



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



**CANDIDATES' ITEM RESPONSE ANALYSIS REPORT
ON THE DIPLOMA IN SECONDARY EDUCATION
EXAMINATION (DSEE) 2022**

**INFORMATION AND COMMUNICATION
TECHNOLOGY**



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**738 INFORMATION AND
COMMUNICATION TECHNOLOGY**

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FOREWORD

The National Examinations Council of Tanzania is pleased to issue the report on Candidates' Item Response Analysis (CIRA) in Information and Communication Technology (ICT) subject for the year 2022. The purpose of this report is to inform teachers, parents, policy makers and other education stakeholders the extent to which the candidates have responded to the examination questions. The report will enable the stakeholders especially college tutors to identify the topics which require more emphasis in the teaching and learning process and take appropriate measures in order to improve the performance of candidates.

The analysis presented in this report is intended to contribute towards understanding the reasons behind the performance of candidates in the examination. The report highlights the factors behind the candidates' responses to the examination questions. The analysis reveals that candidates who performed well were able to provide appropriate responses because they had sufficient knowledge on the subject content. Also they were appropriately able to identify the requirements of the questions. The report also highlights the reasons that made some candidates to fail to score high marks. Such factors include failure to identify the demand of the questions, inability of expressing themselves in English language as well as lack of knowledge on the tested concepts.

The National Examinations Council of Tanzania believes that education stakeholders will take proper measures to overcome the identified challenges in order to improve the candidates' performance in this subject in future examinations.

Finally, the Council would like to thank all the Examination Officers, Examiners and all stakeholders who participated in the preparation and dissemination of this report.



Athumani S. Amasi

EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report analyses candidates' item responses on the Diploma in Secondary Education Examination in Information and Communication Technology (ICT) subject for the year 2022. The paper was set according to the 2009 Information and Communication Technology syllabus for Diploma in Secondary Education. The number of candidates who sat for this examination in 2022 was 4,154, out of which 99.68 per cent passed the examination and 0.32 per cent failed. In 2021, a total of 2,088 candidates sat for the examination of which 98.74 per cent passed and 1.26 per cent failed. Therefore, the performance of candidates has increased by 0.94 per cent.

The paper consisted of two sections, A and B with a total of fourteen (14) questions. Section A consisted of ten (10) short answer questions which carried 4 marks each. Section B had four compulsory questions of which each carried 15 marks. The candidates were required to answer all questions in section A and four questions from section B making a total of 14 questions.

The candidates' performance in each question or topic is regarded as good if they score from 70 to 100 per cent; average if the per cent ranges from 40 to 69 and poor if the per cent ranges from 0 to 39. In this report, the candidates' performance is also presented in different charts and tables by using colors whereby the red color represents poor performance, yellow represents average performance and green shows a good performance

The analysis of candidates' responses shows the requirements of each question, what the candidates were able to do, and the challenges they encountered in answering the given questions. Samples of extracts for good and poor responses from the candidates are given to elaborate the stated cases. Lastly, the report ends with a conclusion and recommendations.

Table 1: Candidates Pass Grades in DSEE 2022 and 2021 in Information and Communication Technology.

Grade	A	B	C	D	F
% of Candidates in 2021.	0	34	1083	921	26
% of Candidates in 2022.	0	163	2849	1073	13

2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE IN EACH QUESTION

2.1 SECTION A: Short Answer Questions

In this section there were 10 compulsory questions. The candidates were required to attempt all questions. Each question carried 4 marks to make a total of 40 marks.

2.1.1 Question 1: Fundamentals of Information and Communication Technology

The question required candidates to explain the efforts made by different institutions in ensuring that their clients are getting the correct, authenticated and updated information. In that regard candidates were asked to use four factors to provide the importance of information. The question intended to examine the candidates' knowledge to demonstrate skills of processing, interpreting and disseminating information.

A total of 4,154 (100%) candidates attempted this question, where by 809 (19.5%) scored from 0 to 1.5 marks, 2365 (56.9%) scored from 2 to 2.5 marks and 980 (23.5%) scored from 3 to 4 out of 4 allocated marks. Statistics shows that the candidates' performance in this question was high since 80.4 per cent scored between 2 to 4 marks. Figure 1 shows the summary of candidates' performance in this question.

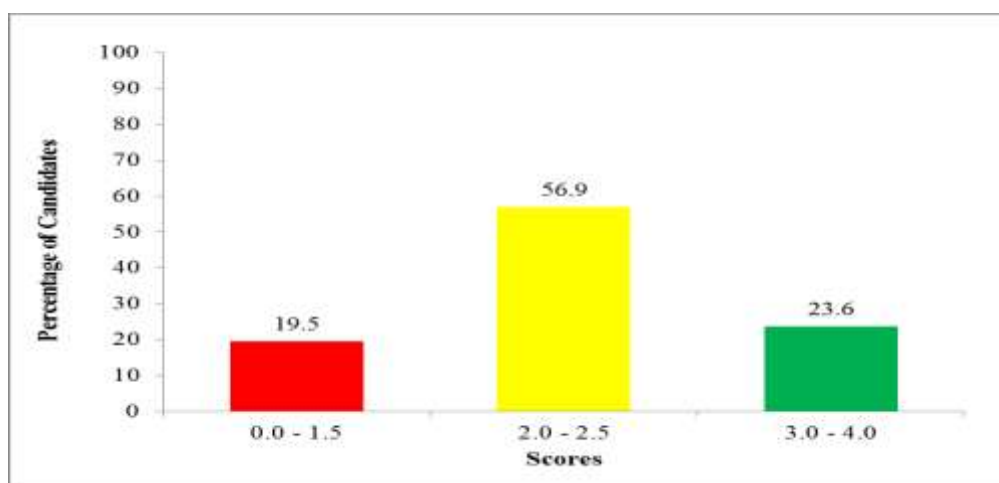
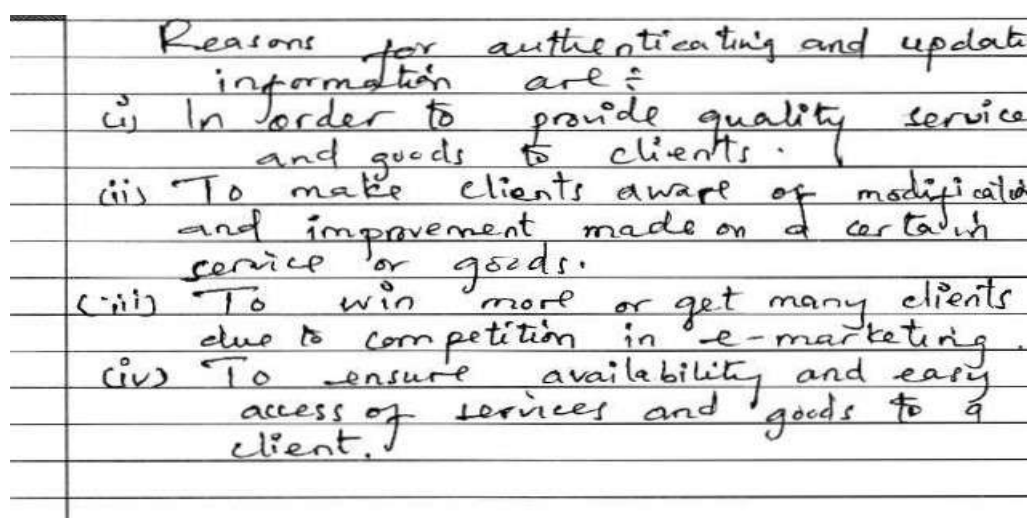


Figure 1: *The candidates' performance in question 1*

Statistics shows that most of the candidates (80.4%) who scored good marks understood the requirements of the question and also had knowledge that information dissemination in the level of an institution is the bridge that connects the management and subordinates. The candidates in this group provided various correct reasons which support the demands of the question. For instance, one of the candidates wrote, “to make clients aware of modifications and improvement made on certain service or goods”. Another candidate wrote, “Is for the purpose of promoting and improving better communication within the institute”. Other candidates in this category wrote several importance of communication in any formal set. Extract 1.1 shows a sample of correct response from one of the candidates.



Reasons for authenticating and update information are:

- (i) In order to provide quality service and goods to clients.
- (ii) To make clients aware of modification and improvement made on a certain service or goods.
- (iii) To win more or get many clients due to competition in e-marketing.
- (iv) To ensure availability and easy access of services and goods to a client.

Extract 1.1: Candidates’ correct response in question 1.

Extract 1.1 shows one of the candidates who responded correctly question 1. Contrarily, the analysis of data indicates that, 19.5 per cent of candidates who scored 0 to 1.5 out of the 4 allocated marks were unable to give the importance of information dissemination to an institution. Some of them misunderstood the requirements of the question and hence ended in providing just the required efforts by the institution instead of explaining the importance of those efforts. Some also had grammatical errors in their explanations, while others provided all four incorrect reasons. Extract 1.2 shows a sample of an incorrect response from one of the candidates.

1	Factors important in today's world
	i/ Provision of labor
	ii/ Provision of capital
	iii/ Provision of investors
	iv/ Transparency to their clients.

Extract 1.2: Candidate's incorrect response in question 1.

2.1.2 Question 2: Computer Programming Languages

In this question candidates were required to identify the memory space contained in the statement "In God we trust" in the storage area by counting the characters.

A total of 4,154 (100%) candidates attempted this question, out of which 4,153 (99.8%) scored from 0 to 1.5 marks, and 1(0.02%) scored from 3 to 4 out of 4 marks allocated. The data shows that the candidates' performance in this question was poor, since 99.8 per cent scored below 1.5 marks and only one candidate who managed to score all the four marks required. Figure 2 shows the summary of candidates' performance in this question.

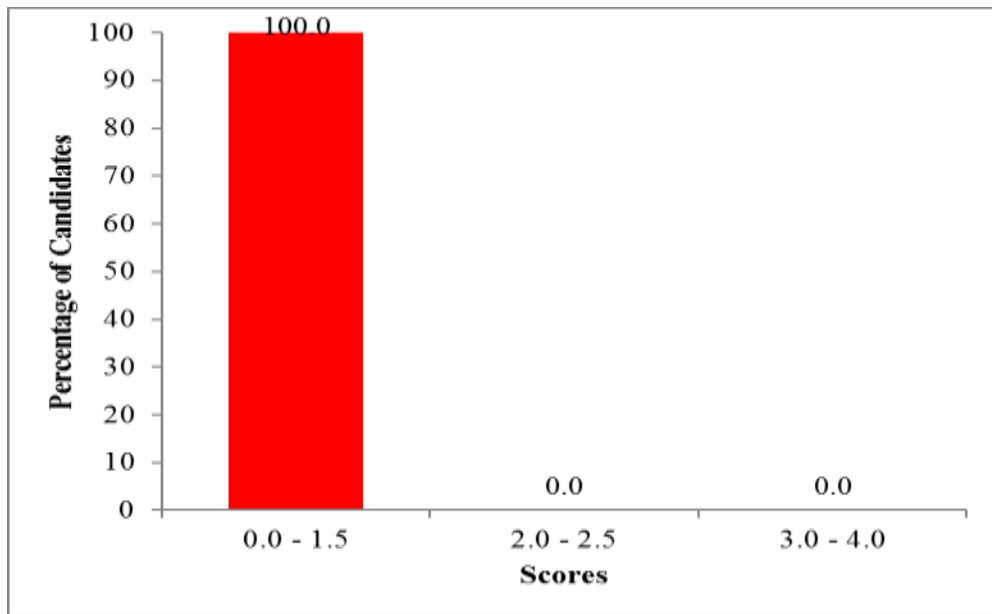


Figure 2: *The candidates' performance in question 2*

On the other hand, the candidates who scored low marks (0 to 1.5) lacked knowledge about computer programming languages and its requirements. Many of the candidates in this category had misconception about computer programming especially in the area of identifying the number of the characters required in the storage area. For example, one candidate wrote, “the statement in God we trust that it is easy to remember, it makes relationship among God with people, and it keeps people closely with God”. Another one wrote just the words, “IN GOD WE TRUST” in four of the options needed, this shows they were not aware of what exactly the question requires. Extract 2.1 shows an example of an incorrect response from one of the candidates in this question.

2	
	the Statement 'in God we trust' comprises a Storage. there are larger number of bits stored in the word. It contain approximately 100 bits because each people trust in God although there are other spirituals.

Extract 2.1: One of the candidate's incorrect responses in question 2.

In Extract 2.1 the candidate failed to understand the requirements of the question and hence ended in giving different explanation about the word IN GOD WE TRUST. These responses imply that, the candidates had no or limited knowledge on computer programming and therefore failed to provide the intended response.

However, the analysis of performance indicates that one candidate (0.02%) who managed to score all the 4 marks was able to identify the characters in the statement IN GOD WE TRUST. This shows that the candidate understood the requirements of the question and also had adequate background knowledge on basic computer programming. Extract 2.2 shows a sample of a correct response from one candidate.

2	
	"In God We Trust"
	"In God We Trust" = 17 bytes
	1 letter stands for 1 byte
	1 byte = 8 bits
	17 bytes = ?
	? = (17 x 8) bits
	"In God we trust" = 136 bits
	- In the words "In God we trust" needs 136 bits storage of 136 bits in memory space.

Extract 2.2: Candidate's correct response in question.

In extract 2.2 the candidate was able to identify correctly the characters in the statement IN GOD WE TRUST.

2.1.3 Question 3: Generic Software Applications

In this question the candidates were asked to describe the type of relationship that exists between two tables in a given case as well as drawing an entity relationship diagram to show the relationship in the given case. The candidates were expected to exert their knowledge on database systems.

A total of 4,154 (100%) candidates attempted this question, out of which 4149 (99.99%) scored from 0 to 1.5 marks, 5 (0.12%) scored from 2.0 to 2.5 marks. The statistics show that, candidates' performance in this question was poor because 99.9 per cent scored below 1.5 marks. Figure 3 shows the summary of candidates' performance in this question.

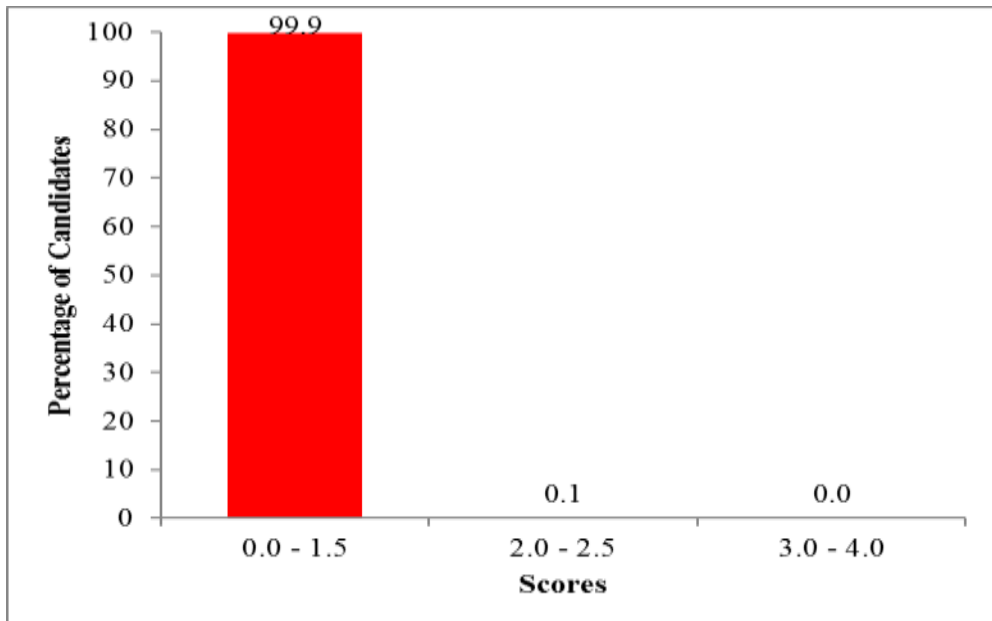
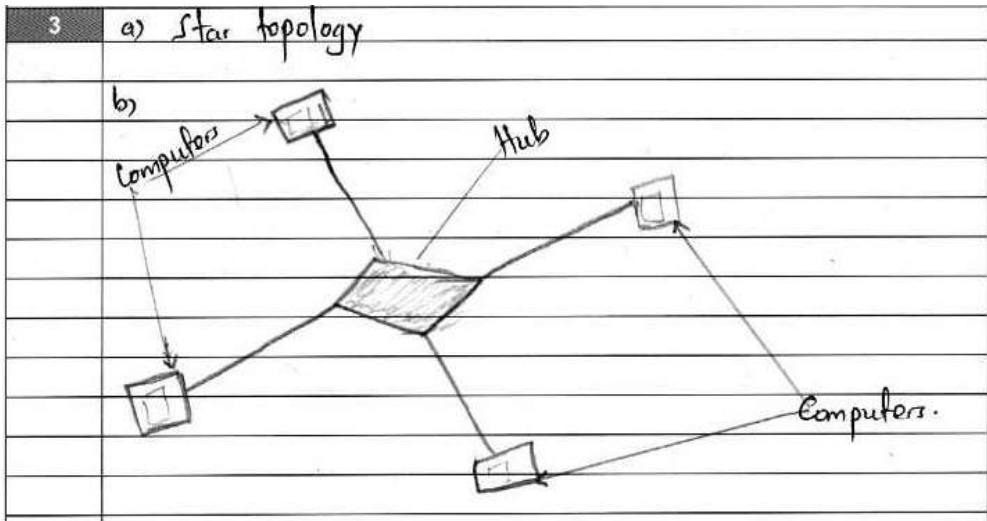


Figure 3: *The candidates' performance in question 3*

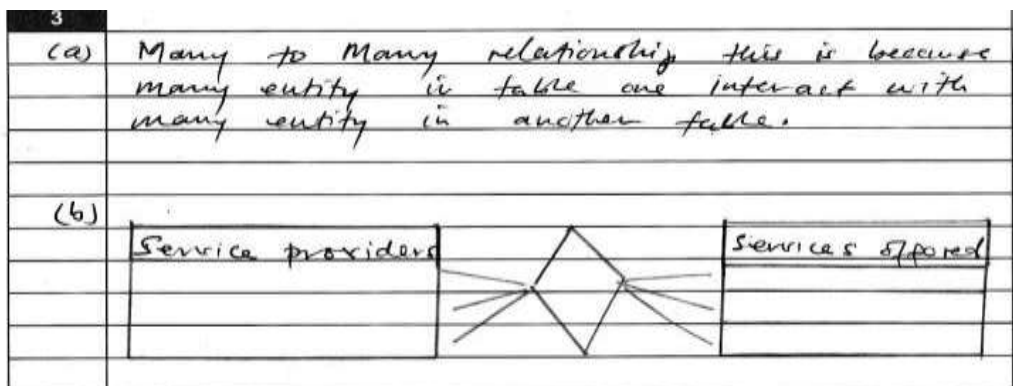
Statistics shows that 99.9 per cent of the candidates who scored low marks (0 to 1.5) were not aware of the requirements of the question. This implies that, they had inadequate knowledge on database systems and hence failed to provide the correct responses. Some candidates under this category did not score any marks because they could not describe them clearly. For instance one candidate mentioned flow chart followed by a flowchart diagram as the relationship and diagram required, another candidate just wrote "the spreadsheet". Extract 3.1 shows a sample of an incorrect response from one of the candidates.



Extract 3.1: An incorrect response of one candidate.

Extract 3.1 shows that, the candidate misunderstood the question and hence ended in describing star topology which is contrary to what was asked.

Further analysis of data shows that 0.12 per cent of the candidates who scored average marks (2 to 2.5) were able to at least describe the type of relationship that exists between the two tables in a given case. While others in this category tried to draw an entity – relationship diagram to represent the relation in the given case. Extract 3.2 shows a sample of a correct response from one of the candidates.



Extract 3.2: A correct response of a candidate in question 3.

Extract 3.1 shows that, the candidate understood the question and hence ended in giving correct answer in some part of the question to what was asked.

2.1.4 Question 4: Computer Programming

In this question candidates were asked to distinguish dimensional from multi-dimensional array by giving one C++ array declaration statement.

A total number of 4,154 (100%) candidates attempted this question, out of which 4154 (100%) scored from 0 to 1.5 marks. The data shows that the candidates' performance in this question was extremely poor and this is due to the fact that 100 per cent of the candidates scored 0 to 1.5 marks. Figure 4 shows the candidates performance in question 4.

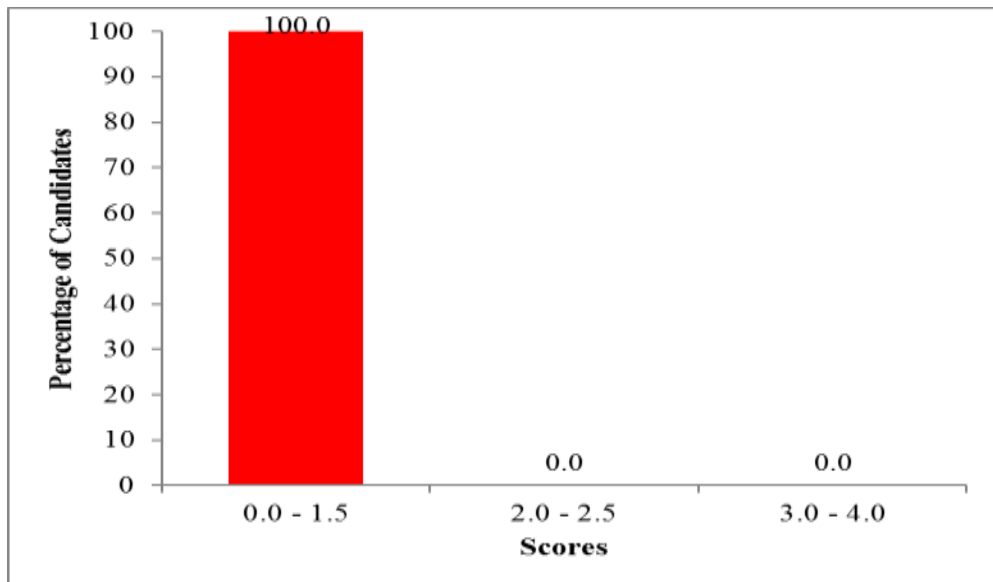


Figure 4: *The candidates' performance in question 4*

All the candidates (100%) scored low marks (0 to 1.5) since they all failed to distinguish dimensional and multi-dimensional array by giving one C++ declaration statement correctly. One of the candidates wrote, "C++ is the high level language program which used to conduct at highly speech within a computer". Their responses show that they were unaware of the requirements of the question as well as lack of knowledge and competence about C++ programming which would at the end give them an ability to

attempt the question undoubtedly. Extract 4.1 shows a sample of an incorrect response from one of the candidates.

4	i) Dimensional performing about only one way while multi-dimensional performing more than one function
	ii) Dimensional depending on the rays required while multidimensional do not depending of the rays required during performing
	iii) Dimension always do not change while Multi-dimensional change from one structure to another structure
	iv) Dimensional rays have low penetration power while Multi-dimensional array have high penetration power.

Extract 4.1: An incorrect response from one of the candidates.

In Extract 4.1, the candidate failed to distinguish dimensional from Multidimensional array by giving one C++ array declaration statement.

2.1.5 Question 5: Computer Basic and Networks

In this question candidates were asked to compare smart phones and computers.

A total of 4,154 (100%) candidates attempted this question, out of which 3,20 (7.7%) scored from 0 to 1.5 marks, 4,23 (10.2%) scored from 2.0 to 2.5 marks and 3,411 (82.1%) scored from 3.0 to 4.0 out of 4 allocated marks. Data shows that the candidates' performance in this question was good, since 92.3 per cent scored between 2 and 4 marks to imply that they had an adequate knowledge to exert the features that compares smartphones and computers. Figure 5 shows the candidates' performance in this question.

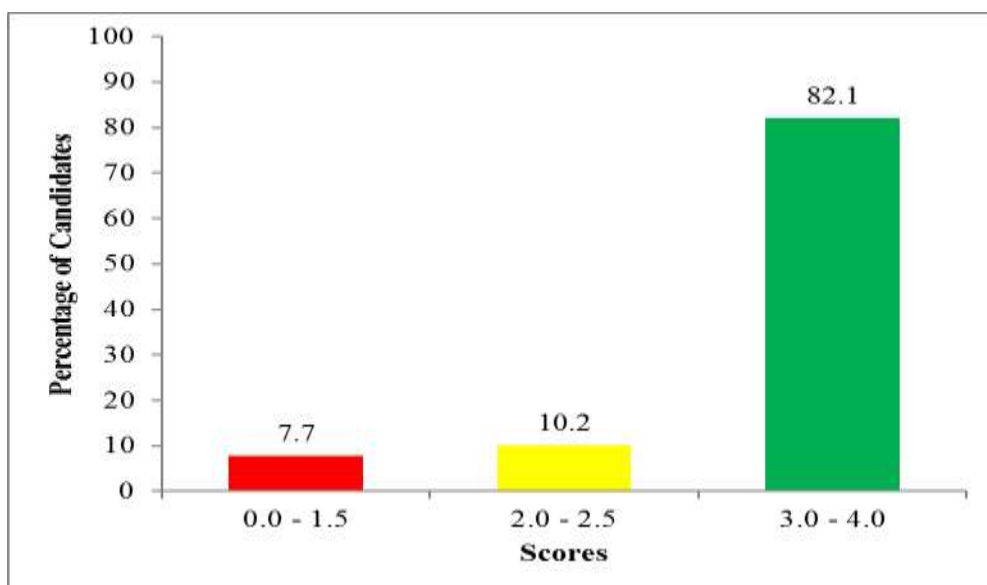


Figure 5: *Candidates' performance in question 5*

Statistics shows that the candidates who scored high marks (3 to 4) gave clear similarities between smartphones and computers with 55.3 per cent scoring the full marks. The candidates in this category who could not score full marks had either grammatical errors in their descriptions or provided some incorrect similarities. This indicates that candidates had adequate knowledge on the concept of computer basics and networks. Extract 5.1 shows a sample of response from a candidate who answered this question correctly.

5	<p>i) Ability of accessing data. Also a smartphone like computer has an ability of accessing and receiving data from various sources.</p>
	<p>ii) Ability of processing data; - A smartphone has higher ability of interpreting and processing data.</p>
	<p>iii) Ability of storing data - A smartphone has an ability of storing data for a long time.</p>
	<p>iv) Ability to retrieve information. - A smartphone like a computer has higher ability of giving information to the user.</p>

Extract 5.1: Candidate's correct response in question 5.

Extract 5.1 shows that, the candidate has managed to describe the common similarities between smartphones and computers.

On the other hand, 7.7 per cent of the candidates who scored low marks (0 to 1.5) had insufficient knowledge on computer basic and networks. For example, one candidate gave the features of small computers instead of giving out the similarities between smartphones and computers, the candidate wrote "small computers have low spread in transfer information". Extract 5.2 shows an example of incorrect response from one of the candidates in this question.

5	<p>Features of Small Computer.</p> <p>(i) Have a short memory</p> <p>(ii) Have low spread in transfer information</p> <p>(iii) It is easily to destroy</p> <p>(iv) It is not accuracy.</p>
---	--

Extract 5.2: A sample of an incorrect response from a candidate.

In Extract 5.2, the candidate was not able to provide the similarities between smartphones and computers using their features and hence focus on highlighting wrongly the features of small computers. This indicates that the candidates lacked knowledge on computer basics and networks.

2.1.6 Question 6: Fundamentals of Information and Communication Technology

In this question the candidates were asked to provide the effects of prolonged television watching to human health.

A total of 4,154 (100%) candidates attempted this question, out of which 960 (23.1%) scored from 0 to 1.5 marks, 1,035(24.9%) scored from 2 to 2.5 marks and 2,159 (52%) scored from 3 to 4 marks out of 4 allocated marks. The candidates' performance in this question was good, because 75.1 per cent scored above 2 to 4 marks. Figure 6 shows the summary of candidates' performance in this question.

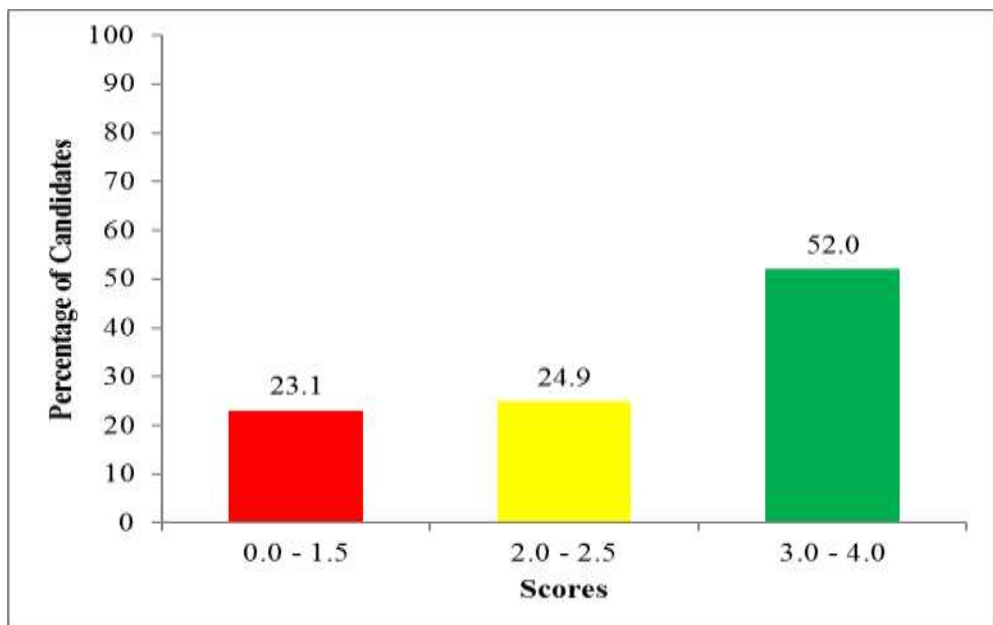


Figure 6: *The candidates' performance in question 6*

Most of the candidates who scored high marks (3 to 4) responded to the question according to the expected demands. Their responses indicate that they had adequate knowledge on the effects of the prolonged television watching to human health such as laziness of the body, loss of eye or blind and reduce the ability of performance other activities at home. Extract 6.1 shows a sample of correct responses provided by one of the candidates.

6	i) watching television for a long time can cause eye problem, so it should be stop to avoid neck problem.
	ii)
	ii) watching television can cause back bone problem because of sitting for a long time so it should be avoid to avoid the problem.
	iii) It causes neck problem because of sitting straight for a long time, it should reduce so as to avoid the problem of neck damage.
	iv) It cause laziness because of concentrating watching TV so it should watch for few hours so as to conduct other works.

Extract 6.1: Candidate's correct response in question 6.

In Extract 6.1 the candidate who managed to explain briefly the effects of prolonged television watching.

Most of the candidates (31.9%) in this group could not score full marks hence they fell in an average group and this is because they explained fewer points while others provided unclear descriptions. In addition, the candidates who could not score full marks outlined the effects of prolonged television watching instead of explaining them in brief.

On the other hand, 960 (23.1%) candidates who scored low marks (0 to 1.5) did not meet the requirements of the question. For example one candidate wrote, "to click title bar in order to minimize or maximize size of Microsoft screen". Some of the candidates in this category outlined the positive impact of prolonged television watching instead of its effects to human health. Extract 6.2 shows an example of an incorrect response from one of the candidates who responded to this question incorrectly.

6	
	a) Iee remember the king majuto action
	b.) It feeling bad because the king majuto was good artist.

Extract 6.2: candidate's incorrect responses in question 6.

In Extract 6.2 the candidate incorrectly spent time in explaining about king Majuto rather than focusing in giving out the effects of prolonged television watching. This is the sign that they were not aware of the requirement of the question and hence ended up in guessing the answers.

2.1.7 Question 7: Computer Laboratory Management Skills

The question required candidates to explain why foods and beverages not allowed in the computer laboratories. In this question, the candidates were expected to demonstrate the knowledge on how computer laboratory regulations are well maintained.

A total of 4,154 (100%) candidates attempted this question, out of which 1,033 (24.9%) scored from 0 to 1.5 marks, 2,743 (66%) Scored from 2.0 to 2.5 marks and 378 (9.1%) scored from 3 to 4 marks out of the 4 allocated marks. The candidates' performance in this question was good, because 74.99 per cent had their scores from 2 to 4 marks. Figure 7 shows the summary of candidates' performance in this question.

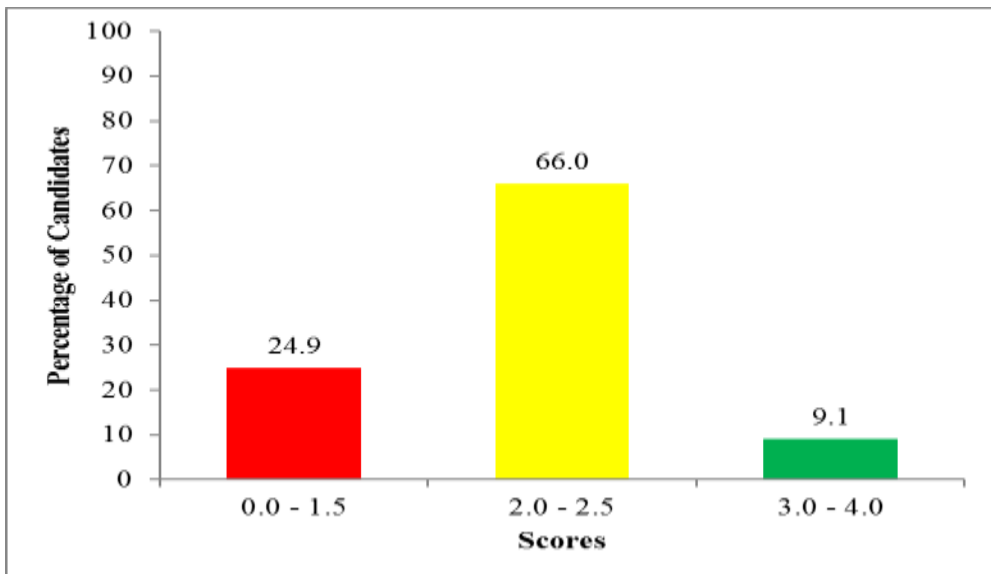


Figure 7: *The candidates' performance in question 7*

The analysis of data shows that candidates (76.6%) who scored good marks managed to explain how the computer laboratory regulations are maintained. Some of them (0.07%) scored full marks while others could not. The candidates who could not score full marks were able to mention correctly few laboratory regulations. Other candidates in this category outlined three appropriate computer laboratory regulations without descriptions. Extract 7.1 shows a sample of a response from a candidate who answered this question correctly.

7
a). Foods and beverages are not allowed in the computer laboratory because when come contact with the screen of the computer will damage it and lead to less proper functions.
b). Foods and beverages are not allowed in the computer laboratory because other beverages are harmful and destructive to other peripherals or the cables.

Extract 7.1: Candidate's correct response in question 7.

In Extract 7.1 the candidate mentioned factors such as when beverages gets contact with the computer screen they will damage it and lead to less proper function and was able to describe them accordingly.

On the other hand, most of the candidates who scored low marks did not understand the requirements of the question at the same time lacking the required knowledge about computer laboratory regulations. For instance, one candidate wrote, “food is not allowed because food may attract the computer user to eat during taking meal, remember there is some particles with the floppy disc facilities the damage of the computer which ensure the cost ”, this is definitely the wrong answer as it shows the candidate’s inability to identify the laboratory regulations . Extract 7.2 is an example of an incorrect response from one of the candidates.

7 The following are reasons why food and beverages not allowed in computer laboratory.

i/ In food there is virus ^{and bacteria} which lead to spoilage which can damage a computer when enter in the computer.

ii/ In beverages there is chemicals and bacteria which protect beverages. Also beverages prepared with the aids of bacterial.

Extract 7.2: Candidate’s incorrect response in question 7

In extract 7.2 the candidate explained things like spread of virus and bacteria as one of the computer laboratory regulations, this contrary to what was required. This implies that the candidate had no knowledge about computer laboratory regulations.

2.1.8 Question 8: Websites Design

This question required candidates to provide the positive impacts of search engines in contributing to students thinking capacity, problem solving and decision making. The question aimed to assess the candidates' knowledge on the web design.

A total of 4154 (100%) candidates attempted this question, out of which 1326 (31.9%) scored from 0 to 1.5 marks, 245 (5.9%) scored from 2.0 to 2.5 marks and 2583 (62.1%) scored from 3 to 4 marks out of 4 allocated marks. The data shows that the candidates' performance in this question was good, because 68.1 per cent scored 2 to 4 marks. Figure 8 shows the candidates' performance in this question.

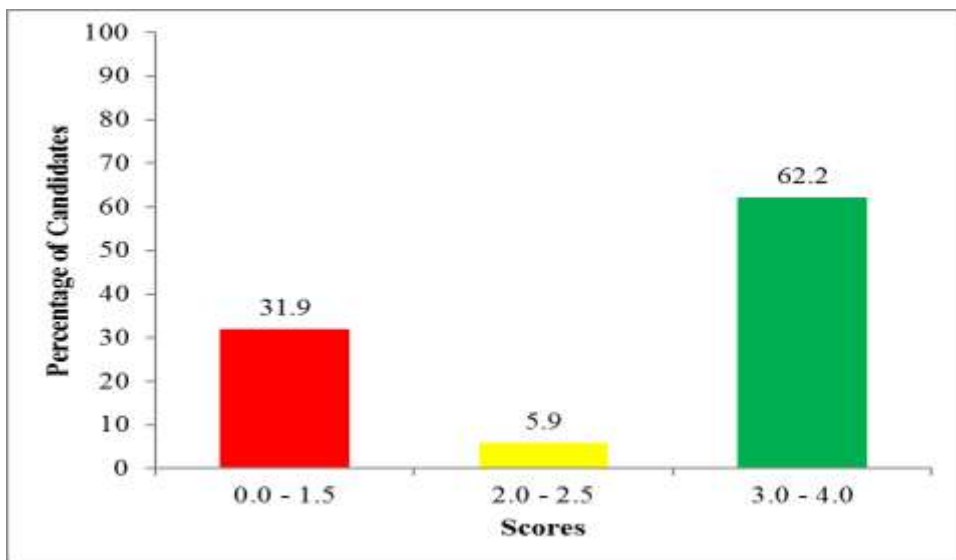


Figure 8: *The candidates' performance in question 8*

Majority of the candidates (68.04%) scored high marks (2 to 4) because they had knowledge on web design and development. One candidate in this category wrote, "Search engines help students to search materials easily and hence get deep understanding of concepts". Another candidate wrote, "Search engine enable students to get notes online". These responses indicate that candidates had sufficient knowledge on search engines in regards to website design and development. Extract 8.1 indicates a sample of correct response given by one of the candidates.

8	
	i) Student can use a search engine like Google, Yahoo to retrieve education information and get up to date about education.
	ii) It helps a student to prepare his own notes.
	iii) It helps e-learning to be simple.
	iv) It helps to use e-mail for spreading the information.

Extract 8.1: candidate's correct response in question 8.

In extract 8.1 the candidate managed to explain correctly the impacts of search engines to students.

Further analysis indicates that few candidates (31.9%) scored from 0 to 1.5 marks. This implies that they had inadequate knowledge on advantages of search engines. Moreover, some of the candidates (29.9%) scored 0 marks and that they could not state the advantages of search engines. Extract 8.2 shows a sample of an incorrect response from one of the candidates in this category. Extract 8.2 where it shows how the candidate misunderstood the requirement of the question and hence ended in providing the negative effects of the search engines.

8	(a) Wastage of time.
	(b) Students or learners becoming lazier.
	(c) Source of students to have poor performances.
	(d) Source of moral decay behavior.

Extract 8.2: Candidate's incorrect response in question 8.

2.1.9 Question 9: Planning and Preparation for Teaching Information and Computer Studies

This question was as follows: The integration of ICT into learning is vital in the modern learning. Here candidates were required to explain how ICT can be integrated in the learning of mathematics and science subjects among student teachers. The aim was to assess the candidates' ability to integrate technology into learning.

A total of 4154 (100%) candidates attempted this question, out of which 339 (8.28%) scored from 0 to 1.5 marks, 774 (18.6%) scored from 2.0 to 2.5 marks and 3041 (73.2%) scored from 3 to 4 marks out of 4 allocated marks. The data shows that the candidates' performance in this question was good, because 89.71 per cent of the candidates scored above 1.5 as shown in figure 8.

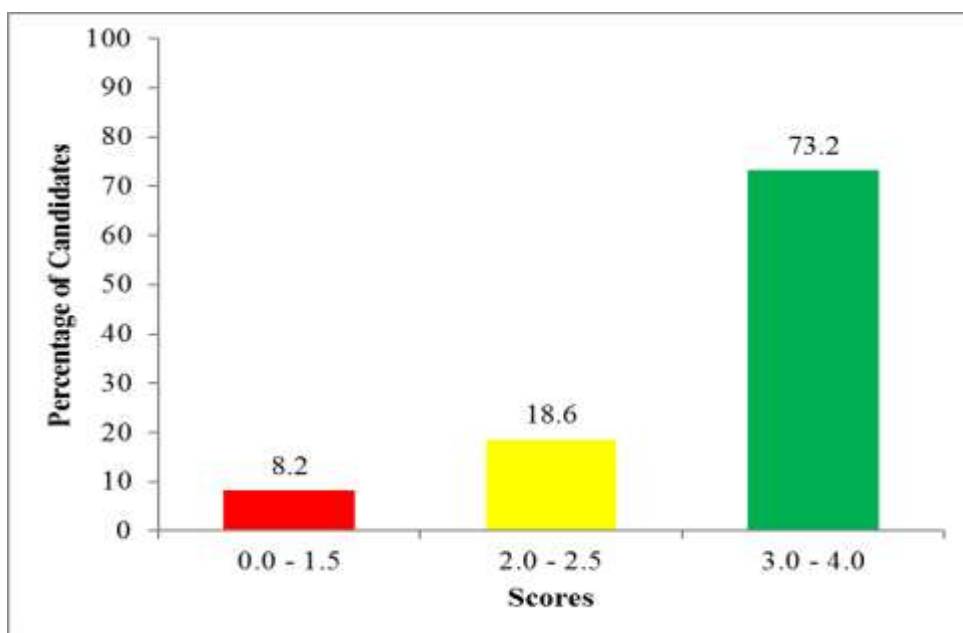
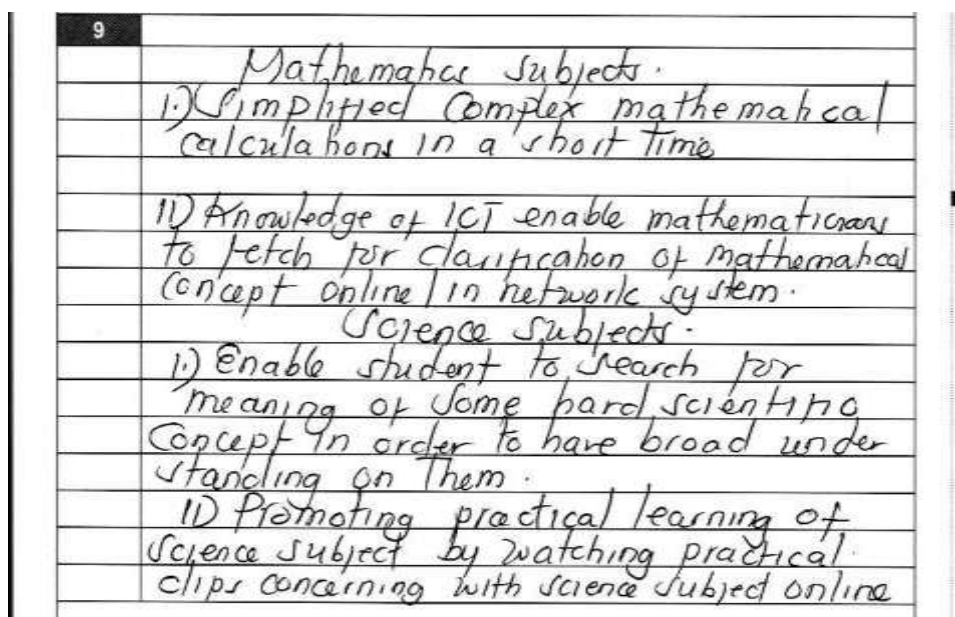


Figure 9: *The candidates' performance in question 9*

Responses of candidates who scored high marks (2 to 4) wrote answers that were related to the demands of the question. These candidates managed to show how ICT can be integrated in the learning of mathematics and science subjects.

The candidates' responses in this category show that, they had the sufficient knowledge on identifying ways by which ICT is integrated to the learning of mathematics and science. Some of them identified the use of computer programs in doing some mathematical calculations, for example the use of spreadsheet program. Others in this category understood the question by listing animation, videos and still pictures as one of the means to describe science concepts. For instance, one candidate wrote, "ICT is for keeping statistical records of students" which are all correct responses. Extract 9.1 shows a correct response from one of the candidates in this category.

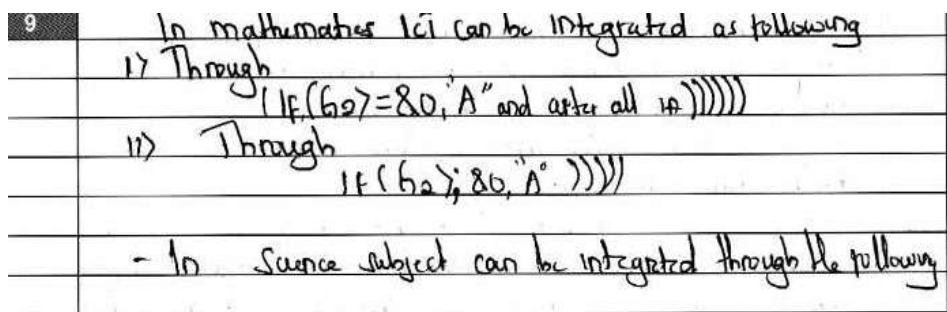


Extract 9.1: A sample of a good response from one of the candidates.

Extract 9.1 the candidate managed to explain correctly the how ICT can be integrated in mathematics and Science.

Further analysis of data shows that, the candidates (8.28%) that scored low marks (0 to 1.5) failed to show ways where ICT is integrated to the learning mathematics and science subjects. For instance, one candidate wrote, “In mathematics ICT a best price shopping while in science ICT is used in science agriculture like use of tractors to simplify work.” This is absolutely a wrong response since it does not have any connection with what was demanded by the question.

Candidates who scored low marks (0 to 1.5) in this question were not able to show how ICT can be integrated to the learning of mathematics and science subjects. Extract 9.2 shows a sample of a response from a candidate who answered the question wrongly.



Extract 9.2: A sample of a poor response from one candidate.

In Extract 9.2 the candidate incorrectly did not show how ICT can be integrated into mathematics and science subjects’ inspite of writing wrongly the spreadsheet formulas. This indicates that the candidate lacked knowledge on how ICT is integrated to mathematics and science subjects.

2.1.10 Question 10: Planning and Preparation for Teaching Information and Computer Studies

The question required candidates to analyze four curriculum resources necessary during teaching and learning process.

A total of 4,154 (100%) candidates attempted this question, out of which 1,971 (47.4%) scored from 0 to 1.5 marks, 973 (23.4%) scored from 2.0 to 2.5 marks and 1210 (29.1 %) scored from 3 to 4 marks out of 4 allocated marks. The data shows that the candidates' performance in this question was good, because 52.3 per cent of the candidates scored above 1.5 marks. Figure 10 shows the summary of candidates' performance in this question.

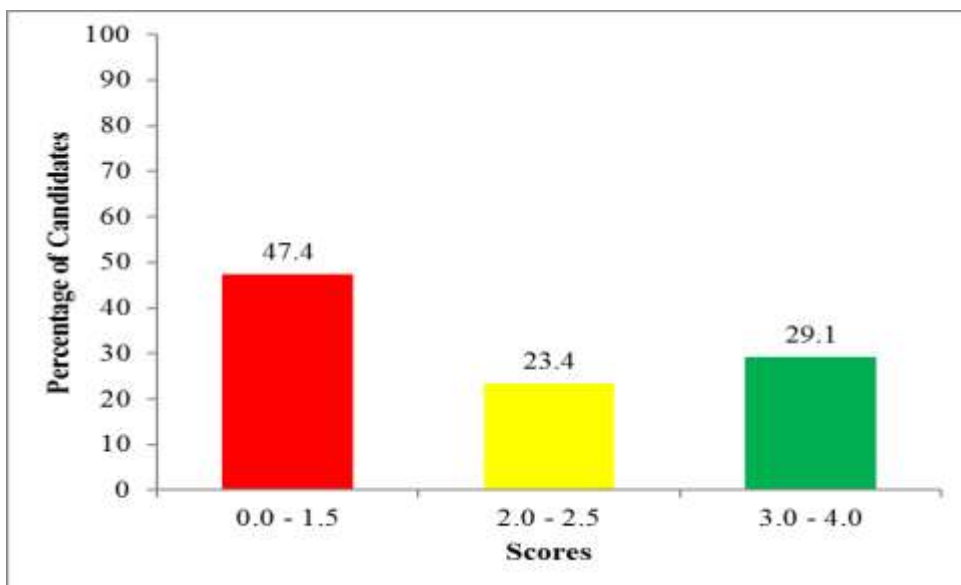


Figure 10: *The candidates' performance in question 10*

On the other hand, statistics show that candidates who scored low marks (0 to 1.5) misunderstood the requirements of the question and hence ended up in identifying the wrong curriculum resources. For example, one candidate wrote, “plan, students, schools and experience”. Other candidates in this category confused the curriculum resources and classroom equipment and hence mentioned *measurements, charts and dusters, rulers and pointers* as their responses. Extract 10.1 shows an example of an incorrect response from one of the candidates in this category.

10	<a> Helps a teacher to teach the learners in a systematic order.
	 Helps teaching and learning process to follow the content clearly.
	<c> Helps the learners to get the necessary materials which should supposed to get when taught.
	<d> Helps the learners and teachers to be or to fit have confidence in all the process of teaching and learning.

Extract 10.1: An incorrect response in question 10.

Extract 10.1 indicate that the candidate fails to realize a needs of question. The question needs 4 curriculum resources for teaching and learning. The candidate explained the importance of curriculum.

The candidates who scored good marks managed to analyse the curriculum resources necessary during teaching and learning process. In their analysis they mentioned *syllabus, textbooks, scheme of work and lesson plan as the commonly used curriculum resources*, this is the implication that they had competence about the topic. A total of 1,210 which equals to 29.1 per cent of all the candidates scored full marks in this question. However, some candidates in this category could not score full marks due to grammatical errors. Extract 10.2 shows a sample of a correct response from one of the candidates who attempted this question.

10	
i.	Syllabus this help teacher to know the all topic and how to teach and tools or method of teaching.
ii.	Lesson plan this are the day to day preparation made by a teacher inorder to show the learning progress and give to teach in a systematic way.
iii.	Teachers guide and text book this are book which help the teacher to prepare note and know how to teach the class.
iv.	Scheme of work this is the curriculum materials prepared by a teacher for period of times which help teacher to manage time

Extract 10.2: A sample of a correct response in question 10.

In extract 10.2: The candidate was able to identify curriculum resources during teaching and learning process.

2.2 SECTION B: Essay Questions

In this section there were 04 compulsory questions. The candidates were required to attempt all the questions. Each question carried 15 marks to make a total of 60 marks.

2.2.1 Question 11: Multimedia

In this question the candidates were required to assess the contribution of Multimedia in teaching and learning process. They were asked to use five points in the descriptions.

A total of 4,154 (100%) candidates attempted this question, out of which 166 (4.5%) scored from 0 to 5.5 marks, 1,068 (25.7%) scored from 6 to 10.0 marks and 2901 (69.8%) scored from 10.5 to 15.0 marks out of 15 allocated marks. The data shows that the general candidates' performance in this question was good, because 97.5 per cent of the candidates scored between 6 to 15 marks. The summary of candidates' general performance is shown in Figure 11.

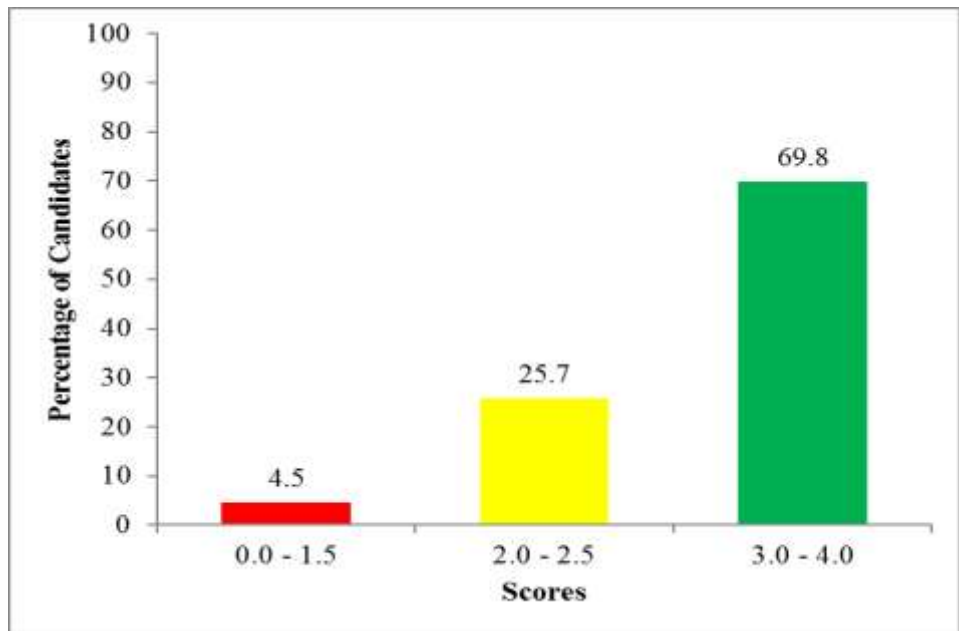


Figure 11: *The candidates' performance in question 11*

The analysis shows that 69.8 per cent of the candidates who scored high marks (10.5 to 15.0) were able to explain correctly the importance of using multimedia in teaching and learning process with appropriate examples. Nevertheless, some of the candidates in this category could not score full marks due to various reasons such as inappropriate organization of ideas and lack of appropriate examples while others explained less than five points. Extract 11.1 shows a sample of a correct response from one of the candidates in this category.

Multimedia is an electronic device which combination of image, video, graphs, picture and sound. Multimedia divided into two main types, which are linear multimedia and Non linear multimedia. Linear Multimedia is the type of multimedia which can be controlled by a person, example is storytelling, and Non linear multimedia is a media which can be controlled by a people, example of multimedia is playing a game. Multimedia have many importance in teaching and learning process, But the following are few importance of multimedia in the promoting teaching and learning process:

It help to create critical thinking to the students, when teacher use multimedia in the process of teaching and learning, students create a higher thinking capacity because they most concentrating the look in multimedia. So due to multimedia learner be critical thinker.

It help a learner to have a long memory about his or her subject studies, that is because through multimedia student read theoretically sometimes practical because they seen each think, for example when teach about volcano eruption a learner see the way volcano erupted.

It help to support teaching and learning as a teaching aid, Many schools used multimedia as teaching and learning aid. So due to this situation it help to support the process of teaching and learning in the classroom.



Extract 11.1: A sample of a correct response from a candidate.

Extract 11.1 indicates one of the candidates who correctly discussed the contribution of multimedia in teaching and learning progress as required by the demand of question 11.

Moreover, the analysis indicates that some of the candidates who scored average marks were able to write five or less points without explaining them, some of them gave partial answers.

On the other hand, few candidates (4.5%) scored low marks. These lacked essay writing skills. They simply outlined one to three points instead of five. Other candidates in this category managed to write good introduction but they explained elements of multimedia instead of the importance of multimedia. Extract 11.2 shows the sample of an incorrect response from one of the candidates.

11	<p>Communication; is the process of changing ideas, opinion, information between two or more people. It is not true that contribution of multi media in promoting the teaching and the learning process is very important according to the following reasons :-</p> <p>Source; In order to improve the communication, we should have the source in order to the people to know what they talking about for instance conflict, work information.</p> <p>Message; It is the content which is the main thing in communication that makes the communication to occurred example Message about job application.</p> <p>Sender; is the person who send the message or state the message to others in order for them to discuss or any means.</p> <p>Receiver; is the one who receive what the sender send to the message and also can reply or giving feedback.</p>
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Extract 11.2: Candidate's incorrect response in question 11.

Extract 11.2 indicates one of the candidates who incorrectly discussed about elements of communication instead of the contribution of multimedia in teaching.

2.2.2 Question 12: Principles of Teaching and Learning ICS

In this question the candidates were asked to explore five benefits secondary school students get from learning ICS.

A total of 4,154 (100%) candidates attempted this question, out of which 79 (3.8%) scored from 0 to 5.5 marks, 852 (20.5%) scored from 6 to 10.0 marks and 3,223 (77.6%) scored from 10.5 to 15.0 marks out of 15 allocated marks. The data shows that the candidates' performance in this question was good, because 98.1 per cent of the candidates scored above 5.5 marks. Figure 12 shows the summary of candidates' performance in this question.

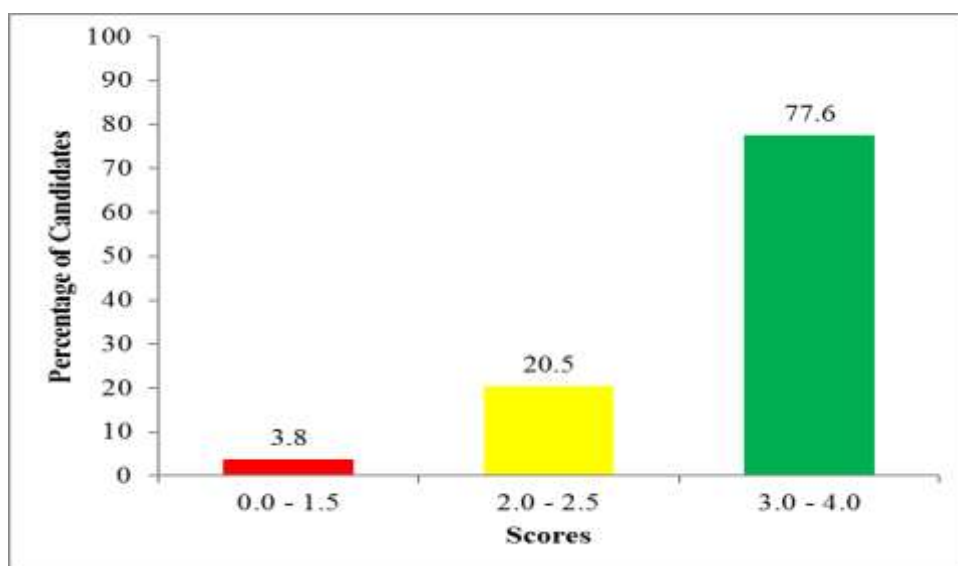


Figure 12: *The candidates' performance in question 12*

The analysis also shows that the candidates who scored high marks (10.5 to 15) were able to explore five benefits secondary school students get from learning ICS. Some of them managed to write clear introduction, description with clear examples and conclusion to show that they had adequate knowledge in this topic and also aware of the requirements of the question. Extract 12.1 shows a sample of a correct response from one of the candidate in this category.

ICS is the abbreviation of the word information and computer studies. But learning ICS is the method used by the learner to obtain knowledge and skills. Therefore the learning ICS is very important to the people especially learners. The followings are the benefits of learning ICS in secondary school student.

It teaches life skills; when learning ICS in secondary school help the learner to get more knowledge and skills of obtaining different things because the ICS when providing skills to the learner the skills that they get can apply to the real life environment. Therefore learning ICS is very benefit to the people.

It used to interpret, analyse and collect details or information; The use of ICS always help the students to understand on how can collect or obtain information from the computer. Therefore when using a computer help you to analyse many thing from the computers as well as to collect data and information of different issues. So it important to use computer studies.

It helps to develop computer based on teaching programmes for education; When learning ICS help the people to increase more skill which can develop the ability of using computer based on teaching during education. Therefore the learning ICS increase and develop the ability of using computer in daily life but especially for the teacher help them to use during teaching and learning process.



Extract 12.1: One of the candidate's correct responses in question 12.

In extract 12.1 a candidate shows correct response about benefits secondary school students get from learning ICS.

In addition, most of the candidates who scored average marks (6 to 10) were able to mention five points but could not manage to elaborate them all.

On the other hand, majority of the candidates who scored low marks (0 to 5.5) mixed the exact meaning of ICS abbreviations by writing information and communication studies instead of information and computer studies, they were also able to provide some points but in nutshell, some managed to incorrectly provide all five points required. This shows that they had inadequate knowledge on the topic, Extract 12.2 shows a sample of an incorrect response from one of the candidates who attempted this question under this category.

12 Teaching of ICS is the abbreviation of Information and communication of science technology during teaching and learning process. Example of this is Digital camera and the CamScanner. The following are the benefits of ICS from learning secondary school students are as below:

ICS it help a student to chart the messages by using computer. This is among of the impact to learner because he or she does not concentrate the classroom during teaching and learning process. Example Mobile phone.

ICS help a student to take photos during teaching and learning process; This is among the impact to learner because ~~the~~ he or she take a photo that lead to fail his or her performance at school.

ICS help a teacher to store the information in the computer in order to memorizing to teach with another month. Example to store the result of ~~four~~ four form four result and store the time-table of regulation at school.

Extract 12.2: An incorrect response in question 12

Extract 12.2 shows that, the candidate was unable to explore benefits that secondary school students get from learning ICS. The candidate was not clear with the explanation so ended in describing the overall use of communication in a school setting rather than the benefits of ICS to students this indicates that the candidate had limited knowledge on the topic.

2.2.3 Question 13: Generic software applications

The question required the candidates to analyze the importance of opting for word processor during the preparation of notes. The question aimed at assessing the candidate's ability in the application of computer programs.

A total of 4,154 (100%) candidates attempted this question, where by 1808 (40.8%) scored from 0 to 5.5 marks, 1,178 (28.4%) scored from 6 to 10.0 marks and 1,168 (28.1%) scored from 10.5 to 15.0 marks out of 15 allocated marks. The general candidates' performance in this question was average, because 56.5 per cent of the candidates managed to score from 6 to 15 marks. Figure 13 shows the summary of candidates' performance in this question.

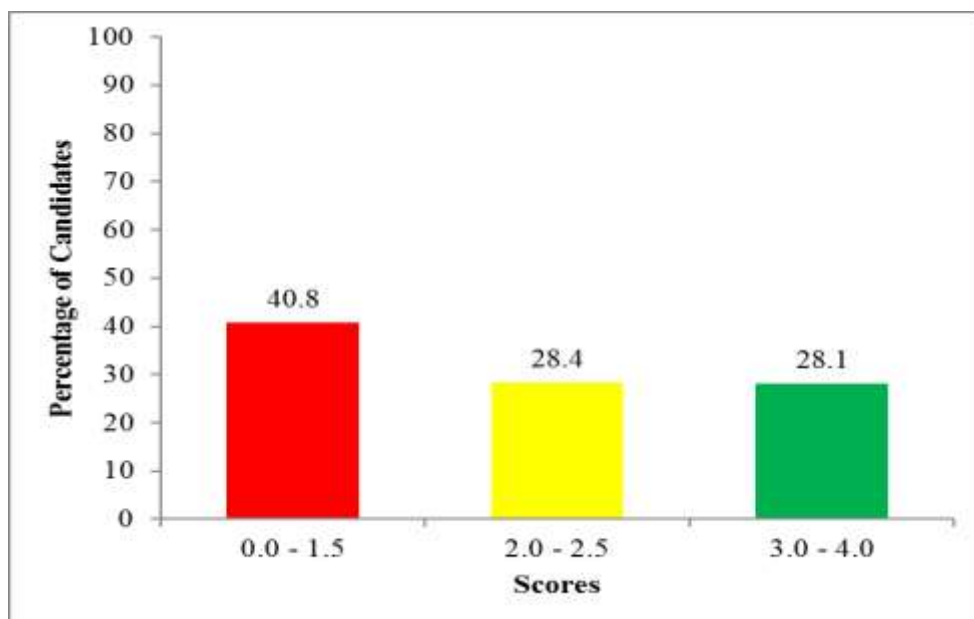


Figure 13: *The candidates' performance in question 13*

The candidates' response shows that some candidates who scored low marks (0 to 5.5) were not able to correctly explain five importance of opting for word processor during the preparation of notes; some of the candidates in this category had inappropriate explanation for some of the importance of opting for word processor as well as grammatical errors. Extract 13.1 shows a sample of an incorrect response from one of the candidates in this category.

13	<p>Notes is the lesson prepare by teacher or student from different the resources material such as text book, internet, computer, new pare, notes are very important during the process of teaching and learning process because it help to teach systematic and student to - recall the information, the following are the</p> <p>Through the use of internet to get material, due to the influence of internet and availability of material where are very important to development awareness to the - student, due to this promoter teacher to opting for word processor</p> <p>They advise to use multimedia, such as computer, television in the process of teaching and learning process due to this promoter student permanent memory during the recalling of information due to this situation promoter help to get knowledge, skills, from different resources, due to this statement it is important to provide notes through opting for word processor to prepare students notes due to this situation</p>
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Extract 13.1: Candidates' incorrect response in question 13.

Extract 13.1 shows that, the candidate failed to explain clearly the importance of opting for word processor during the preparation of notes. Further analysis shows that most of the candidates who scored average marks (6 to 10) explained three to four points while others were repeating some importance of the word processor.

On the other hand, the candidates who scored high marks (10 to 15) were able to meet the question demands. They showed ability in explaining the importance of opting for word processor during the preparation of notes. Some of them were able to write correctly the introduction and other important parts of the question. Many of them under this category mentioned editing process, storage of documents and formatting features of word processor as one major importance of opting for that program. Generally high performance of candidates in this part is the proof that they had sufficient knowledge in generic software applications. Extract 13.2 shows a sample of correct response from one of the candidates.

Word processor; Is the sequence of instructions designed or written for performing the specific tasks or inputs work and the word processor has been used in different areas especially in different institutions as government and private institutions for document writing task.

The following are the importances of opting for word processor to prepare students notes as follows:

Easy for editing of information; This is the importance of using the word processor for the teacher to write the students notes as it provides the chance for the teacher to edit the notes. Example At those areas where there is misperception provides chance to edit information.

Provides good option as if the teacher has poor handwriting. Also if the teacher has poor handwriting the word processor gives him/her to write a good, clear and better notes with good appearance for the students that will enable him/her for teaching.

Provides the chance for the teacher to write notes faster and for the high speed; As if the teacher is good in computer he/she can write faster his/her notes rather than using hand writing as the teacher can prepare the many notes for the short period of time that can enable him/her to save the time of preparing notes.

Provides chance to produce and reproducing of many copies of documents; Also on using the word processor for writing the notes for the students the teacher can able to reproduce and produce many copies of notes and can able to provide each student with his/her own notes that will enable to simplify learning and teaching.

Provides grammatical meanings of different words as well as similarities and differences of words; On using the word processor the teacher will get the grammatical meaning of different words and differences with similarities that will make the notes clear and understandable for the students.

Generally the teachers are advised to use the word processor for writing their notes to students as to promote and facilitate the teaching and learning process to be easy for teachers and learners.



Extract 13.2: One of candidates' correct response in question 13.

Extract 13.2 is performance of candidate who had sufficient knowledge in generic software applications.

2.2.4 Question 14: Socio-Economic and Cultural Aspects of ICT

In this question, candidates were required to elaborate five assessment tools that can be used in assessing Information and Computer Studies in secondary schools.

A total of 4,154 (100%) candidates attempted this question, out of which 3,226 (73.6%) scored from 0 to 5.5 marks, 759 (22.3%) scored from 6 to 10.0 marks and 169 (4.1%) scored from 10.5 to 15.0 marks out of 15 allocated marks. The general candidates' performance in this question was poor, because 73.6 per cent of the candidates managed to score below 5.5 marks. Figure 13 shows the summary of candidates' performance in this question.

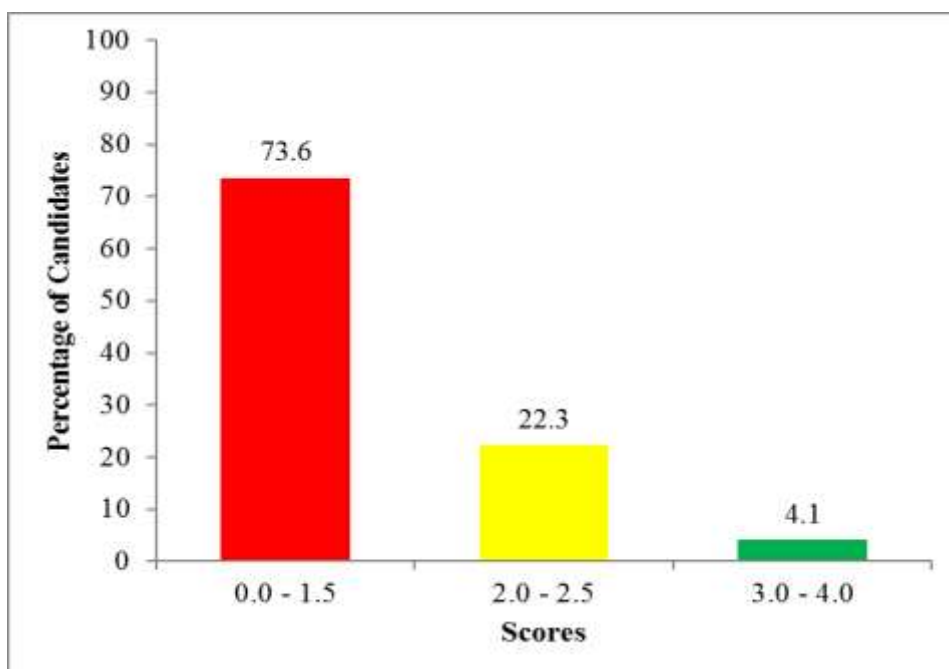


Figure 14: *The candidates' performance in question 14*

The candidate's response in this questions shows that those who scored low marks (0 to 5.5), were unable to provide the correct response due to the fact that they were not sure of the requirements of the question. Some candidates in this category elaborated incorrectly few strategies where effective communication in a classroom can be improved. One of the candidates wrote, "To ensure power supply for communication to occur".

Definitely this is the sign that they also lacked knowledge on how to answer questions regarding social-economic importance of ICT. On the other hand those who scored average marks (6 to 10) were about 22.3 per cent of all candidates and were able to at least provide some strategies of improving communication in the classroom and their performance was supported by things like appropriate introduction and relevant conclusion.

14 Strategies these refers to the measure steps/procedure to be taken in dealing with the certain problem of ineffective communication. And communication this refers to the transfer of information from one place to another, from sender to the receiver and receiver to the sender. The following are the strategies which improve their communication:

To provide with enough information to the area; This will enable the learner to have the effective communication whereby there will be no cut off information/fault of information hence they will be chatting, texting, sharing the telecast of the lesson learned.

To ensure well networking all devices of the students are connected hence to have effective communication; this enable to have understanding each other, where there will be connected each other and communication with other learners of different parts

Extract 14.2 A sample of an incorrect response on question 14.

Extract 14.2 shows a candidate who did not meet a demand of a question.

The statistics show that majority of the candidates who scored high marks (10.0 to 15) managed to propose five strategies that can be used to improve communication in the classroom by giving relevant examples. Many of them pointed staying focus, knowing the audience and being concise as ways to improve communication. One candidate wrote “use simple and clear language in order to provide effective transfer of information.” Their responses stand as a base to show how much the candidates are well equipped to the concept. Extract 14.1 shows a sample of correct response from one of the candidates.

14	<p>Ineffective Communication is the kind of communication which does not bring meaningful message to the receiver or which brought misconception to the mind of the receiver.</p> <p>The following are the strategies to improve effective communication.</p> <p>Knowing the audience. So as to make the communication clear the teacher should understand the nature of the audience are they holiday maker, prisoner, or students, after knowing their nature teacher should use the effective method of delivering information according to nature of the audience.</p> <p>Appropriate selection of media, teacher should select the media, which suit and favour the audience, media which is interested by audience so as to deliver the instruction and message or content in a good and understandable by all.</p> <p>Mastery of the content or subject matter. The teacher should the content he/she deliver to the audience, he/she must arrange the content in logical manner and organizational so as to make the students to understand effectively and make communication clear between teacher and student.</p> <p>Star Clear and simple language, teacher should use very simple language which is understood by students so as to make communication to be meaningful and effective between teacher and students.</p>
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Extract 14.1: Candidates correct response in question 14.

Extract 14.1 shows that, the candidate managed to propose correctly five strategies to improving communication in a classroom.

3.0 CANDIDATES' PERFORMANCE IN EACH TOPIC

In this examination, the questions were set from 10 topics. The analysis of the candidates' responses shows that the performance was good in the topics of *Principles of teaching and learning ICS* (98.1%), *Multimedia* (95.5%), *Computer basics and networks* (92.3), *Fundamentals of information and communication technology* (78.7%), *Computer laboratory management skills* (75.1%) and *Planning and preparation for teaching ICS* (72.2%). The good performance was a result of correct interpretation of the questions and candidates' good practical skills.

Moreover, the candidates had average performance in the topics of *Website Design and development* (68.1%). This performance was an outcome of insufficient understanding on basic computer-related concepts.

However, the candidates performed poorly in the topics of *computer programming languages* (100%), *Generic software application* (28.3%) and *Social-economic and cultural aspects of ICT* (26.4). This is because the candidates lacked equitable knowledge on the topics. The performance of the candidates in each topic is shown in the Appendix.

4.0 CONCLUSION

In this examination the majority of the candidates responded to most of the questions correctly. The analysis on each question shows that the candidates' performance was good in questions 1, 5, 6, 7, 9, 11, 12 and 13 while it was average in questions 8, 10 and 13. On the other hand, it was poor in question 2, 3, 4, and 14.

The analysis on the 10 topics which were examined shows that 8 topics had good performance, 3 topics had average, and the remaining 4 topics had poor performance. Therefore, the overall performance in Information and Communication Technology in 2022 was good. The reasons for the good performance include sufficient knowledge and skills in most of the examined areas. Moreover, it was due to the candidates' ability to recall, explain, and make analysis in answering the questions.

The analysis of the candidates' performance in each topic indicates that the candidates had difficulties in answering questions from the topics of *computer programming, Computer basics and Networks* and *Generic Application Software*. The poor performance in the questions is attributed to the candidates' insufficient knowledge and skills on the topics. They also seem to lack knowledge on the given concepts, since some of them interpreted wrongly the asked concepts.

5.0 RECOMMENDATIONS

In order to improve the candidates' performance in Information and Communication Technology examinations, the following should be done:

- (a) It is necessary that, teachers/tutors should provide more exercises, tests, and examinations to enhance students' mastery of theoretical concepts, and improve their practical skills especially in areas where more practical's are needed.
- (b) Education stakeholders, such as the government, parents and school managers are advised to ensure that schools and colleges have well and equipped ICT laboratories. Such laboratories will facilitate improvement in teaching and learning especially practical activities.
- (c) Students should be encouraged to learn English Language effectively in order to be competent in answering questions particularly those questions which require extended descriptions.

**SUMMARY OF THE CANDIDATES' PERFORMANCE IN
INFORMATION AND COMMUNICATION
TECHNOLOGY (ICT) SUBJECT**

S/N.	Topic	Question number	Performance in each question (%)	Average performance per Topic (%)	Remarks
1.	Principles of teaching and learning ICS	12	98.1	98.1	Good
2.	Multimedia	11	95.5	95.5	Good
3.	Computer basics and Networks	5	92.3	92.3	Good
4.	Fundamentals of information and communication Technology.	1	80.5	78.7	Good
		6	76.9		
5.	Computer laboratory management skills.	7	75.1	75.1	Good
6	Planning and preparation for teaching ICS.	9	91.8	72.2	Good
		10	52.6		
7.	Web design	8	68.1	68.1	Average

S/N.	Topic	Question number	Performance in each question (%)	Average performance per Topic (%)	Remarks
8.	Generic software application	3	0.1	28.3	Poor
		13	56.5		
9.	Social-economic and cultural aspects of ICT.	14	26.4	26.4	poor
10.	Computer programming language	2	0.02	0.015	Poor
		4	0.01		

