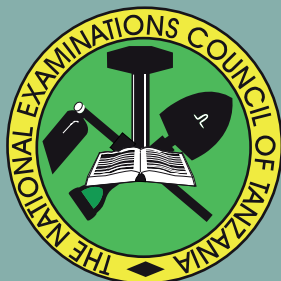**THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA**

CANDIDATES' ITEM RESPONSE ANALYSIS REPORT FOR DIPLOMA IN SECONDARY EDUCATION EXAMINATION (DSEE) 2018

738 INFORMATION AND COMMUNICATION TECHNOLOGY

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

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CONTENTS

FOREWORD

The Candidates' Items Response Analysis report for ICT paper of the Diploma in Secondary Education Examination (DSEE) 2018, was prepared in order to provide feedback to teachers, policy makers and other education stakeholders on how the candidates responded to the examination items.

The report revealed the candidates' strengths and weakness which indicates what the education system was able or unable to offer to the candidates in their two years of Diploma in secondary education.

A total of 912 candidates were registered for ICT Examination whereby 907 sat for this examination. The analysis shows that 905 (99.78%) among the candidates who sat for the examination passed. However, there were some candidates who were not able to answer the questions as it was expected, scoring low marks. The reasons which contributed to the candidates' inability to answer the questions include: failure to identify the requirements of the questions and inadequate knowledge and skills of the concept that were tested in the questions.

The National Examination Council of Tanzania believes that, this report will be used by education stakeholders in finding out the strategies for improving the performance in this subject.

Finally, the Council would like to thank the Examination Officers and all others who were involved in preparing and analyzing the data used in this report. The National Examinations Council of Tanzania (NECTA) will highly appreciate comments and suggestions from candidates and the public in general that can be used to improve future analysis Reports.

Dr. Charles E. Msonde

EXECUTIVE SECRETARY

1.0   INTRODUCTION

This report is based on the analysis of candidates' responses to the items that were examined in Information and Communication Technology (ICT) for the Diploma in Secondary Education Examination (DSEE) 2018. The paper was set according to the 2017 Examination format and the 2009 ICT and ICS syllabus for Diploma in Secondary Education. The report identifies areas in which the candidates faced challenges and those in which they did well.

The paper had sections A, B and C with a total of 16 questions. Section A had 10 questions in which questions 1, 3, 5, 7, 9 and 10 carried 3 marks each; questions 2 and 4 carried 4 marks each; and questions 6 and 8 carried 6 marks each. Section B had 3 optional questions, each carrying 15 marks. Section C had 3 optional questions, each carrying 15 marks. The candidates were required to answer all questions in section A, 2 questions from section B and 2 questions from section C to make a total of 14 questions to be attempted.

The analysis of the candidates' performance on all questions is presented in Section 2. Its subsequent sections analyzes the candidates' performance by indicating the task which was expected to be done by the candidates in each question and the strengths and weaknesses demonstrated by the candidates in attempting each question. In the analysis of the candidates' responses in each question or topic, the performance is regarded as good, average or poor basing on the percentage of candidates who scored 40 percent or more of the marks allotted to a particular question. The candidates' performance was good from 65 to 100, average from 40 to 69 percent and poor or weak from 0 to 39 percent. In addition, charts and tables with colours are used to illustrate the candidates' performance on each question whereby red represents poor, yellow represents average and green represents good candidates' performance. Furthermore, the reasons for the candidates' poor or good performance on each question have been explained and illustrated by using samples of extracts of some of the candidates' responses.

2.0   ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION

2.1   SECTION A

This section consisted of 10 questions: seven carrying 3 marks each, one carrying 4 marks and two carrying 6 marks each. The candidates were required to answer all questions.

2.1.1   Question 1: Fundamentals of Information and Communication Technology

This question consisted of three parts, (a), (b) and (c). The candidates were required to explain briefly the meaning of (a) Data, (b) Knowledge and (c) Information.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 1.3 percent scored from 0 to 1.0; 8.2 percent scored from 1.5 to 2 and 90.5 percent scored from 2.5 to 3 out of 3 marks. The candidates' performance on this question was good, since 98.7 percent of the candidates scored above 1 mark as shown in Figure 1.

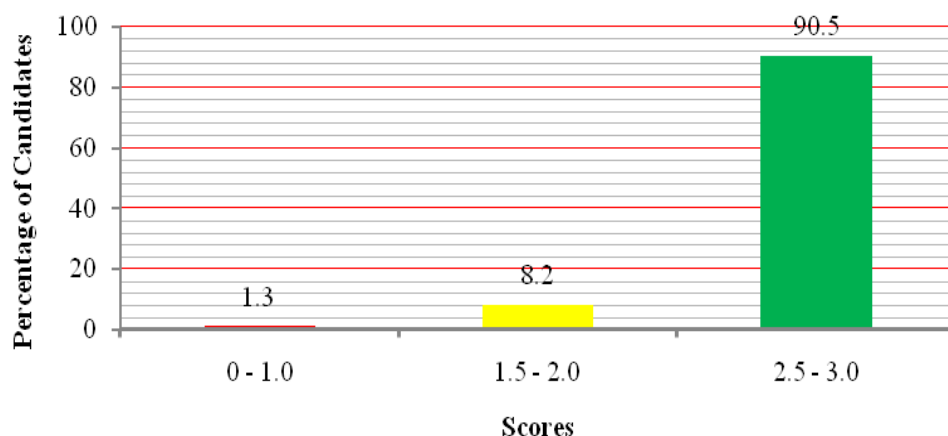**Figure 1:** *Candidates' Performance on Question 1*

In this question, many candidates (98.7%) scored high marks (1.5-3.0). Their responses show that they managed to answer the question according to its requirement. For instance, in part (a), one of the candidate defined data as a fact or raw materials that are not processed, in part (b), the candidates defined Information as processed data to be used or shared.

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Moreover, in part (c), the candidate defined Knowledge as understanding that happens through learning or experience. This shows that, these candidates had adequate knowledge about the concepts *Data, Information and Knowledge*. Extract 1.1 is a correct response from one of the candidates.

Extract 1.1

> In Extract 1.1, the candidate correctly explained the terms *Data, Information* and *Technology*.

Nevertheless, few candidates (1.3%) provided incorrect responses to this question. These candidates failed to explain the meaning of the given terms. For instance, in part (a), one of the candidates defined data as the source of information on the internet way, the second being the process and the last being information, while in part (b), the candidate defined Information as the last stage to produce computer programs. Moreover, in part (c), the candidate defined Knowledge as the body of science, which deals with the source of all information, all these responses are incorrect.

These responses show that, they had insufficient knowledge of the terms Data, Information and Knowledge in relation to Information and Communication Technology.

In this question, the candidates were supposed to explain the meaning of the three terms as used in Information and communication Technology as follows:

Data: It is defined as a fact to an activity in a given environment. Also data can be described as a raw fact or materials if they are not yet even or partially processed information i.e. they convey no particular meaning to a given activity within any given activity.

Information: It is defined as processed data directly useful in decision making. These are processed data which has meaning to the user. The information is achieved by applying some processing procedures on to the input raw data.

Knowledge: It is awareness or familiarity gained by experience of a fact or situation.

Extract 1.2 is an example of an incorrect response to this question.

Extract 1.2 shows that the candidate provided incorrect definitions of the terms *data, information* and *knowledge*.

2.1.2 Question 2: Generic Software Application

This question consisted of two parts: (a) and (b). In part (a), the candidates were required to give the meaning of computer application software. In part (b), they were required to explain briefly three types of application software used in teaching and learning process.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 53.7 percent scored from 0 to 1.5; 20.3 percent scored from 2 to 2.5 and 26 percent scored from 3 to 4 out of 4 marks. The performance of the candidates on this question was average since 46.3 percent of the candidates scored above 1.5 marks as shown in Figure 2.
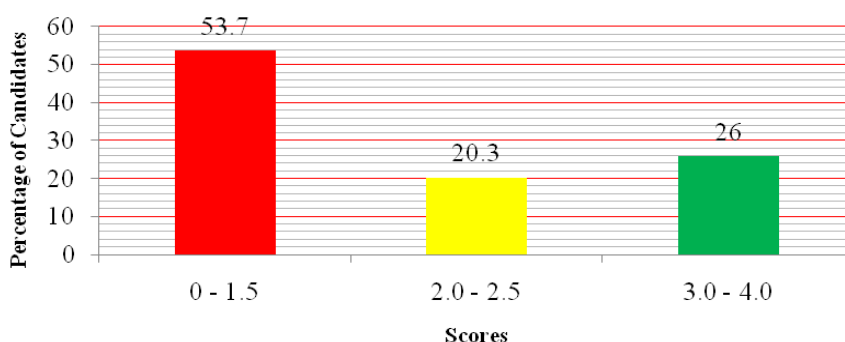
Figure 2: *Candidates' Performance on Question 2*

According to the analysis, 46.3 percent of the candidates performed well as they were able to answer two to three parts of the question correctly with 11 percent scoring full marks. Their responses show that they understood the concepts, and the requirement of the question. For instance, in part (a), one of the candidates defined computer application software as the software which is used to perform specific activities such as spread sheet. Moreover, in part (b), the candidate explained the three useful application software used in Tanzania schools in teaching and learning as follows:

(i) Presentation application software: It is used for making lesson presentations.

(ii) Spread sheet application software: It is used in solving problems like calculations and processing candidates' results. It contains many rows and columns.

(iii) Data base Access: Is the application used for organizing and storing information for easy access.

These responses indicate that the candidates had adequate knowledge of Generic Software Application. Extract 2.1 is an illustration of correct responses from one of the candidates.

Extract 2.1

    In Extract 2.1, the candidate clearly explained the term computer application software and correctly described the application software which can be used in classroom teaching and learning.

On the other hand, the analysis of data shows that 53.7 percent of the candidates scored low marks (0-1.5). Their responses reveal that they did not understand the requirement of the question, and they lacked knowledge of *Generic Software Application*. For example, in part (b), one of the candidates explained the advantages of using generic software in teaching and learning instead of explaining the three kind of application software used in teaching and learning. Furthermore, in part (a), another candidate explained computer application software as the process of applying the electronic devices to transform data and information from one place to

another, while in part (b), the candidate explained the useful application software used in Tanzania schools during teaching and learning process as follows:

(i) Used to transforming information from one learner to another. In learning process the software allow the information to pass from one to another.

(ii) Used to keep memory for long time, it means that when student learn, the software help him/her to keep information for a long time.

(iii) Help learner to share their information for a long time, because the student support the information to be recorded.

(iv) It saves time in process of writing and copying different materials.

Likewise, another candidate, in part (a), defined computer application software as the software that allows user to run a computer, for example Windows, whereas, in part (b), the candidate explained the three useful application software used in Tanzanian schools during teaching and learning as follows:

(i) It enhances sharing of information.

(ii) It enhances retrieval of information. For example, materials which are already recorded in a computer can allow learner to make a simple recall.

(iii) It is used on research findings.

These responses show that the candidates had inadequate knowledge of *Generic Software Application.*

To answer this question, the candidates were supposed to explain the meaning of computer application software and to explain any three among the application software used in the teaching and learning process.

In part (a), the candidates could define computer application software as the software which is designed to perform specific tasks. This software includes office packages such as Microsoft word, Power point, Spreadsheets, Microsoft Access, Audio application software, Database Access and Desktop publisher.

In part (b), the candidates could choose and explain three among the application software such as Word processing, Presentation application software and Spreadsheets. The candidate could explain Word processing application software as the software used in creating and editing text materials. This software is used by teachers in preparing lesson notes, examinations etc.

Presentation application software: It is an application software used for preparing and making lesson presentation in the process of teaching and learning. It presents in form of slides, for example, Ms Power point, open office org impress etc.

Spread sheet application software: It is application software used for creating and manipulating data in schools or colleges. It is used for analyzing and processing candidates results, keep school or college data, preparing business transactions, preparing pay rolls etc. Extract 2.2 exemplifies such incorrect responses to the question.

Extract 2.2
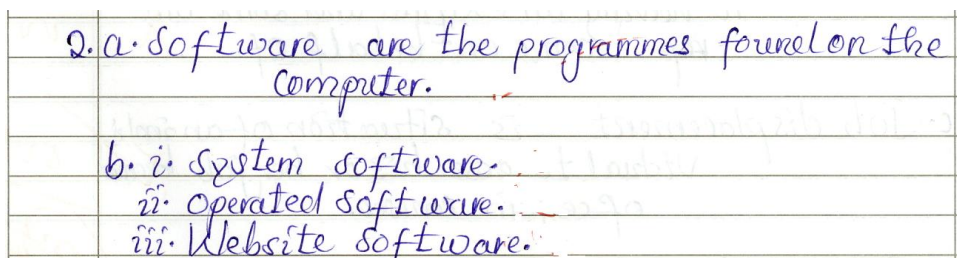
In Extract 2.2, the candidate provided incorrect definitions of computer application software and incorrect examples of application software.

2.1.3 Question 3: Website Design

This question consisted of three parts: (a), (b) and (c). The candidates were required to explain the terms (a) Hypertext (b) Hyperlink and (c) Hypermedia as used in World Wide Web.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 53.7 percent scored from 0 to 1; 20.3 percent scored from 1.5 to 2 and 26 percent scored from 2.5 to 3 out of 3 marks. The overall performance on this question was average, since, 46.3 percent of the

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candidates scored above 1 mark. Figure 3 summarizes the candidates' performance on question 3.
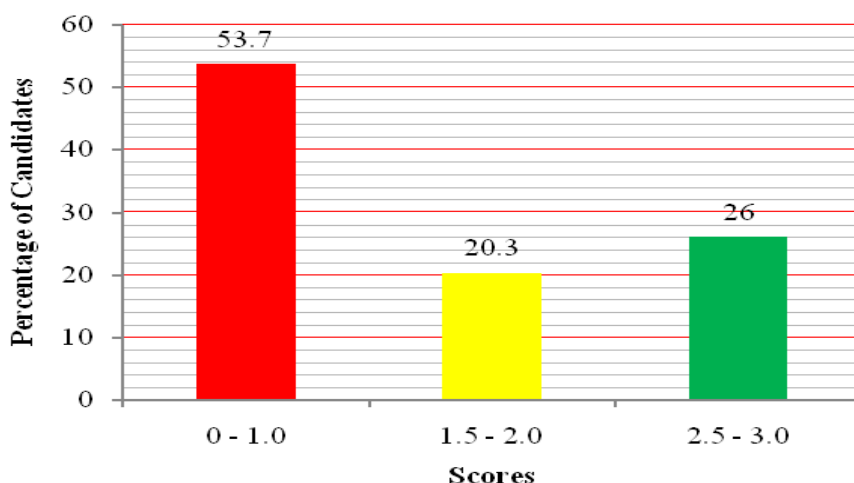
Figure 3: *Candidates' Performance on Question 3*

The analysis shows that 46.3 percent of the candidates performed well. They managed to answer two to three parts of the question correctly, with 3.1 percent scoring full marks. Their responses indicate that they possessed adequate knowledge of the concepts of *Website Design*. For instance, one of the candidates in part (a), explained hypertext as a link which enables one document to link to another document. In part (b), the candidate explained hypermedia as an electronic document which contains link to images, videos and graphics. Moreover, in part (c), the candidate explained hyperlinks as a clickable text that allows visiting pages on a web site. A sample showing the candidate's correct responses to the question is shown in Extract 3.1.

Extract 3.1

Extract 3.1 shows that the candidate correctly explained the meaning of hypertext and hyper media.

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On the other hand, the analysis of data shows that many candidates (53.7%) provided incorrect responses. In this group, the candidates failed to explain the meaning of the terms *Hypertext*, *Hypermedia* and *Hyperlinks*. For instance in part (a), one of the candidates wrote, "hypertext is instructions used to create a web site on HTML, that Hyper Make Up Language: it is a language used to create web pages". In part (b), the candidate explained hypermedia as a media used to define web page. It gives instruction on the contents on web pages. In addition, in part (c), the candidate explained Hyperlink as a link that connects web page to the internet.

Another candidate, in part (a), wrote, "Hypertext Refers to the text which can be written in the computer program". In part (b), the candidate wrote, "Hypermedia refers to the media which can be applied in the computer program". Moreover, in part (c), the candidate wrote, "Hyperlinks are those which can be occurred in the flow chart of the computer program".

Furthermore, another candidate in part (a), wrote, "Hypertext is used to write the text in website". In part (b), the candidate wrote, "Hypermedia is a media used to transmit information from a web site".

Moreover, in part (b), the candidate wrote, "Hyperlinks is the marl language used to link the text and media in the web site". This implies that they had inadequate knowledge of the concepts of *Website Design*.

In this question, the candidates were supposed to explain the meaning of the three terms as used in World Wide Web as follows: in part (a), the candidates were supposed to explain the meaning of Hypertext as a document which contains a hyperlink to another document. In part (b), The candidates were supposed to explain the meaning of Hypermedia as a document which contains link to text, graphics, sound or video files while in part (c), the candidate were supposed to explain the meaning of Hyperlinks as a text or an image that allows visiting a web site without typing new address each time.

Extract 3.2 is an illustration of a response from one of the candidates who provided an incorrect response to this question.

Extract 3.2

> 3.(a) Hypertext refers to the written document which obtained after opening a certain link
>
> (b) Hypermedia refers to the multimedia which can be seen after opening a certain link
>
> (c) Hyperlinks Are the links whenever circled can shift the client or use to another area eg. link which appear blue in colour
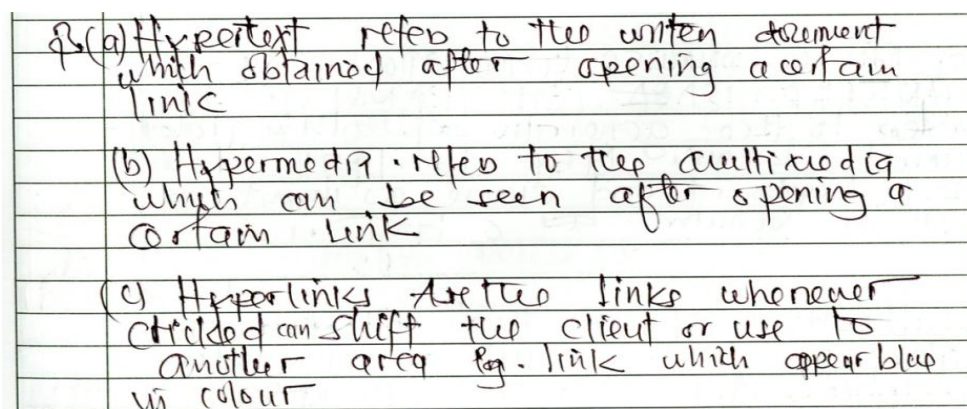
In Extract 3.2, the candidate incorrectly defined Hypertext as written document, Hypermedia as multimedia and Hyperlinks as link in blue colour which is not correct.

2.1.4 Question 4: Computer Basics and Networks

In this question, the candidates were required to explain briefly the first three generations of computers.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 85.7 percent scored from 0 to 2 marks; 7.1 percent scored from 2.5 to 4 and 7.2 percent scored from 4.5 to 6 out of 6 marks. The general performance on this question was poor since only 14.3 percent of the candidate scored above 2 marks. Figure 4 is a summary of the candidates' performance on question 4.
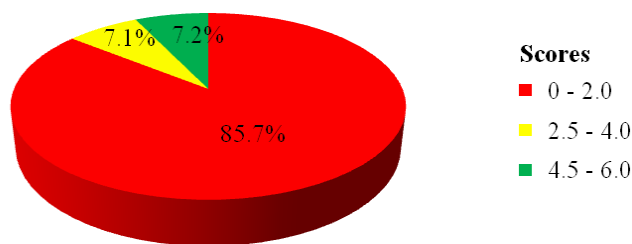

Figure 4: *Candidates' Performance on Question 4*

These responses indicate that the candidates had inadequate knowledge on *Computer Basics and Networks*. This may either be caused by the fact that the topic was not effectively taught or the student did not put much effort on studying the topic in question.

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To answer this question, the candidates were supposed to explain the first three generations of computers as follows:

(a) First generation (Vacuum tube): These were the earliest time computers which were in use from around the early 1950s and mid-1950s. They used vacuum tubes as their circuit. They were very big in size, consumed a lot of electric power, generates a lot of heat, they had limited internal memory, and their processor performed at low speed as compared to the speed of computers today.

(b) Second generation (Transistors): These type of computers used transistors as their circuit which were relatively small to replace the vacuum tubes. They consumed relatively less power, they were small in size as compared to the first generation computers, their internal memory was higher as compared to that of the first generation and the processor performed at a high speed as compared to that of the first generation.

(c) Third generation (integrated circuit): This type of computers used integrated circuit, they are small in size, they have higher main memory, high processing power, storage capacity, they have the capabilities of holding more than one set of instruction at once etc.

The analysis shows that many candidates (85.7%) provided incorrect responses to this question. They did not understand the requirement of the question. Instead of explaining the generation of computers, they explained the generation of computer programming languages. For instance, one of the candidates wrote the following:

(a) First generation language programming
(b) Second generation language programming
(c) Third generation language programming

Likewise, another candidate wrote the following:

(a) Super computers: This is the big computer with high capacity of doing work also it is very expensive.
(b) Microcomputer: This is the biggest with high capacity of doing work also it is very expensive.
(c) Desk top computer: Which include laptop are not big, easy to operate and they are not expensive.

A sample of such incorrect responses is presented in Extract 4.1.

Extract 4.1.

> 7. i/ Machine language, This Use binary digit Code which Computer under OS and Is eg. 1110101
>
> ii/ Assembly language, This people write their words in order to use it.
>
> iii/ High level language, This language which Use Many people can understand.
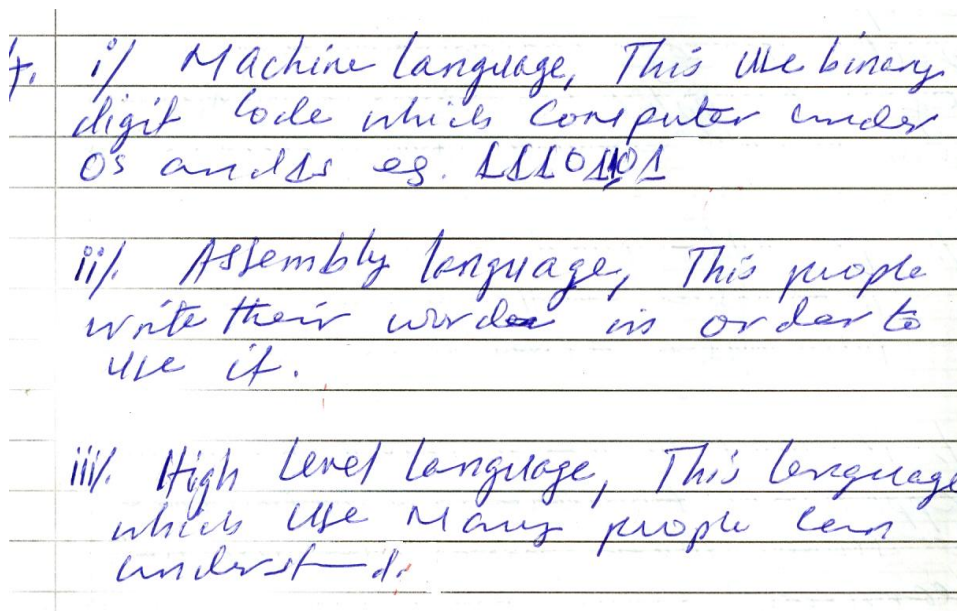
Extract 4.1 shows that the candidate explained the generations of computer programming languages instead of computer generations.

On the other hand, the analysis shows that 14.3 percent of the candidates performed well, as they managed to answer two to three parts of the question correctly, with 4.3 percent of candidates scoring full marks. For instance, one of the candidates wrote,

(a) First generation (Vacuum tube): It was the time when the computers were very big in size, and they could not be moved from one area to another since they were very heavy and big in size and occupied a big space when placed in a room. The first generation computers were very slow when commanded to search any information.

(b) Second generation (Transistors): It was a bit modified and there was the use of transistors, they were reduced in size.

(c) Third generation (integrated circuit): It is when computers used integrated circuit, they are small in size, quick and searching would be done just for very short time.

This is because they had adequate knowledge of the generations of computers. A sample response from a candidate who responded to the question correctly is illustrated by Extract 4.2.

Extract 4.2

4	First. generation of Computers Consists of Computers which uses a Vacuum tube to operate the Computers in this generation were very Low in efficiency and having maximum heat.
	Second generation of Computers Consists of Computers which uses transistors in their operation, they were Characterized by Low efficiency in operation, and amount of heat produced were stil high.
	Third generation of Computers Consist of Computers which uses Intergrated Circuits in their operation, they were Characterized by minimum heat production, stil Low Speed in processing of Information.

Extract 4.2 is a sample response by candidate who correctly explained the first, second and third computer generations.

2.1.5 Question 5: Multimedia

This question consisted of two parts: (a) and (b). In part (a), the candidates were required to give the meaning of *multimedia*. In part (b), the candidates were required to give two differences between linear multimedia and nonlinear multimedia.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 55.6 percent scored from 0 to 1; 39 percent scored from 1.5 to 2 and 5.4 percent scored from 2.5 to 3 out of 3 marks. The analysis shows that, their overall performance on this question was average, since 44.4 percent of the candidates scored above 1 mark. Figure 5 illustrates the case.
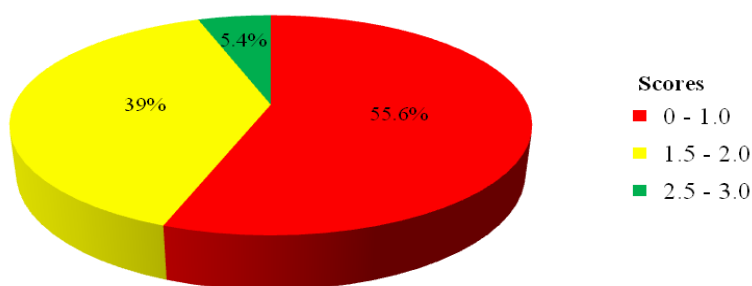
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Figure 5*: Candidates Performance on Question 5*

The analysis shows that many candidates (55.6%) provided incorrect responses. The candidates' responses reveal that they had insufficient knowledge of *Multimedia*. For instance, in part (a), one of the candidates wrote, "Multimedia is the connection of more than one media for the purpose of effective communication". Furthermore, in part (b), she/he wrote, "Linear multimedia is the type of multimedia which uses the connection of more than one type of computers while Non-multimedia uses only one type of computer for communication".

Another candidate in part (a) wrote,

> Multimedia refers to a source of information which composes more than one function to perform and transmit information. The examples of multimedia are: text, video, audio etc.

While in part (b), the candidate wrote, "Linear multimedia can be used without moving it while Non- linear multimedia the use free to use and moving it".

This may also be caused by the fact that the topic was either not effectively taught or the student had insufficient exercises on Multimedia.

In this question, in part (a), the candidates were supposed to define multimedia as follows:

> Multimedia is defined as the use of more than one media in delivering or presenting information. It is a multiple form of media integrated together, involving the use of computer to present text, graphics, video, animation and sound in the integrated and combined way.

In part (b), they were required to give two among the differences between linear multimedia and nonlinear multimedia as follows:

> Linear multimedia is a type of multimedia presentation in which content progress without any navigation control of the viewer, for

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example watching TV; WHILE Non-linear multimedia is a type of multimedia presentation in which content offers user interactivity to control the progress for example computer games, watching video etc.

In Linear multimedia the user has a limited control of access to information WHILE in Non- linear the user has great control of the information.

Non-linear is used in self-based computer training WHILE not in linear multimedia.

A sample of incorrect responses to question is presented in Extract 5.1.

Extract 5.1.
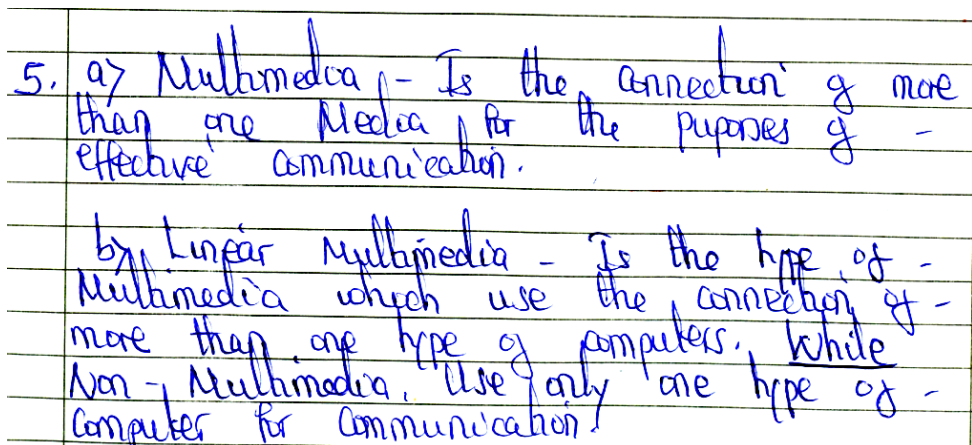
In Extract 5.1, the candidate incorrectly explained the meaning of multimedia as well as the difference of linear multimedia and non-linear multimedia.

On the other hand, the candidates who scored from 1.5 to 3 had adequate knowledge of *Multimedia.* These candidates were able to respond to two or three parts of the question; 4.1 percent of these candidates scored all marks. For instance, in part (a), one of the candidates wrote the following:

Multimedia is the integration of more than one media in presenting information; it involves the use of audio, video, image, text and animation together to present information. It can be linear (non-interactive multimedia) or non-linear multimedia (interactive multimedia).

Moreover, for part (b) the candidate wrote,

Linear multimedia involves active content progress without the audience interaction while Non-linear multimedia involves direct

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participation of the audience with the source of information i.e. activated video program.

The Extract 5.2 illustrates the case.

Extract 5.2

In Extract 5.2, the candidate correctly explained the term *multimedia* and differentiated linear multimedia from non-linear multimedia.

2.1.6   Question 6: Computer Basics and Networks

In this question, the candidates were required to briefly explain three characteristics of a computer.

This question was attempted by 907 (100%) candidates. The analysis of data shows that 61 percent scored from 0 to 2; 22.9 percent scored from 2.5 to 4 and 16.1 percent scored from 4.5 to 6 out of 6 marks. These results imply that their overall performance on this question was poor, since only 39 percent of the candidates scored above 2 marks. Figure 6 summarizes these results.
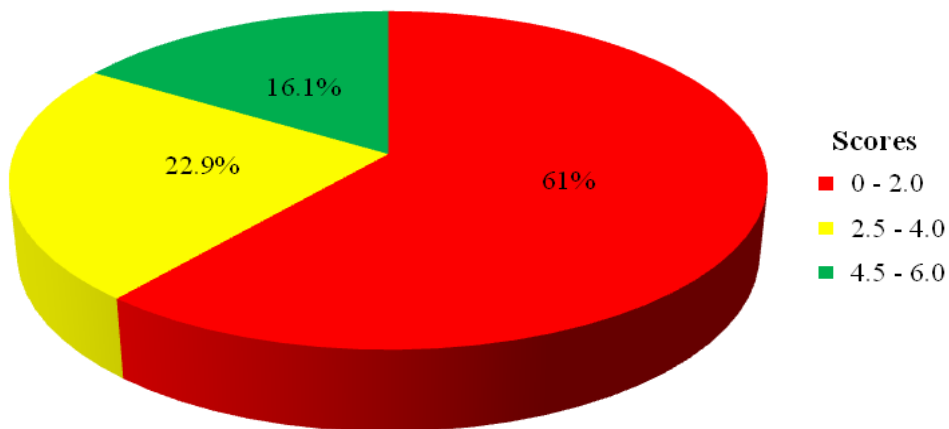
Figure 6: *Candidates Performance on Question 6*

Their results show that many candidates (61%) provided incorrect responses. They failed to explain the three characteristics of a computer. For instance, one candidate responded to the question as follows:

(i)   Computer can input data that the data can enter in the computer through different devices like mouse, keyboard etc,
(ii)   Can process data that all data inputed can be analyzed to form information.
(iii)   Can output the manipulated data which is information.

Another candidate wrote,

(i)   Computer to work must have CPU which commond all hardware.
(ii)   Computer must have operating system.
(iii)   Computer must have internet service provider (ISP).

Moreover, another candidate incorrectly wrote,

(i)   Computer is made up with hardware and software system.
(ii)   Is not a living organism, hence can work all the time when the command given.
(iii)   The only language a computer which understand is binary code (0, 1).

This indicates that the candidates had inadequate knowledge of the topic of *Computer Basics and Network,* particularly the characteristics of the computer. The candidates might not have understood the topic.

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The candidates were supposed to explain three among the following characteristics of a computer: Processing speed, Accuracy, Storage/Memory, Reliability and Versatility. A sample of the candidates' incorrect responses to the question is in Extract 6.1.

Extract 6.1.

6. CHARACTERISTICS OF COMPUTER
i. It is electronically in nature that is use electric power on its functioning
ii. It is digital in nature that is use the symbol which are digitally
iii. It need knowledge on using it and skills

In Extract 6.1, the candidates incorrectly explained the three characteristics of the computer.

However, 39 percent of the candidates had good performance. These candidates managed to answer two to three parts of the question correctly. For instance, one candidate wrote,

(i) Computer is accuracy: computer is accuracy, it performs very clear the Speed: computer has high speed in either writing or searching for information or sending information, also it has speed when making calculation through spread sheet program.

(ii) Accuracy: computer is accuracy because it gives the correct answers when one seek for information and performing calculation, it gives accurate and correct data or results.

(iii) High storage capacity: Computer has high storage .that it can store large amount of information in a single chip in computer.

The responses of these candidates show that they had adequate knowledge of Computer Basics. A sample of the candidates' correct responses is illustrated in Extract 6.2.

Extract 6.1

```
6.  Characteristics of computer.

    i/  Speed.
    A computer has high speed in ether
    writing or searching for information or
    sending the information. Also its has
    speed when making calculation through
    spreadsheet program.

    ii) Accuracy.
    The computer is accuracy because it give
    the correct answer when one seek for
    the information as well as in performing
    calculation it give accurate and correct
    data or results.

    iii/ High storage capacity.
    Computer has high storage that it
    can store large amount of information
    in a single computer.
```

In Extract 6.2, the candidate correctly explained the characteristics of a computer as it was required.

2.1.7 Question 7: Social- Economic and Cultural Aspect of ICT

This question consisted of three parts: (a), (b) and (c). The candidates were required to give the meaning of (a) Job creation, (b) Job displacement and (c) Job replacement.

The question was attempted by 907 (100%) candidates. The analysis of data shows that 60.2 percent scored from 0 to 1; 32.6 percent scored 1.5 to 2 and 7.2 percent scored from 2.5 to 3 out of 3 marks. Their overall performance on this question was poor, since only 39.8 percent of the candidates scored above 1 mark as shown in Figure 7.
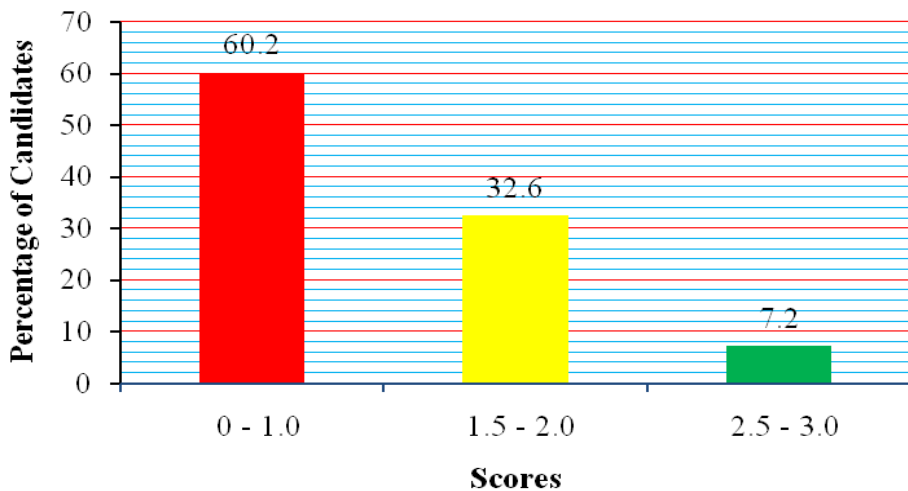
Figure 7: *Candidates' Performance on Question 7*

Many candidates (60.2%) provided incorrect responses to this question. Their responses show they failed to give the meaning of job creation, job displacement and job replacement. For instance, one of the candidates in part (a), defined job creation as a situation of creating jobs, while, in part (b), the candidate defined job replacement as a process of replacing people in their job. Moreover, in part (b), the candidate defined job displacement as a data which cannot be changed from one place to another.

Another candidate, in part (a), defined job creation as it involves inverting or discovering new activity to perform or do, while in part (b), the candidate wrote Job replacement as it involves having alternatives of activities to perform when loosing or changing one. Moreover, in part (c), the candidate wrote, "Job displacement involves to the loss of an activity due to many reasons or factors".

In addition, another candidate, in part (a), wrote, "job creation: Is the discovery or innovation of work to do", while in part (b), the candidate wrote, "job replacements is the situation where by a person is takes another person position in a working center". In addition, in part (c), the candidate wrote, "Job displacement: Is the gap that can occur in a certain job area that a position of someone is not taken".

Moreover, another candidate, in part (a), wrote, "Job creation: This is the process in which there is establishment of job in a specific area"; and in part (b), the candidate wrote, "Job replacement: Is the process which

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involves to replace something in a certain job". In addition, in part (c), the candidate wrote, "Job displacement: Is involves process of making replacement in a certain job".

The responses of the candidates show that they had inadequate knowledge of and skills in the topic of *Social-Economic and Cultural Aspect of ICT*.

In this question, the candidates were supposed to explain the meaning of job creation, job replacement and job displacement as follows:

a) Job creation: Is a state where an organization or individuals allows recruitment. ICT has introduced new employment opportunities that had never existed before. For instance, Computer operators, programmers, Network administrators, Designers, System analysts etc.

b) Job replacement: Since the introduction of ICT in work place, computer illiterate people have been replaced by those who have computer skills. Furthermore, some of the jobs that requires a large number of employees to perform them, nowadays they are no longer performed by human being because of the invention of robots.

c) Job displacement: Due to the introduction of ICT in work place, people with no computer skills are moved to another places or departments where computer skills are not required.

A sample of the candidates' incorrect response to the question is illustrated in Extract 7.1.

Extract 7.1

In Extract 7.1, the candidate incorrectly explained the meaning of the terms job creation, job replacement and job displacement.

However, 39.8 percent of the candidates provided correct responses to this question. Their responses show that they clearly understood the terms which were asked in the question. For instance, in part (a), one candidate wrote,

> Job creation: It is a process whereby a number of jobs opportunity are produced/ created in the society such as emerging of new technology ICT produces a lot of job/employment opportunities, such as system analysts, network designers, Computer programmers and website developers.

In addition, in part (b), the candidate wrote,

> Job replacement: It is a process on which the number of employment/jobs has taken by another person due to change of technology of work. For example, the emergence of word processor in work areas replaces some people in work areas who were familiar with typewriters.

Moreover, in part (b), the candidate wrote the following:

> Job Displacement: It is a process in which a number of employments are replaced by technology and those who do not have technology are shifted to other areas of work. For example, a computer in banks performs a large amount of works which would be done by people.

Their responses to these questions indicate that they had adequate knowledge of *Social-Economic and Cultural Aspect of ICT*. A sample of the candidates' correct responses is illustrated in Extract 7.2.

Extract 7.2

and educational institution. For example money transaction done Automatic Teller Machine ATM
(c) Joy Job displacement is the process of removing jobs from human being. Some jobs replaced by the computers and the technological equipment. It is the process of minimizing different activities which should be ~~dom done~~ by human being

In Extract 7.2, the candidate correctly explained the meaning of job creation, job replacement and job displacement.

2.1.8 Question 8: Computer Basics and Networks

In this question, the candidates were required to describe three types of computers basing on their capacity, price and performance.

The question was attempted by 907 (100%) candidates. The analysis of data shows that 34.7 percent scored from 0 to 2, 34.4; percent scored from 2.5 to 4 and 30.9 percent scored from 4.5 to 6 out of 6 marks. The overall performance on this question was average, since 65.3 percent of the candidates scored above 2 marks. Figure 8 summarizes the candidates' performance on this question.
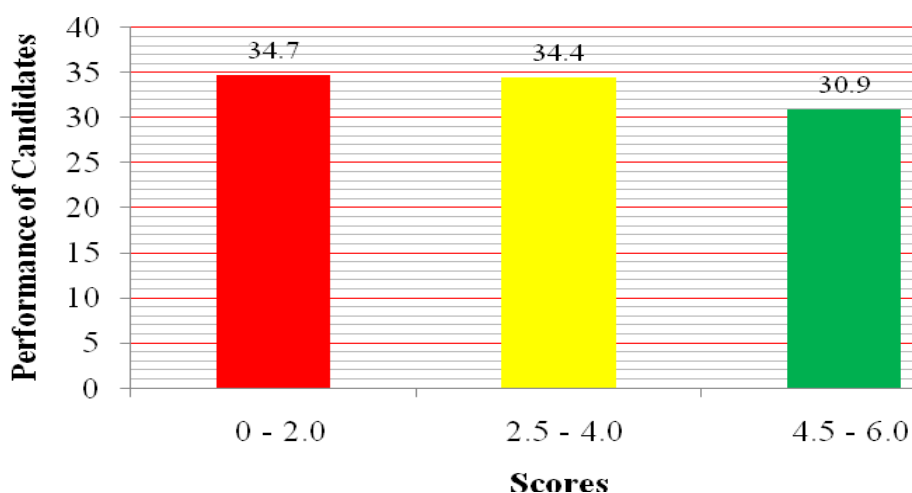

Figure 8: *Candidates' Performance on Question 8*

The responses show that 65.3 percent of the candidates scored from 2.5 to 6 marks. The candidate had adequate knowledge of the types of computers based on their capacity, price and performance. For instance, one of the candidates wrote,

(a) Super computers: These are basic computers that have big storage capacity compared to all other computers, they are commonly used in scientific activities and also they are used in big industries and they are more expensive and with high ability of performing different activities.

(b) Mainframe computers: These also are computers with big size and storage capacity but its performance is low compared to super computers.

(c) Min computers: These are computers that have big capacity more than a laptop and other small computers. These are used in different organizations like schools and hospitals to provide local area network as servers.

Their performance indicates that they had adequate knowledge of the different types of computers. A sample of the candidates' correct responses to this question is illustrated in Extract 8.1.

Extract 8.1

3/ Mini computers or personal computers
these allow single user only and are computer
used to perform various small tasks like
writing letter arranging results as well as
storing minimum amount of the information i
it example laptop and tower.

> In Extract 8.1, the candidates correctly described the three types of computers depending on their capacity, price and performance.

However, the analysis shows that 34 percent of the candidates scored low marks (0 - 2). Some of them did not effectively address the requirement of the question. Instead of the types of computers, they simply mentioned them. For example, one candidate mentioned the three types of computers as Main frame Computers, Min Computers and Personal computers (PCs). Another candidate described the types of computers as overhead projector, Projector and Solaris. Yet another candidate wrote, "(a) Apple Computers: They are of high price, High performance and have high capacity and (b) HP: Not expensive".

Moreover, another candidate wrote,

> (a) Computer networking: This is a type of computer which used to run the computer basing on the issue of network, internet and all things which computer has to perform, it takes large, and it can be wide area or local area.
>
> (b) Computer program: all programs which computer can do, it can be to operate, applying various activities and also is the one which can control the computer on what to perform.
>
> (c) Computer virus: This are those things which used to attach the computer by the virus after entering to the computer to run very slow, sometimes can occur by transferring of the files, unknown emails.

These responses indicate that, they had inadequate knowledge of the different types of computers.

In this question, the candidates were supposed to describe only three types of computers depending on their capacity, price and performance among the following types:

Main frame computers: They are most expensive computers and they are very big in size and offer the maximum computing power. Large number of peripherals can be attached to them. They use large network of computers with the main frame being the node point of network. A typical application is air-line reservation system. They can accept all types of high level languages.

Min computers: They are medium in size, they are physically bigger than microcomputers but smaller than main frame computers due to advanced circuit technology. Some min computers are almost the same as micro-computers. These computers support several users at a time. Min-computers are used mainly in medium scale business e.g. insurance companies, banks etc. In business they are being used for invoicing, payroll etc.

Super computers: These are very large computers which are also extremely faster and very costly. They are usually used by persons carrying out very specialized scientific research and design or by large organization that require very fast processing speed.

Micro-computers: They are also known as personal computers. They were introduced in early 1980s. Personal computers were built using open system architecture. Because of this they are much cheaper than min computers. A sample of the candidates' incorrect responses is illustrated in Extract 8.2.

Extract 8.2

In Extract 8.2, the candidate incorrectly described the three types of computers depending on their capacity, price and performance.

2.1.9   Question 9: Fundamentals of Information and Communication Technology

This question had three parts, (a), (b) and (c). The candidates were required to elaborate the terms (a) Information and Communication Technology, (b) Information Technology and (c) Local Area Network as used in ICT.

The question was attempted by 907 (100%) candidates. The analysis of data shows that 33.4 percent scored from 0 to 1; 47.4 percent scored from 1.5 to 2 and 19.2 percent scored from 2.5 to 3 out of 3 marks. The analysis shows that their overall performance on this question was average, since 66.6 percent of the candidates scored above 1 mark as illustrated in Figure 9.
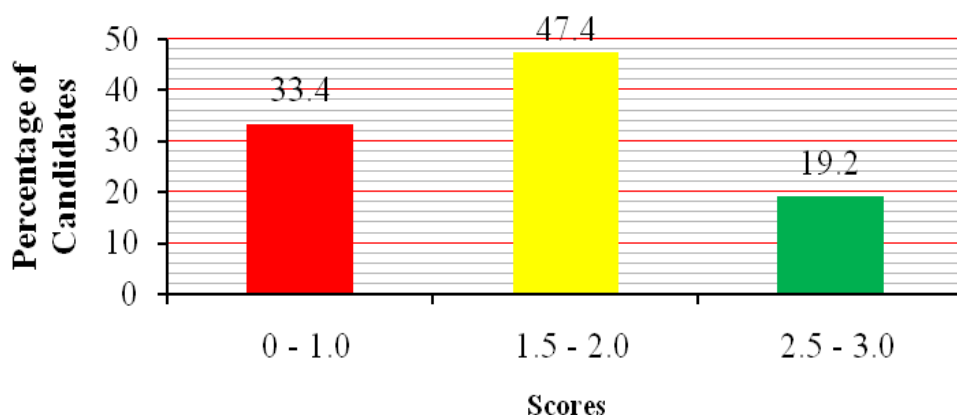

Figure 9: *Candidates Performance on Question 9*

Results show that 66.6 percent of the candidates provided correct responses. They managed to explain the terms clearly, with 9 percent scoring full marks. For instance, in part (a), one candidate wrote, "Information and Communication Technology is a term used to express the coverage of information broadcasting and communication" and in part (b), the candidate wrote, "Information Technology refers to the general term that produces, process, store and disseminate information". In addition, in part (c), the candidate wrote, "Local Area Network is a type of computer network which covers a small geographical area e.g. hospital, school etc."

Such responses show that they had adequate knowledge of *Fundamentals of Information and Communication Technology*. A sample of the candidates' correct responses is illustrated in Extract 9.1.

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Extract 9.1

> 9 (a) Information and Communication Technology - These are terms that describe equipments Hardware and Software through which information can be captured, process, pass Processed, manipulated, Sought and distributed.
>
> (b) Information Technology is a long of the word (IT) which can be defined as the use of technology in processing and Managing information.
>
> (c) Local Area Network: is the network connection which takes Small area like home or an institution like a School And is the long of the word (LAN) as the type of network connection.

In Extract 9.1, the candidate correctly defined the terms Information and communication Technology, Information Technology and Local Area Network.

On the other hand, 33.4% of the candidates provided incorrect responses. These responses show that they failed to explain the terms Information and Communication Technology, Information Technology and Local Area Network correctly. For instance, in part (a), one candidate wrote, "Information and Communication Technology is the electronic device that can input and output storage and processing information and it share and transmit information from so," while in part (b), the candidate wrote, "Information Technology is the application of science in processing data to give out information". Furthermore, in part (c), the candidate wrote, "Local Area Network these are the type network in which the resources and ideas are shared in a local area".

Another candidate, in part (a), wrote, "Information and Communication Technology is the application of science which used to provide data and process it". While in part (b), the candidate wrote, "Information Technology is the process of apply information into science". Moreover, in part (c), the candidate wrote, "Local Area Network: These are the channel of passing different information to different channel".

Furthermore, in part (a), another candidate wrote, "Information and Communication Technology means ICT". In part (b), the candidate wrote, "Information Technology means IT". Moreover, in part (c), the candidate wrote, "Local Area Network means LAN".

These responses show that the candidates had inadequate knowledge of *Fundamentals of Information and Communication Technology*.

In this question, the candidates were supposed to elaborate the terms Information and Communication Technology, Information Technology and Local Area Network as follows:

Information and Communication Technology: It is a generic term used to express the coverage of information technology, broadcasting and communication, for example internet.

Information Technology (IT): It is the use of computers, telecommunications and office system technology for the collection, processing, storing, packaging and dissemination of information.

Local Area Network: It refers to a computer network that span relatively in small area. In most cases LANs are confined to a single building or group of buildings. A sample of the candidates' incorrect responses to the question is illustrated in Extract 9.2.

Extract 9.2

In Extract 9.2, the candidate incorrectly defined the terms Information and Communication Technology, Information Technology and Local Area Network.

2.1.10 Question 10: Generic Application Software

This question has three parts: (a), (b) and (c). The candidates were required to explain briefly the terms (a) Spread sheet, (b) Database and (c) the Internet.

The question was attempted by 907 (100%) of candidates. The analysis of data shows that 40.1 percent scored from 0 to 1; 41 percent scored from 1.5 to 2 and 18.9 percent scored from 2.5 to 3 out of 3 marks. The overall performance on this question was average, since 59.9 percent of the candidates scored above 1 mark. Figure 10 shows the candidates' performance on this question.
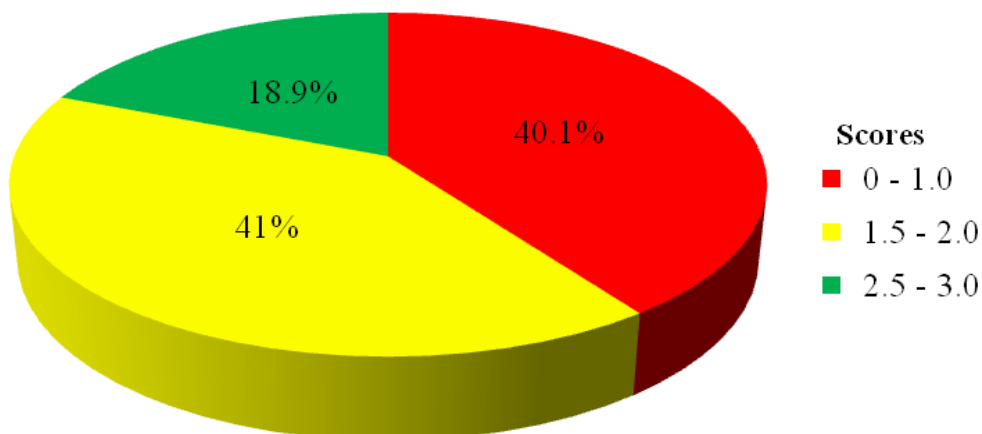

Figure 10: *Candidates Performance on Question 10*

Results show that 59.9 percent of the candidates scored from 1.5 to 3 marks. The candidates were able to explain the concept of *Spread sheet*, *database* and *the internet*. For instance, in part (a), one candidate responded, "Spread sheet is an application program designed for mathematical or numerical data manipulations", while in part (b), the

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candidate responded, "database is computer application software used for storing and retrieving information". Moreover, in part (c), the candidate responded, "internet is the network of networks which covers the world". This shows that, they had adequate knowledge of *Generic application software.* A sample of the candidates' correct responses is illustrated in Extract 10.1.

Extract 10.1

    In Extract 10.1, the candidate correctly defined the term Spread sheet, Data base and the Internet.

However, 40.1 percent of the candidates scored low marks (0 to 1) in the question. They failed to explain the meaning of Spread sheet, Database and the Internet. For instance, in part (a), one candidate wrote, "Spread sheet is the sheet used write document in the field". In addition, in part (b), the candidate wrote, "database is the collection of pages". Furthermore, in part (c), the candidate wrote, "Internet is the collection of network".

Another candidate in part (a), wrote, "Spread sheet means a page in a computer program which allows the user to write their documents so as to be printed". In part (b), the candidate wrote, "Database is a software system in a computer which used to provide the information". In addition, in part (c), the candidate wrote "Internet refers to the huge number of computers".

Moreover, in part (a), another candidate wrote, "Spread sheet is a sheet which have column used to inter the result or score of the student in a computer," while, in part (b), the candidate wrote, "Database is a system of a computer which used for communication". Furthermore, in part (c), the candidate wrote, "Internet is the searching engine used to search different things".

Their responses show that they had inadequate knowledge of *Generic Application Software.*

In this question, the candidates were supposed to explain briefly the meaning of Spread sheet, Database and the Internet as follows:

   (a)   Spread sheet: It is an application software generally used for manipulation of numerical data into information it consists of rows and column which intersects to form cells. It comprises of work books, worksheets graphs and charts.

   (b)   Database: Refers to an organized collection of data. It is considered to be organized because the data is accessible in a logical manner. Data can be anything which deemed to be of significant to the organization that the system is saving. The basic components of a database system will comprise fields, records and files.

   (c)   The Internet: It is the network of computers connecting millions of people worldwide. It consists of the hardware that is involved in sending the information from one place to another and the software which glues all these together.

A sample of the candidates' incorrect responses is illustrated in Extract 10.2.

Extract 10.2

10	i. Spread sheet is the Computer programme that allow a user to perform numerical Calculations. Example all mathematical calculation.
	ii. Data base ii. Database, Is a collection of data under a Certain management.
	iii. Internet, Is the system of Computers Connected together through out the world.

Extract 10.2 shows that the candidate failed to define the term Spread sheet, Data base and the Internet.

2.2 SECTION B

This section consisted of three questions, each carrying 15 marks. The candidates were required to answer two questions.

2.2.1 Question 11: Computer Basics and Networks

This was an essay type question. It required the candidates to explain five advantages of having a computer network in Tanzanian teachers' colleges.

The question was attempted by 95.7 percent of the candidates. The analysis of data shows that 1.6 percent scored from 0 to 5.5; 60.6 percent scored from 6 to 10 and 37.8 percent scored from 10.5 to 15 out of 15 marks. The overall performance on this question was good, since 95.7 percent of the candidates scored above 5.5 marks. Figure 11 summarizes the candidates' performance on this question.
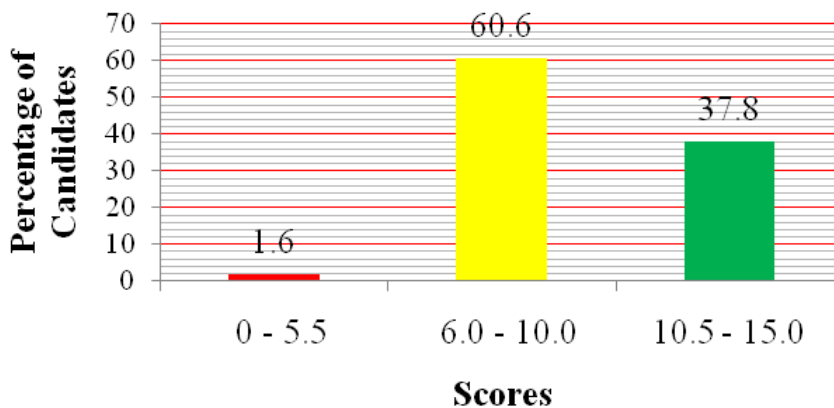
Figure 11: *Candidates Performance on Question 11*

The analysis shows that 98.4 percent of those who attempted this question provided correct responses. They managed to explain three to five points, relevant to the question. For instance, one candidate wrote,

> The advantage of having computer networks in Teacher College in Tanzania are: Sharing of resources: Network allows sharing of recourses like printers, modems, computer programs and files in teacher colleges easily.
>
> Speed of sharing data/information: Through computer network, data and information are shared faster through the use of e-mail, CD, DVD, flash and memory cards.
>
> Data security: In a computer network data can be stored in one computer (server) which can be protected by the use of password, data backups etc.
>
> Cost effective: Computer Network in colleges in Tanzania reduces the cost of communication because files can be shared through network from one computer to another in a network and from one place to another at low cost.

This shows that the candidates had adequate knowledge of and skills in the advantages of computer networks. They also understood the requirements of the question. A sample of the candidates' correct responses is illustrated in Extract 11.1.

Extract 11.1

11   Computer network; is the interconnection of more than one computer for the purpose of sharing information. There are some types of computer network such as local area network, Metropolitan area network and wide area network.

The following are the advantages of having a computer network in Tanzania teachers colleges.

Resources such as printer, mouse can be shared so the individual computer or workstation does not need the individual resources; through computer network can allow sharing and solve the scarcity of resources.

Effective and efficiency communication; the network around the college allow effective and efficience communication because all the time the machines can be operated without disturbance.

Keeping information reliable and up-to-date. Through computer network the information can be keept and become useble for a future use especially when teacher store the notes in a computer they stay for a long time and be used for the coming students.

Security; the data or information of the users can be stored in a central place or server so the user can access their work throug any workstation in the computer network. so the computer network more advantage to secure the work of the user.

Speed; computer network make easy sharing of information and operate very faster especially when searching the information in the computer through search engine such as google, yahoo and operamini.

Centralised communication; The computer network it centralize the communication becaus all people around the computer network get information at once so theu is why the computer network very important in college such as local area network because it saves the cost because it allow server and worksta- tion computer server have so many resource and the workstation share with server.

According the to the advantage of computer network in Tanzania teachers college there are some of requireman

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> used in order to get computer network such as client, workstation, cabling, the interface card and the network system.

> In Extract 11.1, the candidate correctly explained the advantage of having a network in Tanzanian teachers' colleges. Such advantages are sharing of resources, speed of sharing, data/information, data security, cost effective and centralization of software management.

However, few candidates (1.6%) provided incorrect responses to some or all parts of the question. Some of them explained the advantage of having an internet connection instead of the advantage of computer networks. Their responses reveal that they had insufficient knowledge of computer networks. Furthermore, they did not understand the requirement of the question. For instance, one of the candidates wrote,

> Computer networks helps in searching teaching and learning recourses with the aid of search engines as well computer network helps in distance learning where teachers or students can learn on line courses.

Another candidate wrote,

> Computer network helps in learning practicals, helps to know different computer applications, and helps the student to acquire knowledge.

These responses indicate that they had insufficient knowledge of *Computer Basics and Networks.* In this question, the candidates were supposed to discuss five points, among the following: Sharing of resources, speed of sharing data/information, data security, cost effective, centralization of software management as well as flexibility of data access

A sample of the candidates' incorrect responses to the question is illustrated in Extract 11.2.

Extract 11.2

> 11. Computer network:- This is the type of network when more than one computer are connected to share information. Below, are the advantages of having a computer network in Tanzania teachers' college.

High speed :- This is one of the advantages of computer network it performs its function for speed so as to, support to the user

Low cost :- Also, the availability of computer network, are very cheap compared to other types of network this is because, does not need large amount of money to support to the user.

More Sensitive and accuracy network :- The computer network is considered as the sensitive and active and accuracy type of network because it access to the user at any time.

Does not consume alot of time to access to the User :- This is another characteristic of or advantage of having the computer network at college because it saves time in use so teachers and tutors, may use it to check different materials for Learning and learning - process

Allows the Users to, search different thing in the internet very quickly and easily fororexample the teachers and tutor when searching materials in online service

finally computer network is important to an institution of education, like teacher college because it reduce the cost and also, saves alot of time when Using these computer netro-

In Extract 11.2, the candidate incorrectly explained the advantage of having an internet connection in Tanzania teachers' college is to allow the users to search different things on the internet very quickly and easy.

2.2.2 Question 12: Fundamentals of Information and Communication Technology

This was an essay type question. It required the candidates to analyse two sources of information used by our forefathers and three sources of information used by modern generation.

The question was attempted by 76.6 percent of the candidates. The results show that 4 percent scored from 0 to 5.5; 41.5 percent scored from 6 to 10 and 54.5 percent scored from 10.5 to 15 out of 15 marks. The overall performance on this question was good, since 96 percent of the candidates scored above 5.5 marks. Figure 12 shows the candidates' performance on this question.
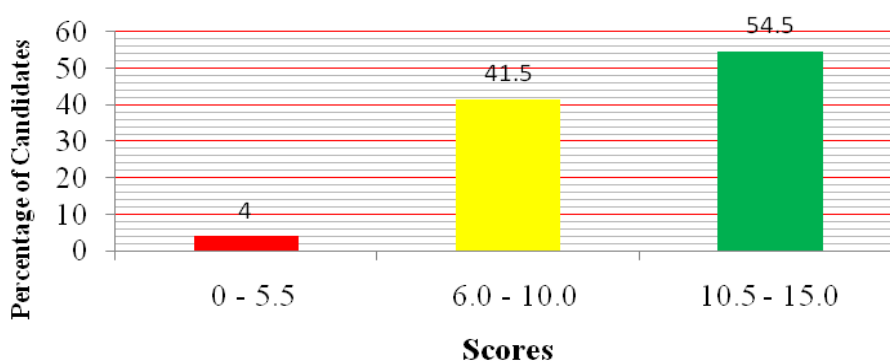
Figure 12: *Candidates' Performance on Question 12*

The candidates who responded well to this question had sufficient knowledge about the sources of information used by our forefathers and sources of information used in modern generation. Most of them explained the sources of information used by our forefathers as folk media (storytelling), drawings, drams, horn, shouting (especially when there is a crime). In addition, they explained the sources of information in modern generation as printed media, electronic media, telephone/mobile phones and internet. For instance, one candidate mentioned folk media and drawings as the sources of information used by our forefathers and Printed media, electronic data and telecommunication using telephones/mobile phones as sources used in modern generation.

This indicates that the candidates had sufficient knowledge of *Fundamentals of Information and Communication Technology* especially on the sources of information. A sample of candidates' correct responses is illustrated in Extract 12.1.

Extract 12.1

Handwritten response transcription:

12. Information. Is the processed data to give meaning. Information Is very impotant in such away that It is used In public opionron also Information can be used to make decision and Information also can be used as entertainment But there are several sources of data Used to transimitt Information. The following are the sources of Information used by our fore father such as:

Story telling. This is the source of data used by our fore father to transimmit information. Happen when an older tell the story to a certain group of people. Mear people are sitting down and the older telling them story which interesting them. There fore this is amoung of the source of data used by our fore farther to transimit Information.

Dance. This is also amoung of the source of data Used by our fore father to transimmit information. Ocur when people are danting according to their traditional example. There are Ngoni dance according to their culture Bena used something known as Mtyli to Transimit Information. There fore this is the source of data using with our fore father. The following are the Source's of data used his modern

Television. The Modern generation nowdays use tellevision as the source of Information from varrous Information to access data in different area example of tellevison are East Afrrican tellevision (EATV) also Swahili Li, Television, ITV and so on. Thir is the source of Information used by modern generation.

Computer. This is also amoung of the source of Information used by modern generation. To share and transimott and denuer Information from different source. people use computer to search Information from different area even outside the country people They are finding Information. Therefore Computer is the source of data used by modern generation.

> In Extract 12.1, the candidate correctly analyzed the sources of information used by our forefathers as storytelling and dance and the sources of information used in modern generation as telephones, television and computers connected to the Internet.

However, few candidates (4%) of those who attempted this question provided incorrect responses. Their responses show that they lacked adequate knowledge of the sources of information, especially the difference between the traditional and modern sources. For instance, one of the candidates wrote, *"*The fore father used letters and radios as one of their sources of information". Moreover, another candidate wrote, "Books and magazine were the sources if information used by the fore father as their means of communication".

This indicates that the candidates had insufficient knowledge of *Fundamentals of Information and Communication Technology* especially of the sources of information.

In this question, the candidates were supposed to analyze two sources of information used by our forefathers and three sources of information used by modern generation, by considering the following points: Sources of information used by our forefathers include storytelling, drawings, smoke signals, bell ringing, drums, dance and shouting. In addition, the sources of information used by modern generations include newspapers, television, telephones and the Internet.

A sample of the candidates' incorrect responses to this question is illustrated in Extract 12.2.

Extract 12.2

In Extract 12.2, the candidate identified the sources of information used by our fore fathers as books and magazines instead of storytelling and dances, drawings, drums, horns and shouting.

2.2.3 Question 13: Generic Software Application

This was an essay type question. It required the candidates to discuss five advantages of using electronic database over the traditional way of keeping data.

The question was attempted by 27.6 percent of the candidates. Results indicate that 12 percent scored from 0 to 5.5; 36 percent scored from 6 to 10 and 52 percent scored from 10.5 to 15 out of 15 marks. The analysis shows that the overall performance on this question was good, since 88 percent of the candidates scored above 5.5 marks. Figure 13 shows the candidates' performance on this question.
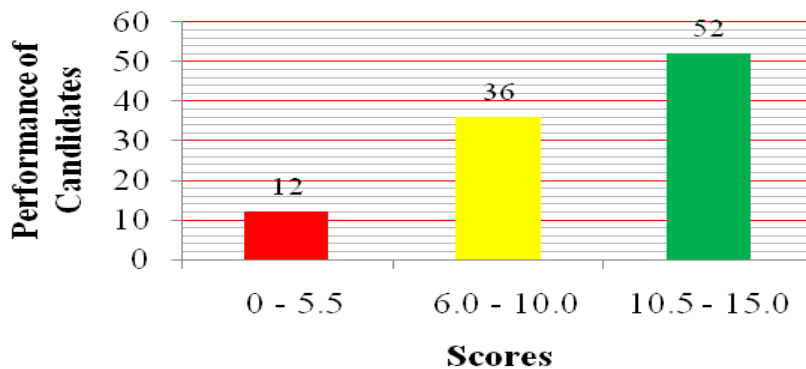
Figure 13: *Candidates' Performance on Question 13*

Results show that 88 percent of the candidates attempted this question performed well. They managed to explain three to five points as required by the question. For instance, one candidate discussed three of five points as,

> Database prohibits the repetition of data in the tables while in the tradition way of keeping data, data can be repeated; Data in a database are very secure, they cannot lost or destroyed easily while in tradition way data can be easily lost or destroyed; in database data can be accesses quickly than in tradition ways; database can store larger amount of data in a computer while in tradition way larger amount of data needs a large space in cupboards.

This indicates that the candidates had sufficient knowledge of *Generic Application Software* especially of Database Application. A sample of the candidates' correct responses to the question is illustrated in Extract 13.

Extract 13.1

In Extract 13.1, the candidate correctly discussed the advantages of using electronic database over the traditional way of keeping data.

However, 12 percent of the candidates provided some of incorrect points in their responses. For instance, one candidate wrote, "Database are used to store quick information while tradition stores slow information". The candidate went on by explaining that, "data base can be used as wild card etc".

Moreover, some of the candidates did not understand the requirements of the question; they simply discussed the advantages of using database instead of discussing five advantages of using electronic database over the traditional way of keeping data. For instance, one candidate wrote,

> The advantages of using database over tradition way of keeping data are: using a database, it is easy to add, remove and edit information; data can be accessed and share easily; data can be secured easily using data backups and password; database can store large amount of data.

This indicates that the candidates had insufficient knowledge of Database.

In this question, the candidates were supposed to discuss five advantages of using electronic database over the traditional way of keeping data with respect to simplicity of editing, adding and deleting, restriction of duplication of data, security of data, accessibility of data and capacity of data storage. A sample of the candidates' incorrect responses is illustrated in Extract 13.2.

Extract 13.2

In Extract 13.2, the candidate incorrectly discussed the advantages of using electronic database over the traditional way of keeping data by explaining that databases is used to motivate learners, create creativity among learners and simplify teaching.

2.3   SECTION C

This section consisted of three questions, each carrying 15 marks. The candidates were required to answer any two questions.

2.3.1   Question 14: Planning and Preparation for Teaching ICS

This was an essay type question. It required the candidates to elaborate five factors that teachers must consider in selecting a teaching strategy.

The question was attempted by 73.2 percent of the candidates. Their results indicate that 5.3 percent scored from 0 to 5.5; 53 percent scored from 6 to 10 and 41.7 percent scored from 10.5 to 15 out of 15 marks. Generally, the performance on this question was good, since 94.7 percent of the candidates scored above 5.5 marks. Figure 14 summarizes the candidates' performance on this question.
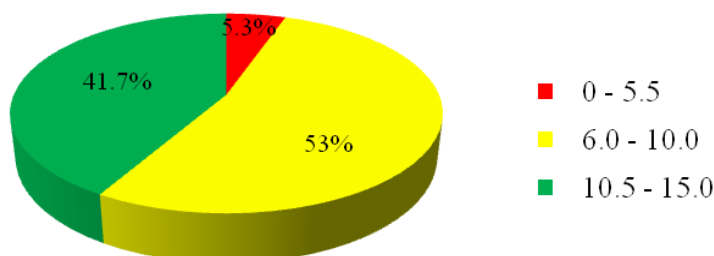
Figure 14: *Candidates Performance on Question 14*

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The candidates' performance on this question show that 94.7 percent performed well. They managed to elaborate four or five factors that teachers must consider when selecting a teaching strategy. Most of them clearly elaborated such factors For instance, one candidate wrote,

> The actors that teachers must consider when selecting a teaching strategy are:
>
> Age and cognitive ability of a learner as an important factor to be considered since different age of learners need different teaching strategy, for example lecture strategy is not suitable for learners at the age of pre and primary schools.
>
> Time allocated for a lesson determines the teaching and learning strategy.
>
> Class size/number of students: the selection of teaching strategy must consider the number of learners in the class, for example group discussion method is not suitable for a huge class;
>
> Nature of the content determines the teaching strategy, for example a teacher cannot use lecture when teaching generic application software in its practical part.

This indicates that the candidates had sufficient knowledge of *Planning and Preparation for Teaching ICS*. A sample of the candidates' correct responses to the question is illustrated in Extract 14.1.

Extract 14.1

> on the issue of Class. For example wh
> en the Class is small teacher they supp
> ose to use group discussion and when the
> size of Class is large teacher should supp
> ose to use question and answer in or
> der to save time and to manage Class.
> Ability of the learner, Also the teache
> r before Chose the teaching strategy
> must he look the ability of understandi
> ng of the learner in order to choose b
> etter way of teaching in the Class. Exa
> mple when the teacher & determine the
> ability of the learner is low must be
> select the strategy which include mn
> Nature of the subject content, Also the
> teacher must be look on the issue of subj
> ect content and then choose the stra
> tegy which relate with the subject
> content. Because when the teacher
> do not look on the issue of the
> content it will be difficult to the
> student to understand the concept.
> Availability of the resources, Also te
> acher before select a teaching strategy
> must be check which kind of resource
> s needed in that strategy and then
> ensure that resources is available at
> the time of teaching and learning in

> In Extract 14.1, the candidate correctly elaborated five factors that
> teachers must consider when selecting a teaching strategy such factors
> are age of the learners, size of the class, nature of the subject content and
> availability of resources.

However, few candidates (5.3%) scored low marks (0 - 5.5); they provided incorrect responses. Their responses show that they failed to elaborate the factors that teachers must consider in selecting a teaching strategy.

For instance, one of the candidates wrote,

> Teaching strategy must be valid; availability of materials e.g. books;
> availability of teaching and learning aids; availability of lesson plans;
> availability of syllabuses scheme of work and availability of lesson
> notes.

This indicates that the candidates had insufficient knowledge of *Planning and Preparation for Teaching ICS*.

In this question, the candidates were supposed to elaborate any five factors that teachers must consider in selecting a teaching strategy. Such factors were age and ability of the learners, content of the subject matter, time for teaching, physical infrastructure, size of the classroom, availability of teaching and learning resources and ability of a teacher in teaching the content. A sample of the candidates' incorrect responses is illustrated in Extract 14.2.

Extract 14.2

In Extract 14.2, the candidate incorrectly elaborated five factors that teachers must consider in selecting a teaching strategy as authentic read context, formative or ongoing assessment, active approach, treat individual student to ability, assessment and report.

2.3.2 Question 15: Computer Laboratory Management Skills

This question required the candidates to analyze five factors to consider when setting a new computer laboratory in a school.

The question was attempted by 58.8 percent of the candidates. The analysis of data shows that 53.2 percent scored from 0 to 5.5; 43.6 percent scored from 6 to 10 and 3.2 percent scored from 10.5 to 15 out of 15 marks. This implies that the overall performance on this question was average, since 46.8 percent of the candidates scored above 5.5 marks. Figure 15 shows the candidates performance on this question.
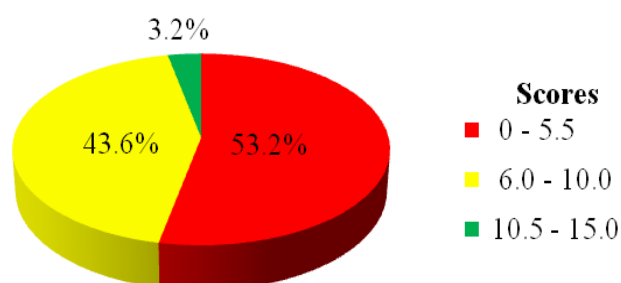
Figure 15: *Candidates' Performance on Question 15*

Results show that 46.8 percent of the candidates who attempted this question performed well. They managed to analyze three to four factors to consider when setting a new computer laboratory in a school. For instance, one of the candidates wrote,

> Enough space: the space is an important factor because it allows students to move freely in the laboratory.
>
> Reliable power supply: It is an important factor because when there is no power no effective computer laboratory can be established.
>
> Storage device: There must be flash and memory cards in the computer lab for storing software.
>
> Security: The computer lab must have strong doors and window as well as computer viruses software to make secure of all physical facilities of a computer laboratory and the software available in the computer laboratory.

Drawing on the response above, the candidates had adequate knowledge of *Computer Laboratory Management Skills*. A sample of the candidates' correct responses to this question is illustrated in Extract 15.1.

Extract 15.1

15. Five factors to consider when setting new computer laboratory in a school.

Answer

Computer laboratory : Is a special room whereby different computer practical activities are been conducted by both teachers and students after going through theory example excel - calculations, power point presentation preparation, performing publishing activities.

The following are the factors to consider when setting new computer laboratory in a school.

There must be the enough space in a room that your selecting to be computer laboratory so that you can not cause different accident in the laboratory, so enough space is needed.

There must be enough tables which will suit for monitors which meet the eye levels of the learners, because some of the table are so big and sometimes small that may not fit for the learners to use the computers effectively and efficiently.

There must be enough storage devices, so that you can keep informations about the learners and the laboratory example flash - disk, CD's, DVD's, Memory cards and even different floppy disk and hard disks to store information internally and externally.

There must be enough computers and There must be the printing stationary so that learner may print their work and see their success or progress in their practical activities, also printing stationary may

In Extract 15.1, the candidate correctly analyzed five factors to consider when setting a new computer laboratory in a school. He/she considered the availability of space, furniture, storage devices and printing facilities.

However, 53.2 percent of the candidates who attempted this question scored low marks (0 - 5.5). They provided incorrect responses. Such responses indicate that they did not know the basic requirements for establishing a new computer laboratory. For instance, one wrote,

> Availability of network system; presence of qualified teachers for computer programming system; avoid viruses which affects computers; availability of good transport and communication and presence of good air conditions.

Another candidate wrote,

> Allocation of the building where computers should be kept; make the availability of internet network; many computers should be prepared and presence of rules and regulations.

This indicates that the candidates had insufficient knowledge of *Computer Laboratory Management Skill.*

In this question, the candidates were supposed to analyze factors such as sufficiency of space, availability of lab technicians, availability and stability of electric power supply; availability of storage devices, availability of printing facilities, security, as well as laboratory furniture.

A sample of the candidates' incorrect responses to this question is illustrated in Extract 15.2.

Extract 15.2

there must be internet Connection.
Also, there must be network available, because the network can help the user to down load and use materials easily also network can improve work performance of the computer such as serching of information.
Number of the students in the school, because the user are students so it is important to know their number, both girls and boys so as to make computer laboratory quilhed and each students, should enjoy the lesson
Computer performance and capacity, this is a factor that can be considered when setting Computer laboratory, because, if the computer is performs poor or have virus normally it may affect teaching and learning and at the end it become destroyed.
Road and electricity also this is a factor to consider because through road it can help students to move also when making repare it is easy to transport a Computer, and the road must be near to the Computer, also electricity because computer need electricity to their performance
There are Computer laboratory in schools is very important because, through it can improve innovation to the students, such as create new programs also increase knowledge and skills on the use of computer.

In Extract 15.2, the candidate incorrectly analyzed the availability of internet connection, number of student in a school, computer performance and capacity, availability of roads and electricity.

2.3.3 Question 16: Assessment Procedure for ICS

This was an essay type question. It required the candidates to describe five assessment tools used to assess students' achievement in secondary schools in Tanzania.

The question was attempted by 85.9 percent of the candidates. Response analysis shows that 0.5 percent scored from 0 to 5.5; 8.8 percent scored from 6 to 10 and 90.7 percent scored from 10.5 to 15 out of 15 marks. This implies that their performance on this question was good, since 91.5

percent of the candidates scored above 5.5 marks. Figure 16 summarizes the candidates' performance on this question.
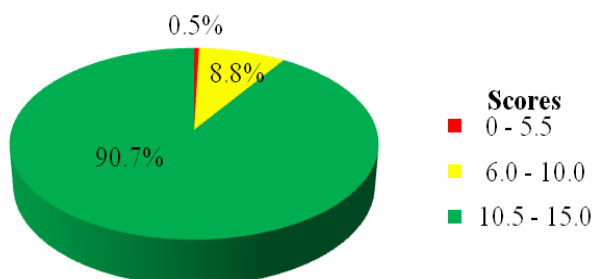
Figure 16: *Candidates' Performance on Question 16.*

Furthermore, the candidates who scored from 6 to 15 marks managed to analyze four to five assessment tools used to assess students' achievement in secondary schools in Tanzania. For instance, one of the candidates wrote,

> The five assessment tools used to assess student achievement in secondary schools in Tanzania are:
>
> Test and examinations: It is a tool used to assess student performance during the process of teaching and learning or at the end of the term of a year.
>
> Questionnaire: Is a tool used to assess students success or difficult in learning. Portfolio: It is a collection of students work such as files, past papers, lesson notes etc.
>
> Interview guide: This is a face to face oral communication between teachers and the students aiming at assessing students' achievement in a certain topic.
>
> Observations: It is a tool, where by a teacher assesses students by observing what a student is doing e.g. BTP.

These responses indicate they had sufficient knowledge and skills in *Assessment Procedure for ICS.* A sample of the candidates' correct responses is illustrated in Extract 16.1.

Extract 16.1

Tests/ examinations, Tests or examination is a series of questions which made by the teachers in order to measure a particular, per behaviour or individual behaviour. Tests or examinations is the most common assessment tool. Tests is very important to student because helps to know the learning difficulties to student, also it used for selection of student from one level to another level or for further studies, Not only that but also tests is used to brings feedback to for both teacher and student.

Portfolio, Is the systematic collection of some body works, that can be taken to measure achievement, Portfolio is very important as a assessment tools for secondary school because students can collects differents materials concerning of a particular to subjects and preserve in a file, Portfolio is used in assessing achievement and making evaluation for students

observation. This is the one this teacher or a person who collect data can observe different things which student are doing but by using his or her organs such as eyes, ears.

Interview, Also this is one of assessment tools which is used to know achievements of the learners, Here we use oral communication there must be two sides that is interviewer and interviewee, or student and teacher, Teacher may asks different questions to student and then student needed to answer or respond those questions, so finally after student respond through those answers, teacher may use to assess him or her.

Questionnaire, Is the way of collecting data by using writen form, when by the teacher may have the lists of questions to the paper and student needed to answer those questions through writing, After finishing to answer the questions teacher may use those answers to assess the achievement of the learner,

Generally assessing students achievement in teaching and learning is very important, because it can use to select students from one stage to another stage, to know bring brings feedback not only that but also for scholarship

In Extract 16.1, the candidate correctly described test and examination, portfolio, interview, questionnaire and observations as the five assessment tools used to assess student achievement in secondary schools in Tanzania.

55

However, 0.5 percent of the candidates scored low marks (0 - 5.5). They provided incorrect responses. Their responses show that they had inadequate knowledge of the assessment tools that can be used in assessing secondary school students. For instance, one of the candidates wrote "scheme of work, lesson plan, lesson notes, lesson development and subject logbook". This shows that the candidates had insufficient knowledge of *Assessment Procedure for ICS.*

In this question, the candidates were supposed to explain five assessment tools used to assess students' achievement in secondary schools in Tanzania. Such tools include test and examinations, portfolios, questionnaires, interview guides, observations, anecdotal records, check lists and projects. A sample of the candidates' incorrect responses is illustrated in Extract 16.2.

Extract 16.2

> *Lesson development:* This documents shows the down ward and upward development of the students It Shows if the students Understand the Subjects or not.
>
> *Subject loglog book* This Shows if the teacher attends to the periods or not this also leads to the situation of making the teacher to be Pancfual to their work and to work hards because there are many documents which leads them or needs them to teach.
>
> Therefore the teaching is an art so the Use of documents is not a real measures fo to Know who is the effective teacher and is not. thus it better to Measure the performance of the students than to measure the document of the teacher.

In Extract 16.2, the candidate explained lesson plan, scheme of work, lesson notes, lesson development and subject log book as assessment tools used to assess students' achievement in secondary schools in Tanzania. All these are incorrect.

3.0 ANALYSIS OF PERFORMANCE IN EACH TOPIC

In this examination, the questions were composed from 9 topics. Questions 1, 9 and 12 were set form the topic of *Fundamentals of Information and Communication Technology* and questions 4, 6 and 11 were set form the topic of *Computer Basics and Networks*. In addition, questions 2, 8, 10 and 13 were set from the topic of *Generic Application software*, question 3 was set from the topic *Website Design*, question 5 was set from the topic of *Multimedia* and question 7 was set from the topic of Social-economic and Cultural Aspect of ICT. Moreover, question 14 was set from the topic of *Planning and Preparation for Teaching ICS*. Question 15 was set from the topic *of Computer Laboratory Management Skills* and question 16 was set from the topic of *Assessment Procedures for ICS.*

The analysis of the candidate responses shows that the performance was good on the topics of *Assessment Procedure for ICS* (99.5%), *Planning and Preparation for Teaching ICS* (94.7%), *Fundamentals of Information and*

Communication Technology (80.3%). The candidate had average performance in the topics of *Generic Software Application* (67.1%), *Computer Basics and Networks* (50.6%), *Computer Laboratory Management Skills* (46.8%) and *Multimedia* (44.4%). However, the candidates performed poorly on the topics of *Social-economic and Cultural Aspect of ICT* (39.8%) and *Website Design* (8.4%). The analysis of performance per topic in this subject is shown in the **Appendix** attached to this report.

The poor performance of candidates on these topics was caused by insufficient knowledge and skills in some of concepts like job creation, job replacement and job displacement in *Social-economic and Cultural Aspect of ICT*. Moreover, the candidates misconceived the concept of advantage of computer networks to advantages of internet connection. Furthermore, the candidates misconceived the concept of generations of computers to the concept of generation of computer programming languages in the topic of *Computer Basics and Networks*. In addition, the candidates lacked knowledge on the concept of hypertext, Hypermedia and hyperlinks in the topic of *Website design*. Insufficient knowledge and skills in those topics resulted into poor performance of the candidates.

4.0   CONCLUSION

In general the analysis of candidates' performance on each question as well as the topic examined shows that the candidates' performance on questions 1, 9, 10, 12, 14 and 16 was good; on questions 2, 4, 5, 6, 11,13 and 15 was average while the performance was poor on questions 3, 7 and 8. The overall analysis on the 9 topics that were examined shows that 3 topics had good performance, 4 topics had average performance and the remaining 3 topics had poor performance. Therefore, the overall performance of the candidates in this subject was good as 99.78 passed the examination.

The reasons for the good performance in some of the topics include sufficient knowledge and skill in the examined concepts, ability to recall, explain and make analysis in answering these questions.

Conversely, the poor performance was attributed by the candidates' insufficient knowledge and skill in the examined concepts. The candidates

used incorrect concepts, and they interpreted wrongly some of the given information.

5.0   RECOMMENDATIONS

In order to improve the candidates' performance in the future in Information and Communication Technology examinations, it is recommended that;

(a)   Tutors should make sure that all topics in the syllabus are taught effectively during the given time of teaching and learning.

(b)   Since ICT is growing and changing every day, ICT teachers should be given regular in service training to meet the demand of technology.

(c)   Tutors should encourage the students to study hard all the topics in the syllabus and make sure that they understand all the concepts in each topic.

Analysis of the candidates' Performance per Topic

S/N	Topic	Question Number	Percentage of candidates who scored 40 percent or more.	Average Performance	Remarks
1	Assessment Procedure for ICS	16	99.5	99.5	Good
2	Planning and Preparation for Teaching ICS	14	94.7	94.7	Good
3	Fundamentals of Information and Communication Technology	1	98.7	87.1	Good
		12	96		
		9	66.6		
4	Generic Software Application	13	88	64.7	Average
		10	59.9		
		2	46.2		
5	Computer Basics and Networks	11	98.4	46.8	Average
		6	39		
		8	35.3		
		4	14.3		
6	Computer Laboratory Management Skills	15	46.8	46.8	Average
7	Multimedia	5	44.4	44.4	Average
8	Social- Economic and Cultural Aspect of ICT	7	39.8	39.8	Weak
9	Website Design	3	8.4	8.4	Weak