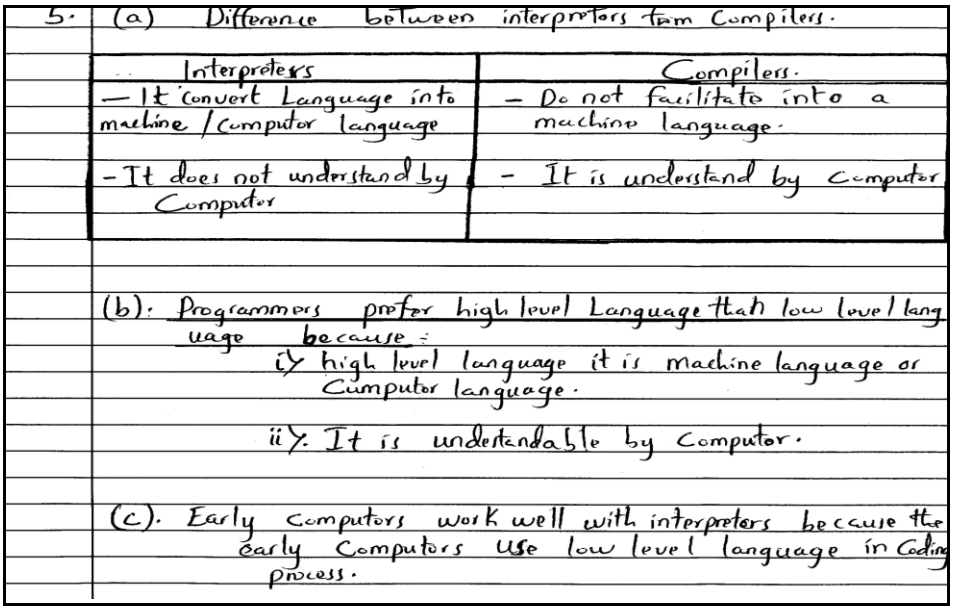
Table 2: Summary of the Candidates' Performance in Question 5

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	560	90.00
3.5 - 5.5	11	8.80
6.0 - 10	3	1.20

The candidates' overall performance on this subject was weak because the majority of candidates (90%) scored only 3 or less marks. Among these candidates 50.4 per cent scored zero mark. The analysis showed that, these candidates faced difficulties in answering all parts. In part (a), some of the candidates associated the interpreter with a person who translates

the information from one language to another. They also related the compiler with the collection of programs. Others thought that interpreter translate the computer language so that the user can understand and compiler arranges computer language from simple to complex. These candidates did not know that both interpreter and compiler translate the source code to machine language but interpreter translates the source program one statement at a time while compiler translates the entire source code at once before execution.

Conversely, in part (b), some candidates gave the reasons which are not technical for programmers to prefer high level languages in coding. For example, some candidates *wrote high level languages are modern than low level languages*. Others wrote *high level language are accurate than low level language*. Further analysis revealed that few candidates understood that high level languages are being preferred by programmers because they are easy to use. Moreover, majority of the candidates did not know why the early computers work well with interpreters in part (c). It was also noted that, these candidates guessed the answers as they gave irrelevant reasons. For example, some of the candidates wrote *they are fast* and *are low skilled*. Extract 5, represents a sample of such incorrect response.


5. (a) Difference between interpreters from Compilers.

Interpreters	Compilers.
— It convert Language into machine / computer language	- Do not facilitate into a machine language.
- It does not understand by Computer	- It is understand by computer

(b). Programmers prefer high level Language than low level language because :-
i). high level language it is machine language or Cumputer language.
ii). It is understandable by Computer.

(c). Early computers work well with interpreters because the early Computers use low level language in Coding process.

Extract 5: Candidates incorrect answer in question 5

In Extract 5, the candidate gave wrong differences in part (a) because interpreter and compiler convert codes to machine language. This failure led the candidate to provide wrong answers in part (b) and part (c).

On the other hand, 10 per cent of the candidates scored from 3.5 to 8 marks. Some of these candidates gave correctly the difference between interpreters and compilers in part (a). The analysis showed that most of them faced difficulties in giving the reasons on why programmers prefers high level language than low level language in coding in part (b). It was noted that a few of them wrote correctly only one reason. The most common reason provided was *interpreters translate source program one statement at a time while compilers translate entire source code*. In part (b) majority of candidates misinterpreted the question, as they wrote the difference between first computer generation and third computer generation instead of giving reasons as to why programmer prefer high level language instead of low level language in coding. For example, one candidate *wrote that high level language uses integrated circuit while low level language uses vacuum tube, high level language uses java while low level uses command prompt.* This show that the candidates had no knowledge about high and low level languages instead relates it with computer generations. In addition, few candidates managed to answer correctly in part (c). For example, one candidate wrote *early computer had small memory to store object code which is correct*.

A few candidates managed to give clearly difference between interpreters and compilers in part (a). For example, one candidate wrote *interpreter translates source program in one statement while compilers translate entire source code at once, interpreters take less memory to interpret object code while compilers require more memory*. Some of them also answered correctly in part (b) while others did not score all marks because they failed to give all reasons correctly. For example, one of the candidates *wrote high level language is more flexibility, easy to correct errors, it is more portable*. This indicates that the candidates had insufficient knowledge on the programming language.

2.1.6 Question 6: Generic Applications Software

This question tested the candidate's knowledge of the software used to create different publications such as invitation cards which include combination of pictures, graphics and texts. In this question the candidates were required to:

(a) propose the application program to be used.
(b) identify other four documents that can be created by the program mentioned in part (a) above.
(c) give four advantages of using program identified in part (a) over others.
(d) recommend three areas (fields) which are suitable for using the program proposed in part (a).

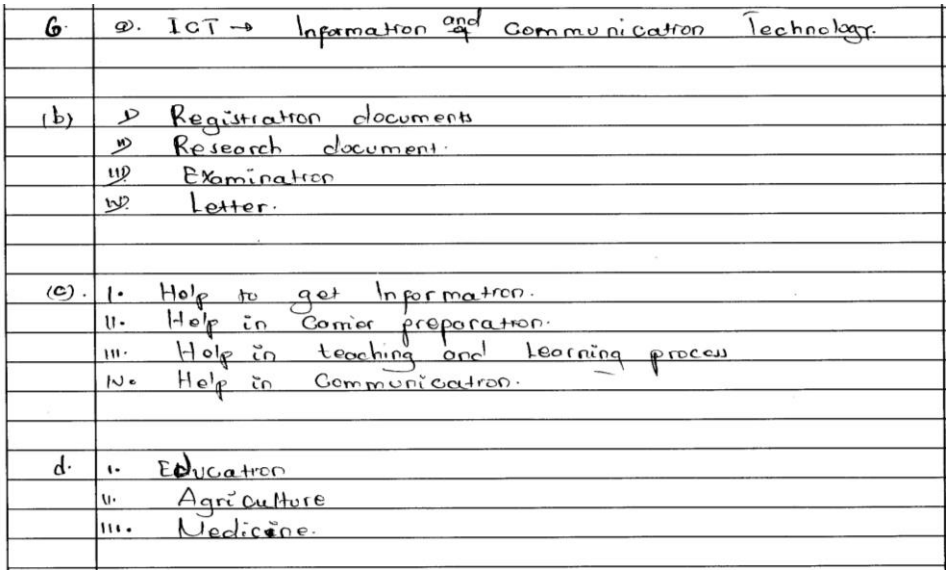
A total of 622 candidates (100%) attempted this question, of whom 504 (81%) scored 0 to 3 marks, 99 (15.9%) scored 3.5 to 5.5 marks, and 19 (3.10%) received 6 to 8 out of 10 marks. Table 3 presents the candidates' performance in this question.

Table 3: Summary of the Candidates' Performance in Question 6

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	504	81.00
3.5 - 5.5	99	15.90
6.0 - 10	19	3.10

Table 3 shows that 81 per cent of the candidates scored 3 marks or less, thus, the candidates' general performance on this question was weak. Analysis shows that majority of the candidates proposed programs which are not used to create publications in part (a). For example, some candidates proposed *Microsoft word,* which is a program for creating rich text document such as books or letters. Others proposed *HTML Language* which is the standard mark-up language for Web pages. The candidates' failure in proposing the program for creating publication led the failure in part (b), (c) and (d). Further analysis showed that some candidates proposed the correct program in part (a) and identified at least two professional documents which can be created by the proposed program in

part (b). However, they could not provide advantages of using desktop publishing program in part (c). For example, one candidate wrote *it does not involve many options and it is not complexity*. This candidate did not know the advantages of the options available in a program. Therefore, these candidates had insufficient knowledge on desktop publishing software. Extract 6.1 represents incorrect response to question 6.


6. a. ICT → Information and Communication Technology.

(b) i. Registration documents
ii. Research document.
iii. Examination
iv. Letter.

(c). i. Help to get Information.
ii. Help in Carrier preparation.
iii. Help in teaching and learning process
iv. Help in Communication.

d. i. Education
ii. Agriculture
iii. Medicine.

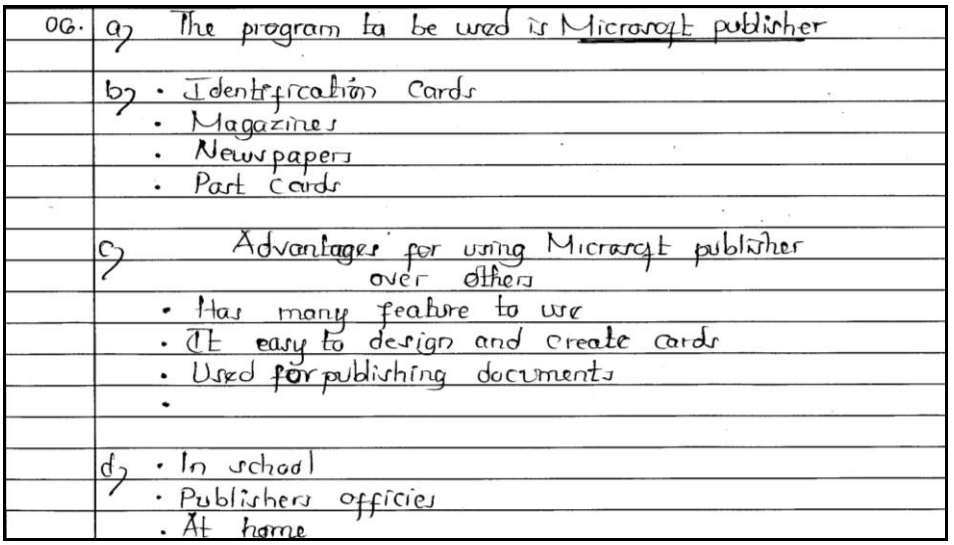
Extract 6.1: A sample of incorrect answer in question 6

In Extract 6.1, the candidate proposed ICT as a program to be used to create a professional invitation card instead of Microsoft publisher in part (a). The candidate's answer in part (b) was wrong because the listed documents can be created by Microsoft word program. Moreover, the candidate wrote the function and recommended areas where ICT can be used instead of Microsoft publisher.

Apart from weak performance, few candidates (19%) scored more than 3 marks. Some of these candidates proposed the correct program to be used in creating cards in part (a) and provided three to four professional documents that can be created by proposed software in part (b). However, in part (c), some of them faced difficulties in giving the advantages of Microsoft publisher because they had insufficient knowledge of its features. For example, one candidates *wrote it does not require*

professionals for their operation, It's not time consuming, its available, provide wide range for the user instead of publisher has a wide range of templates that doesn't limit the choice of a designer as compared to word processor, every item page contains the frame that can be edited and formatted independently.

Nevertheless, only 3 candidates proposed the correct program used to create complex and professional invitation card in part (a). They also gave the document that can be created by the proposed program in part (b). Additionally, the candidate gave two to three advantages of the proposed program over the others and also provided correct areas which are suitable for the Microsoft publisher to be used. Extract 6.2 represents a sample of such correct responses to question 6.



Extract 6.2: Candidates correct response to question 6

In Extract 6.2, the candidate managed to identify name of the proposed program, give the document that can be created by the proposed program in part (b). However, the candidate failed to provide all advantages of the proposed program in part (c). The answer provided in part (d) was also correct.

2.1.7 Question 7: Networking and Data Communication

This question intended to test the candidates understanding on networking, the question was as follows;

A College Laboratory network has 20 computer connected to the server from which every student has been given a user accounts to access teaching and learning resources. Due to the increase of the number of student registered, the technician decided to add 10 more computers to the network using the same server. It was noted that when all student logged in the system become very slow in terms of its performance.

(a) What are the three causes of this problem?
(b) Explain how you would fix the problem identified in 7(a). Give two points.
(c) Why was it important for each student to be given a personal user account? Give two reasons.

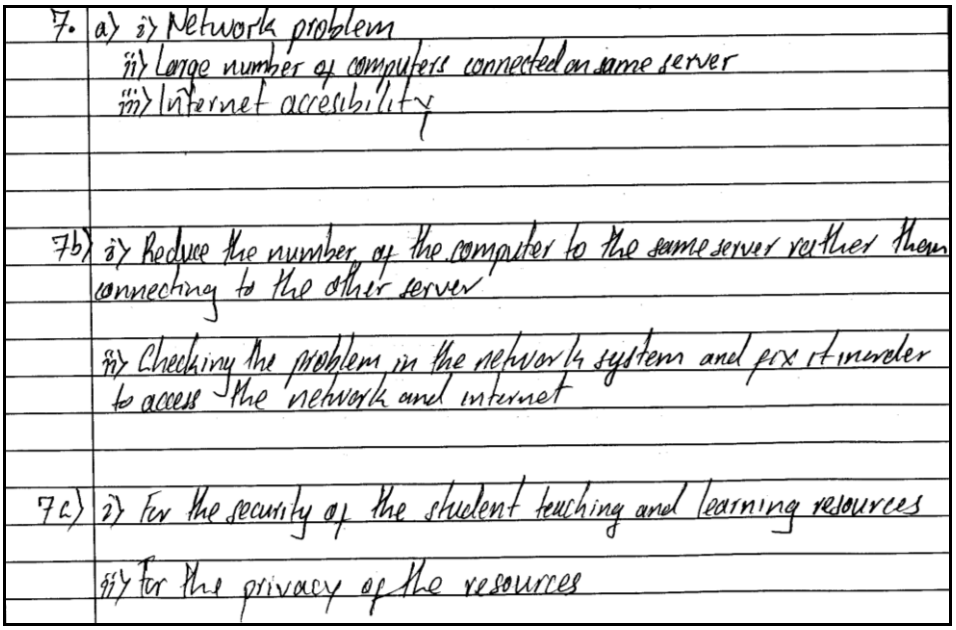
All candidates 622 (100%) attempted this question, out of whom 533 (85.70%) scored from 0 to 3 marks, 80 (12.90%) scored from 3.5 to 5.5 marks and only 9 (1.4%) scored 6 to 10 marks. Table 4 presents the candidates' performance in this question.

Table 4: Summary of the Candidates' Performance in Question 7

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	533	85.70
3.5 - 5.5	80	12.90
6.0 - 10	9	1.40

The candidates' general performance on this question was weak because (85.70%) of candidates scored 3 marks or less. The analysis showed that some candidates misinterpreted the question demand in part (a) as they wrote the problems which occur in the ring topology instead of causes of computer network being slow. For example, one of the candidates *wrote it is difficult to install, it is difficult to set up* instead of insufficient/low capacity of Random Access Memory (RAM) in the computer that acts as a server, poor performance of Central Processing Unit (CPU) in the server and the hard disk of server may be overloaded.

In part (b), some candidates gave the reasons which are not technical. For example, some candidates wrote *reducing number of computers and reducing number of candidates* as ways of fixing the problem of computer network being down. Others wrote *decreasing number of internet; avoid setting of computer for long time, minimizing the number of candidates in college laboratory*. These candidates were supposed to know that to fix the problem a high amount of RAM, high storage capacity Hard disk and CPU with a high processing speed should be added to the server. Not only that but also buying new computer server with a high amount of RAM, high storage capacity Hard disk and CPU with a high processing speed. Furthermore, some of candidates had an idea of the importance of giving a personal user account in part (c). The analysis revealed that most candidates gave correctly only one reason while others failed to give clear explanations. For example, one candidate *wrote student need user account for security* instead of *candidates' needs user account with passwords for security of their information. Also system administration creates student account for easy monitoring and network administration.* Extract 7 shows an example of a candidate's incorrect response to this question.



Extract 7.1: A sample of incorrect answer in question 7

In Extract 7.1, the candidate failed to explain causes of the network problem occurred after adding computers in part (a). The candidate also failed to suggest ways of fixing a problem occurred after adding computers in part (b).

Despite of weak performance, 14.3 per cent of the candidates scored 3.5 or more marks. Some of these candidates explained correctly the causes of computer network being down in part (a) but some of them failed to explain ways of fixing the problem identified in part (a). Statistics show only 1 candidate scored 8 marks. This candidate had idea of answers in all parts (a), (b) and (c), but failed to score all marks due to unclear explanations. This indicates that the majority of the candidates had insufficient knowledge of the operation of computer networking.

2.1.8 Question 8: Website Development

This question intended to test the candidates' ability on the website development by using HTML codes typed in the text editors. The question was as follows;

CBC Jogging club has designed a registration form in their website which will be used by the new members to join the club as shown in Figure 2.

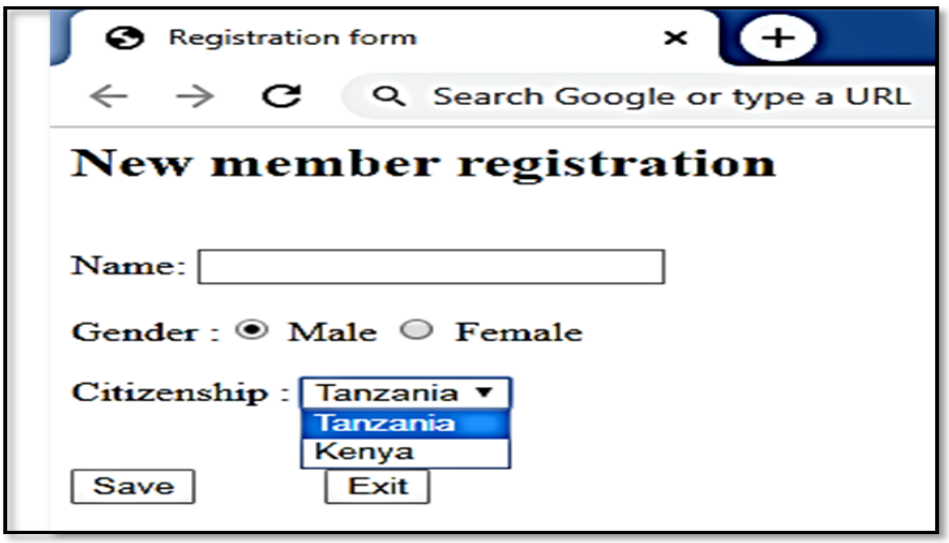


Figure 2

(a) Identify four web browsers which can be used to display the form given in Figure 2.
(b) Differentiate Notepad from Notepad++ which can be used to develop registration form.
(c) Write HTML codes which generate a registration form given in Figure 2.

The question was attempted by 622 candidates, out of whom 435 (99.5%) scored from 0 to 3 marks and 187 (0.5%) scored from 3.5 to 5.5 marks. However, there were no candidates scored above 5.5 marks out of 10 marks allocated. Table 1 presents the candidates' performance on this question.

Table 5: Summary of the Candidates' Performance in Question 8

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	435	99.50
3.5 - 5.5	187	0.50

Generally, this question had weak performance because majority of the candidates (99.5%) scored less than 3.5 marks as illustrated in Table 1. The analysis shows that the candidates lacked knowledge of the content of website development. For instance, in part (a), some of the candidates identified social media such as *WhatsApp, Facebook, Instagram and Twitter* as web browsers instead of Google Chrome, Mozilla Fire Fox and Internet explorer. Additionally, some of them wrote different terms related to website such as URL, Http, Hyperlink, www and HTML. Moreover, some of the candidates associated wrongly the web browsers with application software and computer parts. For example, some of the candidates wrote Microsoft excel, Microsoft word and CPU.

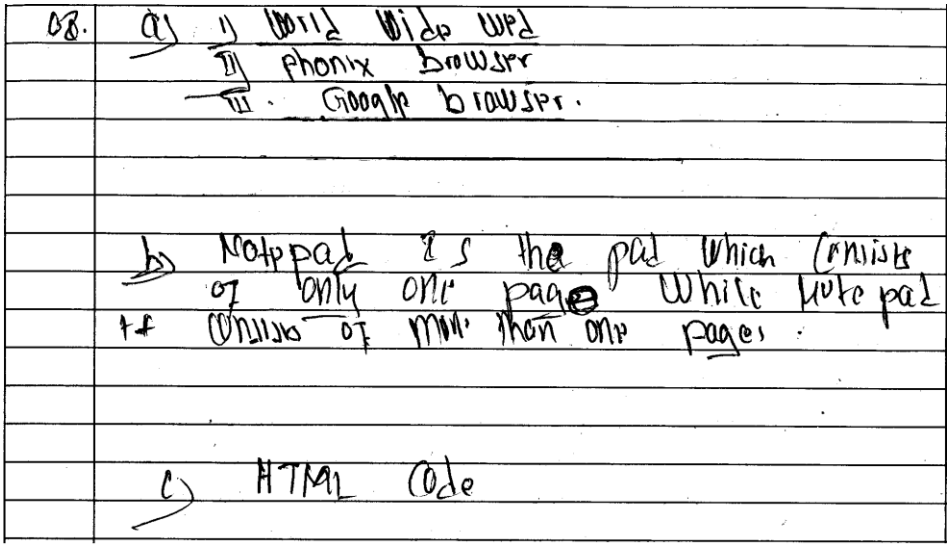
Consequently, the candidates' lack of concept in website development led them to give contrary responses in part (b) and (c). For example, one of the candidates wrote, *Notepad displays the limited document while the Notepad++ it displays the unlimited documents* as the different between Notepad and Notepad++. Some of them wrote *Notepad displays the website while the Notepad++ it displays the registration form*. Moreover,

some candidates wrote Notepad is *slow* while Notepad++ is *fast*. These candidates associated ++ involved in a notepad with speed. The candidates were supposed to know that Notepad is a simple text editor tool that comes with windows by default. It supports almost all languages and it saves the file with .txt extension while Notepad ++ is a free source code editor which is a replacement of the notepad as it supports more languages and has superior features such as spellchecker, file comparisons, zooming and find and replace.

In part (c), majority of the candidates skipped because they lacked knowledge of writing HTML code. Most of the candidates did not understand what HTML code is all about. The analysis showed that some of the candidates thought that HTML is the website address. Others wrote descriptions given in the screenshot. For example, some candidates wrote *Citizenship, gender and names*. Others wrote information which can be filled in the form provided. For example, one of the candidates wrote *Head <New member registration> Name <Samwel> Gender <Male> Citizenship <Tanzania>* as codes for generating form. The candidates were supposed to have knowledge of HTML syntax and tags for generating textbox, radio button, select and submit button. The required codes were as follows;

```
<html>
<head><title>Registration form</title></head>
<body>
<h2>New member registration</h2><br>
<form>
Name: <input type = "text" name = "x"><br><br>
Gender :<input type = "radio" name = "s"> Male
<input type = "radio" name = "s"> Female <br><br>
Citizenship : <select><option>Tanzania
<option>Kenya</option></select><br><br><br> <input type = "submit" value = "Save">           
<input type = "submit" value = “Exit
</form>
</body></html>
```

Extract 8, represent sample of incorrect response from one of the candidates



Extract 8: A sample of candidate's incorrect response to question 8

In Extract 8, the candidate wrote World Wide Web in part (a) which is the collection of webpages and google instead of google chrome as web browser. The candidate also failed to differentiate Notepad ++ and Notepad.

On the other hand, a few candidates (0.5 %) scored average marks. in additional, no candidate scored more than 5.5 marks. These candidates identified correctly the web browsers in part (a) but failed to list all of them. In part (b), some candidates explained correctly the Notepad but failed to give correct explanations of Notepad++. Moreover, in part (c), a few candidates managed to write correctly only the introduction parts of the HTML codes which generates registration form. This indicates that the candidates had insufficient knowledge of web development.

2.2 Section B: Essay Questions

The candidate was only allowed to select one (1) question from the two (2) essay questions in Section B, which carried a total of 40 marks. In this section each question had twenty (20) marks. According to the marks scored, the candidates' performance was divided into three groups. The

group of candidates with a weak performance included those who scored 0 to 6.5, while the group which performed averagely included those who scored 6 to 11.5. Candidates were regarded to have good performance if they scored 12 to 20.

2.2.1 Question 9: Fundamentals of Data Processing

This question required the candidates to justify the statement "Information is very important in performing daily duties". The question intended to measure the candidate's knowledge of the importance of information as processed data by giving six points.

A total of 476 (76.5%) candidates attempted this question, and 110 (23.10%) scored a score from 0 and 6.5. The candidates who scored from 7 to 11.5 were 211 (44.30%) whereas 155 (32.60%) scored from 12 to 20 marks. The performance of the candidates in this question is summarized in Figure 4.

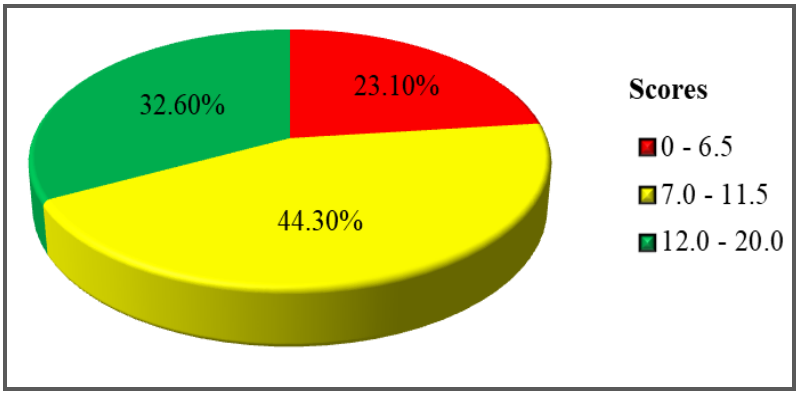
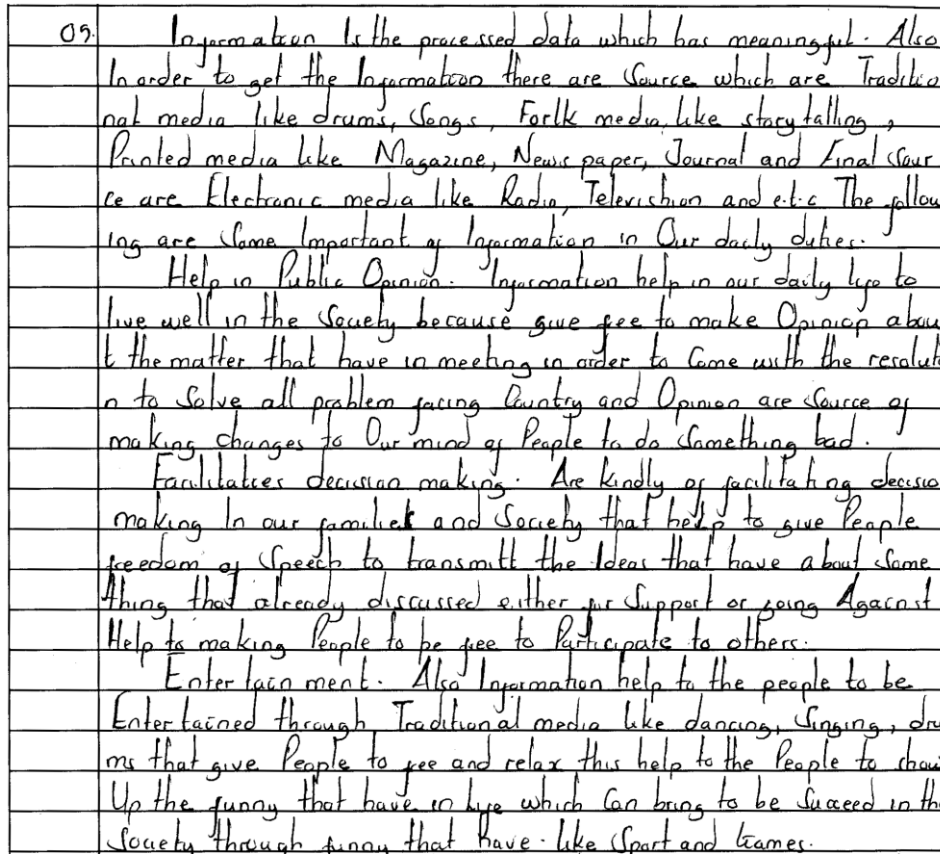


Figure 4: *The Candidates' Performance on Question 9*

Figure 4 shows that 76.90 per cent of the candidates' scored from 7.0 to 20 marks, thus the candidates' general performance on this question was good. Although this question had good performance, majority of the candidates (44.30%) scored average marks. The analysis shows that some of these candidates gave the correct introduction of information and justified correctly two to three relevant importance of information in daily activities. However, some candidates failed to organize ideas to give clear explanations. Additionally, it was also observed that some

candidates gave correctly few importance of information in performing daily duties but failed to give clear introduction and conclusion. Others mixed up the importance of ICT (Information and Communication Technology) with the term information used in the statement. For example, some candidates wrote *information refers the use of electronic devices to transfer information or communication.* Others wrote *information is the transferring information one place to another through communication devices such as computer.*

On the other hand, the candidates who scored high marks (15 to 20) gave correct introduction with real examples. Some of them justified the statement by providing correct explanations and examples to support their arguments. However, some candidates failed to conclude their points. Extract 9.1, represents sample of correct response from one of the candidates.



09. Information Is the processed data which has meaningful. Also In order to get the Information there are Source which are Traditional media like drums, Songs, Forlk media like story telling, Printed media like Magazine, News paper, Journal and Final Source are Electronic media like Radio, Television and e.t.c The following are Some Important of Information in Our daily Lifes.

Help in Public Opinion. Information help in our daily Lyfe to live well in the Society because give fee to make Opinion about the matter that have in meeting in order to Come with the resolution to Solve all problem facing Country and Opinion are Source of making changes to Our mind of People to do Something bad.

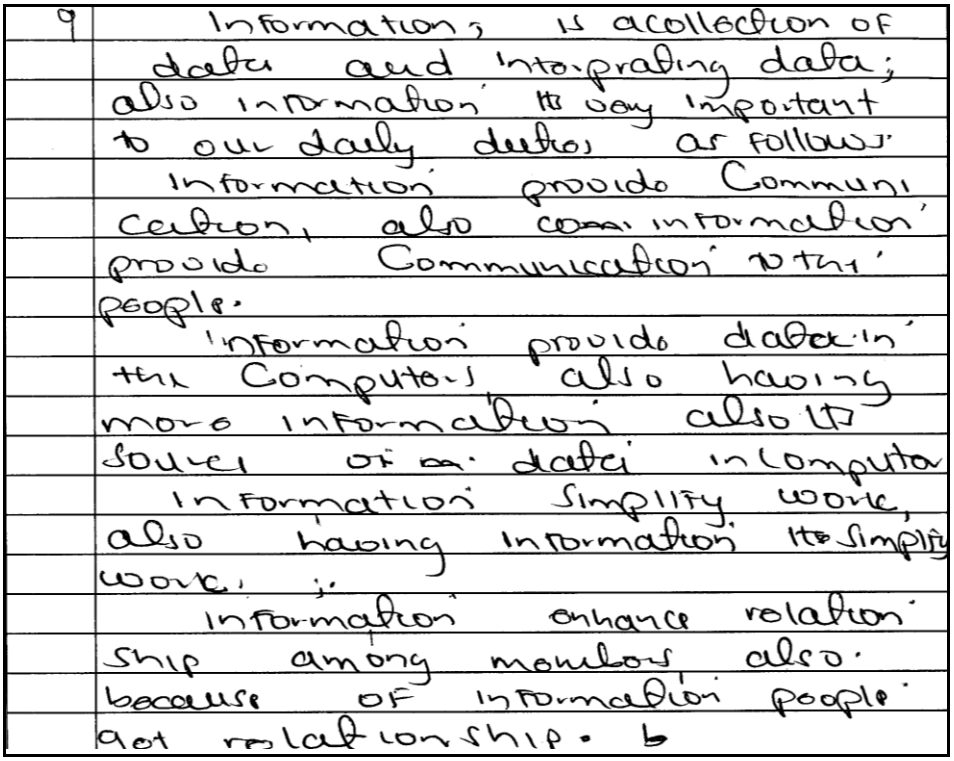
Facilitates decission making. Are kindly of facilitating decission making In our familieh and Society that help to give People freedom of Speech to transmitt the Ideas that have about Some thing that already discussed either for Support or going Against Help to making People to be free to Participate to others.

Enter tain ment. Also Information help to the people to be Entertained through Traditional media like dancing, Singing, drums that give People to fee and relax this help to the People to chase Up the funny that have in lyfe which Can bring to be Suceed in the Society through funny that have like Sport and Games.

Extract 9.1: A part of candidate's correct response to question 9

Extract 9.1, shows the candidate who justified correctly the statement "information is very important in performing daily duties".

On the other hand, some of the candidates (23.10%) who scored 0 to 6 marks did not understand the requirement of the question these candidates explained the impact of ICT in the society instead of importance of information in performing daily duties. For example, one candidate *wrote information is used in a military, information used in industry, information used in a school and information used in a Hospital*. Some of them explained the importance of ICT as important of information. For example, one candidate wrote *information help to development science and Technology.* Moreover, some of candidates outlined the importance of information without giving explanations. For example, one candidate wrote that importance is *less cost, help in storing information, help in marking an examination, Help in the rules of laws and principle.* So this led them to score low marks. Extract 9.2 represents a sample of incorrect response from one of the candidates.


9 Information is acollection of data and interpreting data; also information is very important to our daily duties as follows: Information provide Communi cation, also com information provide Communication to the people.
Information provide data in the Computer also having more information also is source of data in Computer Information simplify work, also having information is simplify work.
Information enhance relation ship among members also. because of information people get relationship.

Extract 9.2: represent a sample of incorrect response to question 9

Extract 9.2, the candidate had idea of information but failed to organize and give clear explanations.

2.2.2 Question 10: Multimedia

This question required a candidate to explain six importance of Multimedia to candidates and community by giving three points for each group.

This question was opted by few candidates 130 (20.9%), where by 27 (20.8%) scored from 0 to 6.5 marks. The candidates who scored from 7 to 14.5 were 42 (32.5%) while 61(46.90%) scored from 15 to 20 marks. The performance of the candidates in this question is summarized in Figure 5.

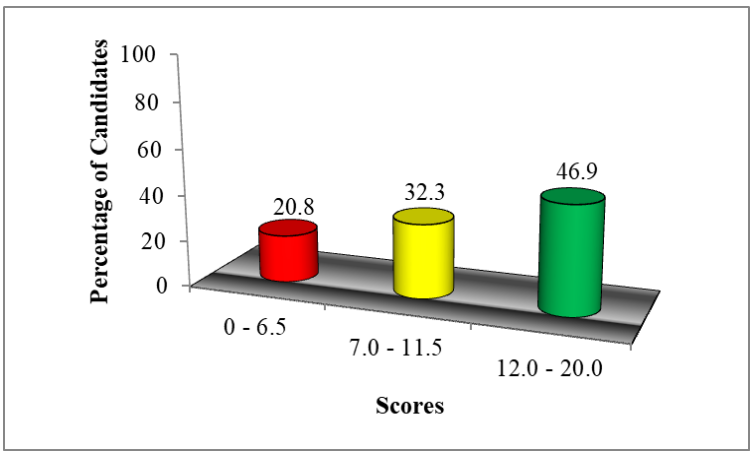
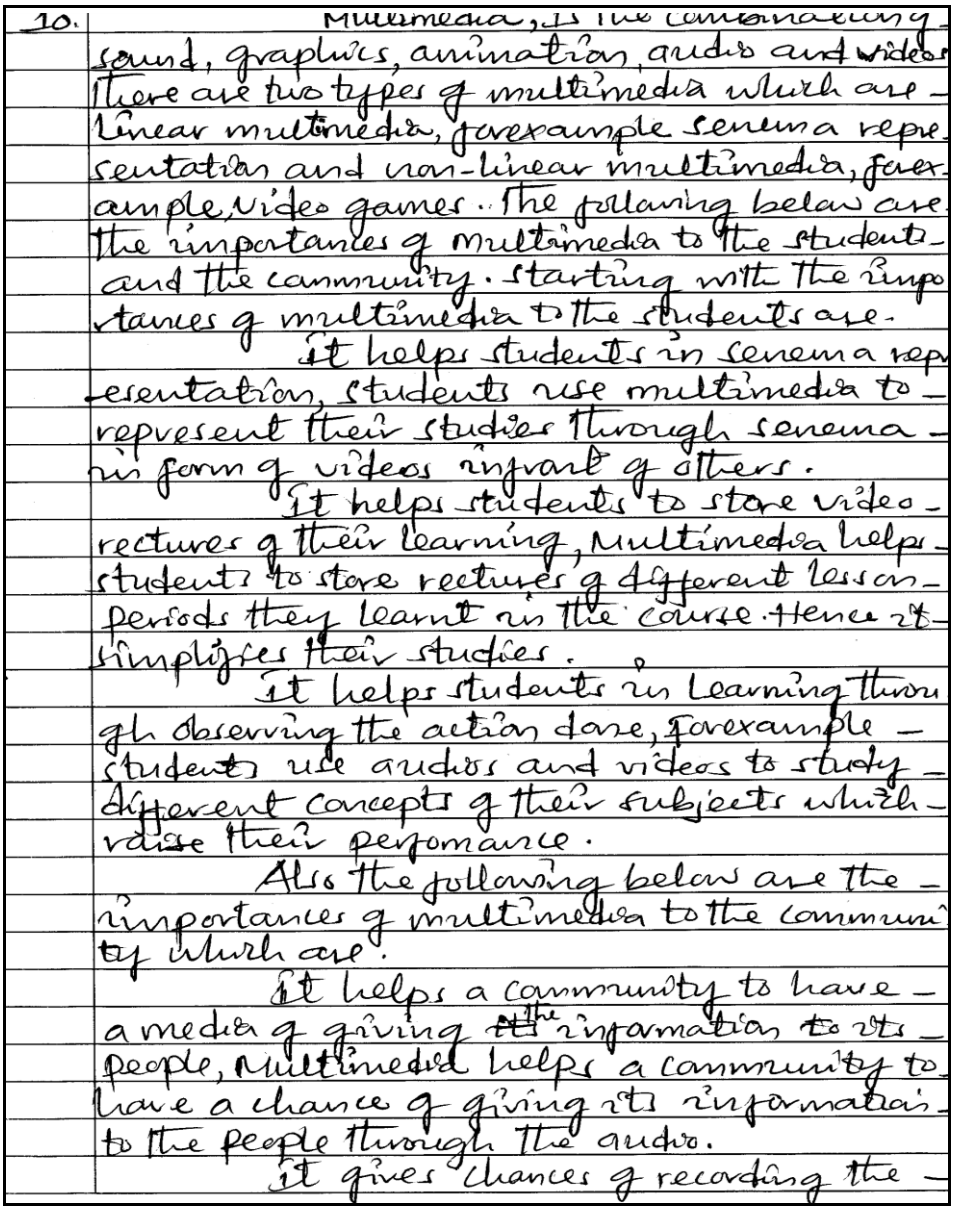


Figure 5: *The Candidate's Performance on Question 10*

This question had good performance because 79.2 per cent of the candidates scored 7 marks or more as illustrated in Figure 5. The good performance is attributed to the fact that currently multimedia is commonly used in learning institutions and in the society. The analysis shows that most of the candidates (46.9%) gave relevant introduction and correctly explained the importance of multimedia to candidates and community. However, some of them failed to score full marks because they wrote unclear explanations to some points. Others explained only the importance of multimedia to the student but could not consider the community as the question demand. Extract 10.1 represents a sample of good response to question 10.


10. Multimedia, is the combination of sound, graphics, animation, audio and video. There are two types of multimedia which are - linear multimedia, for example cinema representation and non-linear multimedia, for example, video games. The following below are the importances of multimedia to the students and the community. Starting with the importances of multimedia to the students are.

It helps students in cinema representation, students use multimedia to - represent their studies through cinema - in form of videos in front of others.

It helps students to store video - rectures of their learning, Multimedia helps - students to store rectures of different lessons - periods they learnt in the course. Hence it - simplifies their studies.

It helps students in Learning through observing the action done, for example - students use audios and videos to study - different concepts of their subjects which - raise their peformance.

Also the following below are the - importances of multimedia to the community which are.

It helps a community to have - a media of giving ~~its~~ the information to its - people, Multimedia helps a community to - have a chance of giving its information - to the people through the audio.

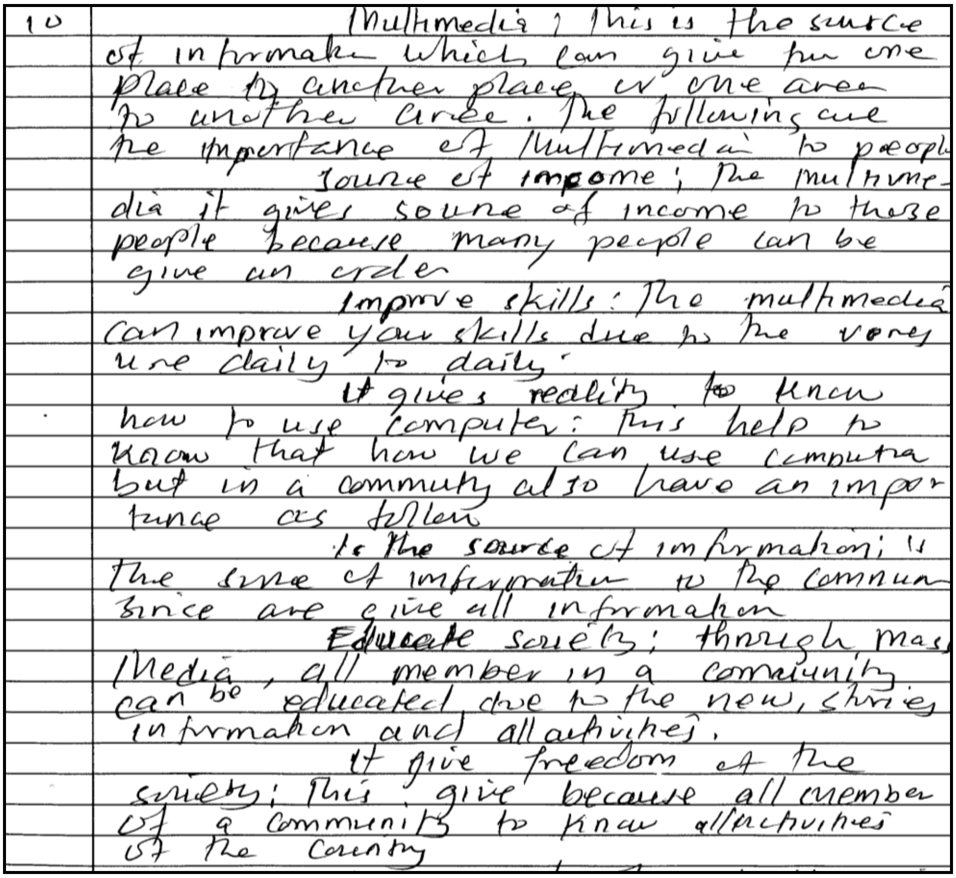
It gives chances of recording the -

Extract 10.1: A part of candidate's correct response to question 10

In Extract 10.1, the candidate wrote correctly the importance of multimedia to students and community.

Although this question had good performance, 20.8 per cent of the candidates performed poorly. Some of them did not know what multimedia is all about. For example, one candidate wrote *Multimedia is*

studio in which computers are found instead of multimedia involves the combination of multiple media which are audio, video, animation, graphics and image. Others wrote the importance of multimedia in business contrary to the question demand. For example, one candidate wrote *multimedia help in advertising a business*. Moreover, some of candidate wrote the importance of computer to candidates and community instead of multimedia. However, a few candidates gave a correct introduction and listed one to two importance of multimedia but failed to give clear explanations. Extract 10.2 represents a sample of incorrect responses from one of the candidates.


10 Multimedia ; This is the source of informatin which can give fun one place to another place or one area to another area. The following are the importance of Multimedia to people

Source of income; The multimedia it gives soune of income to those people because many people can be give an order

Improve skills: The multimedia can improve your skills due to the very use daily to daily.

It gives reality to know how to use computer: This help to know that how we can use computra but in a community also have an importance as follow

1. The source of information; is the sorce of information to the communa since are give all information

Educate society; through mass Media, all member in a community can be educated due to the new, stories information and all activities.

It give freedom of the society; This give because all member of a community to know all activities of the country

Extract 10.2: Sample of incorrect response to question 10

In Extract 10.2, the candidate failed to organize the ideas to give clear explanations on the importance of multimedia to candidates and community. The candidates also failed to give clear conclusion.

3.0 PERFORMANCE OF THE CANDIDATES PER TOPIC

The Information and Computer Studies paper comprised of 10 questions set from 8 topics. The analysis done in relation to each topic showed that only one topic had good performance, one topic had an average performance and six topics had weak performance. The topic with good performance was *Fundamentals of Data Processing* (76.9%). The good performance in this topic was attributed to the candidates' adequate knowledge about the importance of information. The candidates' performance was average in the topic of *Multimedia* (49.4%). It was observed that, lack of clarity in explanations for the points given contributed to this performance. The candidates' performance was weak in the topics of *Website Development* (0.5%), *Elementary Programming* (10%), *Database Management Systems* (10.5%), *Networking and Data Communication* (14.3%), *Generic Application Software* (15.5%) and *Application Areas of ICT* (19.80%). The poor performance in these topics is attributed to inability of creating simple publishing document, lack of knowledge in creating simple website by using HTML, lack of knowledge about different levels of programming languages and its types, lack of ability in developing a database step by step by using DBMS software, inability of exploring the concept of multimedia and its importance in daily life. The *Appendix* summarises the performance of the candidates in each topic.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

In general, the candidates' performance in the ACSEE 2022 Information and Computer Studies Examination was average as 38.39 per cent of the candidates passed.

The analysis of the candidates' responses showed that majority of the candidates performed weakly in many topics because they lacked knowledge of the assessed concepts and some of them could not understand the demands of the questions. The candidates faced difficulties in attempting questions which were set from the topics of *Website Development, Elementary Programming, Database Management Systems, Networking and Data Communication, Generic Application*

Software and *Application Areas of ICT*. It has been noted that, the weak performance in these questions was a result of candidates' inadequate knowledge of the tested concepts, lack of practical skills, and failure to understand the questions' requirements. As a result, the candidates provided irrelevant responses.

4.2 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 create simple publishing document and the functions of application software *(Microsoft word, Microsoft excel, Microsoft access and Microsoft publisher)* in daily life.

(b) Teachers should demonstrate how to create simple website by using HTML.

(c) Teachers should guide candidates to explain different levels of programming languages and its types.

(d) Teachers should guide the candidates to identify the types of computer networks according to the physical arrangement of computers.

(e) Teachers should guide the candidates to develop a database step by step by using DBMS software.

(f) Teachers should lead candidates in exploring the concept of multimedia and its importance in daily life.

(g) Real-world work should be emphasized during teaching and learning to develop practical skills.

(h) Teachers and students should set more emphasize on the discussion of the importance of quality, correctness and accurate of information.

(i) The candidates should read the examination questions carefully so as to understand clearly the requirements of the questions.

APPENDIX

Analysis of Candidates Performance per Topic

S/n	Topic	Number of Questions	Percentage of Candidates who Scored 35% or Above	Remarks
1	Fundamentals of Data Processing	1	76.9	Good
2	Multimedia	2	49.40	Average
3	Application Areas of ICT	1	19.80	Weak
4	Generic Application Software	2	15.50	Weak
5	Networking and Data Communication	1	14.3	Weak
6	Database Management Systems	1	10.50	Weak
7	Elementary Programming	1	10.00	Weak
8	Website Development	1	0.5	Weak