CANDIDATES’ ITEM RESPONSE ANALYSIS REPORT FOR DIPLOMA IN SECONDARY EDUCATION EXAMINATION (DSEE) 2019

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 subject for the year 2019. The purpose of this report is to inform teachers, parents, candidates, policy makers and other education stakeholders on how the candidates responded to the examination questions. The report will enable the stakeholders to understand the topics which need more emphasis in 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 some of the reasons behind the performance of candidates in the examination. The report highlights the factors that made the candidates to give the correct or incorrect responses. The analysis revealed that candidates who performed well provided appropriate responses because they had adequate knowledge on the subject content and good mastery of the English Language. Also they were able to identify the requirements of the questions. The report also highlights the reasons that made some candidates fail to score high marks. Such factors include failure to identify the tasks of the questions inability to express themselves in English language and lack of knowledge on the tested concepts.

The National Examinations Council of Tanzania believes that the 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 who participated in the preparation of this report.

Dr. Charles E. Msonde
EXECUTIVE SECRETARY
1.0 INTRODUCTION

This report analyses candidates' item responses for Diploma in Secondary Education Examination in Information and Communication Technology subject for the year 2019. 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 2019 was 3,074, whereby 3,072 candidates sat for the first time and 2 were repeaters, out of which 99.84 percent passed the examination and 0.16 percent failed. In 2018, 907 candidates sat for the examination of which 99.78 percent passed and 0.22 percent failed. Therefore, the performance of candidates has increased by 0.06 percent.

The paper consisted of three (3) sections, A, B and C with a total of 16 questions. Section A consisted of ten (10) short answer questions in which question 1, 2, 3, 5, 7, 8 and 10 carried 4 marks each; questions 4 and 9 carried 3 marks each; and question 6 carried 6 marks. Section B had 3 optional questions each carrying 15 marks. Section C had 3 optional questions each carrying 15 marks. 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 in each question/topic, is regarded as good if the candidate scored from 70 to 100, average if they scored from 40 to 69 and poor if they scored from 0 to 39. In this report, the candidates' performance is presented in different charts and tables using colours whereby the red colour represents poor performance, yellow represents average performance and green shows good performance.

The analysis shows the requirements of the question, what the candidates were able to do, and the challenges 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 conclusions and recommendations.
2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE IN EACH QUESTION

2.1 Question 1: The Fundamentals of Information and Communication Technology

The question consisted of two (2) parts; (a) and (b). The Candidates were required to:
(a) define the term “Source of Information”.
(b) outline three categories of sources of information.

All 3074 candidates (100%) attempted this question, out of which 1,010 (32.9%) scored from 0 to 1.5 marks, 491 (15.9%) scored from 2.0 to 2.5 marks and 1,573 (51.2%) scored from 3 to 4 out of 4 the marks allocated. The data shows that the candidates' general performance in this question was good, because 67.1 percent scored above 1.5 marks. Figure 1 shows the candidates' performance in this question.

![Scores Chart](image)

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

The analysis of this question indicates that the majority of the candidates (51.2%) who scored 3 to 4 marks had correct responses. Some of these candidates defined correctly the term source of information in part (a) and outlined all three categories of sources of information in part (b). In addition, some of the candidates in this category failed to score full marks because, they were able to define the term source of information correctly, but mentioned only two categories of sources of information. Also, others failed to define source of information, but they managed to outline all three
categories of sources of information. Extract 1.1 shows a sample of a correct response from one of the candidates.

Extract 1.1: A sample from a candidate who managed to define source of information in part (a), and outline three categories of sources of information in part (b).

| 1. | **a) Source of information is anything which can be used to provide information.** |
| 2. | **b) i) Traditional media, this is involving the use of means, drama and Citizen's to provide information.** |
| 3. | **ii) Electronic media, this include television, radio, computer which can be used to provide information.** |
| 4. | **iii) Printed media, this include book, journal, pamphlet which helps people to get information.** |

The analysis shows further that the candidates who scored average marks (2 to 2.5) were able to define the term source of information in part (a), but outlined one category of sources of information in part (b). Other candidates failed to give a clear definition due to poor proficiency in the English language.

On the other hand, the analysis shows that most of the candidates (32.9%) who scored low marks failed to outline categories of sources of information in part (b). Some of them mixed up the elements of effective communication with the sources of information. For example, one candidate gave the following responses: sender, message receiver and feedback. Another candidate wrote, radio, internet, and television which are examples of electronic media of information and not the categories of sources of information. Extract 1.2 shows a sample of an incorrect response from one of the candidates.
Extract 1.2: A sample of a response from a candidate who defined information instead of source of information in part (a) and mentioned examples of electronic media of information instead of categories of sources of information in part (b).

2.2 Question 2: The Computer Basics and Networks

The question intended to measure the candidates’ knowledge on computer network topology. The question had two parts; (a) and (b). In part (a), the candidates were required to give the meaning of star topology while in part (b) they were required to give three advantages of a star topology as far as a computer network is concerned.

A total of 3,074 candidates (100%) attempted this question, out of which 853 (27.7%) scored from 0 to 1.5 marks, 744 (24.3%) scored from 2.0 to 2.5 marks and 1,477 (48.0%) scored from 3 to 4 out of 4 the marks allocated. The data shows that the general candidates' performance in this question was good, because 72.3 percent scored above 1.5 marks. Figure 2 shows the candidates' performance in this question.

![Figure 2: The candidates' performance in question 2.](image)
The analysis shows that most candidates (48.0%) who scored 3 to 4 were able to define the term star topology in part (a) and provided three advantages of star topology in part (b). Some of the candidates could not score full marks because they failed to give clear meaning of star topology. Extract 2.1 shows a sample of a correct response from one of the candidates.

Extract 2.1; A sample of a response from the candidate who was able to give correct definition of star topology in part (a) and advantages of star topology in part (b).

Moreover, analysis shows that the candidates (24.3%) who had average marks from (2.0 to 2.5) were able to define star topology in part (a) and give one advantage of star topology in part (b). It was also observed that, some candidates mixed up the advantages of star topology with other types of topologies like bus topology, ring topology and mesh topology. Apart from that, others explained the advantages of internet. Such responses signify that the candidates had partial knowledge on the topic of computer networking.
On the other hand, the candidates (27.7%) who scored low marks from (0 to 1.5) had a misconception of the definition of star topology in part (a). Some of the candidates gave the definition of internet instead of that of star topology. Others defined topology instead of defining star topology. For example, one candidate defined star topology as *the type of network topology which cover small area*, which is actually the definition of Local Area Network. In part (b), some of the candidates provided advantages of internet instead of a star topology, while others provided the uses of internet. These findings imply that, the candidates did not understand the question requirements or had insufficient knowledge of star topology. Extract 2.2 shows an example of an incorrect response from one of the candidates who attempted this question.

![Extract 2.2: A sample of a response from a candidate who defined Local Area Network instead of a star topology in part (a) and failed to give correct advantages of star topology in part (b).](image)

2.3 **Question 3: Generic Application Software**

The question consisted of two parts: (a) and (b). In part (a), the candidates were required to give the meaning of a word processor document. In part (b), they were required to list the steps to be followed in opening a new Microsoft word document.

All 3,074 candidates (100%) attempted this question, out of which 556 (18.1%) scored from 0 to 1.5 marks, 1,232 (40.1%) scored from 2.0 to 2.5 marks and 1,286 (41.8%) scored from 3 to 4 out of 4 the marks allocated. The data shows that, the candidates' general performance in this question was good, because 81.9 percent of the candidates scored above 1.5 marks. Figure 3 shows the candidates' performance in this question.
Figure 3: The candidates' performance in question 3.

Most of the candidates who scored high marks from (3 to 4) were able to give the correct meaning of a word processor document in part (a), and correctly listed the steps to be followed in opening a new Microsoft word document in part (b). For example, one of the candidates wrote *start, all programs, Microsoft office then Microsoft office word*. However, few of the candidates could not score full marks because they did not sequence correctly the steps for opening a new word document. Extract 3.1 shows a sample of a correct response from one candidate who attempted this question.

<table>
<thead>
<tr>
<th>Extract 3.1</th>
<th>A sample of a response from a candidate who gave correct definition of word processor document in part (a) and correctly listed the steps used to open a Microsoft word document in part (b).</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a</td>
<td>Word processor document is the computer application program which allows the computer users to edit, format, and create documents.</td>
</tr>
<tr>
<td>b1</td>
<td>Click the start.</td>
</tr>
<tr>
<td>b2</td>
<td>Select all programs</td>
</tr>
<tr>
<td>b3</td>
<td>Select Microsoft office</td>
</tr>
<tr>
<td>b4</td>
<td>Select Microsoft word</td>
</tr>
<tr>
<td>b5</td>
<td>Practice to open</td>
</tr>
</tbody>
</table>

Moreover, the analysis shows that the candidates (40.1%) who had average performance from (2.0 to 2.5) marks were able to give the meaning of a word processor in part (a), but failed to list correctly the steps for opening a new Microsoft word document. For example, one of the candidates wrote: *Click*
all programs → word 2016 → small blanks → format the document. Instead of Start → All Programs → Microsoft Office → Microsoft Office Word. Also, other candidates failed to write clear definition of word processor in part (a). For example, one candidate wrote: *a word processor document refers to computer program which deals with text and editing.*

On the other hand, the candidates who scored low marks from (0 to 1.5) gave incorrect definition of Microsoft word document in part (a). For example, one candidate wrote: *Word processor document is the program which enable the users to process documents in the computer.* Another candidate wrote: *Word processor document refers to the document which have been processed through the Microsoft work.* In part (b), some candidates listed the steps for opening Ms Excel instead of a new Microsoft word document. Extract 3.2 shows an example of an incorrect response from one of the candidates who attempted this question.

```
3. Word Processor document:
   This is a system used to keeps record for future use.

3. 5. Steps to opening Microsoft word document:
   1. Click Start
   2. Then go to Microsoft Excel
   3. There are many items to choose
   4. Choose document
   5. Open it and start to use it.
```

Extract 3.2 A sample of a response from a candidate who listed the steps for opening Ms excel instead of Ms word in part (b).

2.4 Question 4: Computer Programming Languages
The question consisted of three parts: (a), (b) and (c). The candidates were required to explain briefly the following terms as they are used in computer programming: (a) Algorithm, (b) Pseudo code and (c) Source code.
A total of 3,074 candidates (100%) attempted this question, out of which 2,741 (89.2%) scored from 0 to 1 mark, 272 (8.8%) scored from 1.5 to 2.0 marks and 61 (2.0%) scored from 2.5 to 3.0 out of 3 the marks allocated. The data shows that the candidates' general performance in this question was poor, because 10.8 percent of the candidates scored above 1.0 mark. Figure 1 shows the candidates' performance in this question.

![Scores](image)

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

The analysis shows that majority of the candidates (89.2%) who scored poor marks from (0 to 1) mark, faced difficulty in responding to most parts of the question. Some of them failed to understand the requirements of the question because they mixed up the concepts of computer programming languages with other concepts. Moreover, the analysis revealed that, majority of the candidates lacked knowledge in this topic. For example, in part (a), one candidates wrote: *Algorithm is the programmes in computer which is used to perform all function which involves the calculation in computer*, which is the function of Microsoft Excel and not algorithm. In part (b), the candidate wrote, *Pseudo code is an program which is used to lock and open the program which you may decide to put the security instead of sequence of steps that will meet the program requirement*. Pseudo code uses a mixture of English and Code like statement, and in part (c) the candidate wrote: *Source code is the application where you can find different kind of code to be used in the computer program* which is also incorrect. Extract 4.1 shows a sample of a poor response from one of the candidates.
Extract 4.1: A sample of a response from a candidate who defined algorithm, pseudo code and source code incorrectly.

The analysis further shows that the candidates (8.8%) who had average performance from (1.5 to 2.0) marks were able to define correctly only one of the terms and partially defined other terms. For example, one candidate was able to define algorithm but failed to provide clear definitions of pseudo code and source code as follows: *Algorithm is the step by step procedures on solving a particular problems this involves various methods on solving various problems on a computer programming, Pseudo code is the compact and informal high level description on a program process and Source code is the originator or initiator where a particular problem appear.*

On the other hand, the candidates who scored high marks (2.5 to 3) were able to define at least two terms. Their responses suggest that these candidates had sufficient knowledge on computer programming language. Extract 4.2 shows a sample of a correct response from one of the candidates.
Extract 4.2: A sample of a response from a candidate who gave correct definitions of algorithm, pseudo code and source code.

2.5 **Question 5: Website Design and Development**

The question intended to measure the candidates’ knowledge on website development. The question had two parts: (a) and (b). In part (a), the candidates were required to give the distinction between web page and website. In part (b), they were required to give the distinction between html and web browser.

A total of 3,074 candidates (100%) attempted this question, out of which 2,051 (66.7%) scored from 0 to 1.5 marks, 504 (16.4%) scored from 2.0 to 2.5 marks and 519 (16.9%) scored from 3 to 4 out of 4 the marks allocated. The data shows that the general candidates' performance in this question was poor, because only 33.3 percent of the candidates scored above 1.5 marks. Figure 5 shows the candidates' performance in this question.

Figure 5: The candidates' performance in question 5.
Most of the candidates who scored low marks (0 to 1.5) in this question, failed to provide correct descriptions of web page and website. For example, one candidate wrote: *Web page is the collected during dealing with website, while Web site is the collection of web page* instead of writing *Webpage is an electronic page which may be created using programming languages such as HTML, Sun micro-systems Java and Microsoft ASP while Website is collection of individual but related web pages that are usually stored together and hosted by a web server. Furthermore, most of the candidates were unable to give the distinction between html and web browser in part (b). Some of these candidates wrote: *html is the high technology millennium language, while web browser is the one used for searching the information in the given page example Http browser* instead of writing *html is a text-based language used to develop web pages, while a Web browser is an application software used to retrieve/access and translate web pages. Such response imply that the candidates lacked knowledge on website development. Extract 5.1 is an example of a poor response from one of the candidates who attempted this question.

Extract 5.1: A response from a candidate who wrote incorrect distinctions in part (a) and (b) of the question.

On the other hand, the candidates who scored average marks were able to give the distinction between webpage and website in part (a), but they failed to give the distinction between html and web browser in part (b). Most of the candidates were able to give the long form of HTML as *Hyper Text Mark-up Language*. For example, one candidate wrote: *html is the abbreviation of Hyper Text Mark-up Language, a language which develop a program while web browser is the program which used in searching other web addresses.*
Finally, the candidates (16.9%) who scored high marks in this question, were able to give distinctions between web page and website in part (a) and html and web browser in part (b). However, some of the candidates in this category, failed to score full marks because they were not able to provide clear explanations in part (b). Extract 5.2 shows a sample of a response from candidate who answered the question correctly.

|   | a) **Web page** is a single page in a website  
   | **while Website is the collection of web page.**  
   | b) **HTML** - HyperText Transfer Make up Language  
   | **while Browser is the program which retrieve information in the websites.** |

Extract 5.2: A sample of a response from a candidate who was able to give distinctions of web page and website in parts (a) and html and web browser in part (b) correctly.

### 2.6 Question 6: Socio - Economic and Cultural Aspects of ICT

The question intended to measure the candidates’ knowledge on the socio-economic and cultural aspects of ICT. The candidates were required to explain three uses of ICT in education sector and give an example in each case.

All 3,074 candidates (100%) attempted this question, out of which 268 (8.7%) scored from 0 to 2.0 marks, 990 (32.2%) scored from 2.5 to 4.0 marks and 1,816 (59.1%) scored from 4.5 to 6 out of 6 the marks allocated. The data shows that the general candidates' performance in this question was good, because 91.3 percent scored above 2.0 marks. Figure 6 shows the candidates' performance in this question.
The analysis shows that the candidates (59.1%) who scored high marks (4.5 to 6) were able to explain three uses of ICT in education sector and gave correct examples for each case. However, some candidates did not score full marks because they explained the uses of ICT in education sector without giving examples. Extract 6.1 shows a sample of a correct response from one of the candidates.

Extract 6.1: A sample of a response from a candidate who explained correctly the uses of ICT in education sector and gave an example for each case.

The analysis further shows that the candidates (32.2%) who scored average marks from (2.5 to 4), were able to give three uses of ICT in education sector,
but they did not manage to give clear explanations. However, few candidates in this category were able to explain the three uses of ICT in education sector without giving examples.

On the other hand, the candidates (8.7%) who scored low marks managed to give one or two uses of ICT in education sector. These candidates did not understand the requirements of the question. Few candidates provided the general uses of ICT instead of being specific to education sector. For example, one of the candidates wrote: *the ICT is used in business, banking and sociology.* Another candidate wrote, *ICT is used in choosing and storing a network topology in education sector that enhance them to communicate effectively example of network topology is like bus, star, mesh etc.* This candidate thought that, network topology is a tool used for communication. Furthermore, some of the candidates failed to give explanations with examples. For example, one of the candidates wrote: *In ranking the candidates name in the examination instead of writing ICT is used in teaching and learning in the classroom for example making analysis of candidates results. Extract 6.2 shows an incorrect response from one of the candidates.*

<table>
<thead>
<tr>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Institution sector</strong></td>
</tr>
<tr>
<td>1/ The uses of ICT in the education sector</td>
</tr>
<tr>
<td>2/ Education sector is one of the sectors that can use ICT in education sector</td>
</tr>
<tr>
<td>3/ ICT financial institution sector</td>
</tr>
<tr>
<td><strong>Health sector or Social Service sector</strong></td>
</tr>
<tr>
<td>1/ Health sector</td>
</tr>
<tr>
<td>2/ Social Service sector</td>
</tr>
<tr>
<td><strong>Communication and transport sector</strong></td>
</tr>
<tr>
<td>1/ ICT in education sector</td>
</tr>
<tr>
<td>2/ ICT in health sector</td>
</tr>
<tr>
<td>3/ ICT in social service sector</td>
</tr>
<tr>
<td>4/ ICT in communication and transport sector</td>
</tr>
</tbody>
</table>

Extract 6.2: A sample of a response from a candidate who mentioned the uses of ICT in other sectors instead of education sector.
2.7 **Question 7: Multimedia**

The question had two parts: (a) and (b). In part (a), the candidates were required to give the meaning of multimedia. In part (b), they were required to give two differences between linear multimedia and non-linear multimedia.

A total of 3,074 candidates (100%) attempted this question, out of which 1,910 (62.1%) scored from 0 to 1.5 marks, 684 (22.3%) scored from 2.0 to 2.5 marks and 480 (15.6%) scored from 3 to 4 out of 4 the marks allocated. The data shows that the general candidates' performance in this question was poor because 37.9 percent of the candidates scored above 1.5 marks. Figure 7 shows the candidates' performance in this question.

![Figure 7: The candidates' performance in question 7.](image)

The analysis shows that most of the candidates (62.1%) scored low marks from (0 to 1.5) marks in this question. The candidates responses revealed that the candidates had insufficient knowledge on multimedia. For example, one candidate wrote: *Multimedia is a media which can perform more than one task at the same time for example typing in the computer while listening the music.* Another candidate wrote: *multimedia is the multiple function of things. Example video you see and hearing.*

Likewise, in part (b), some candidates provided incorrect meaning of linear multimedia and non-linear multimedia. For example, one candidate wrote, *linear multimedia is the arrangement of nodes and working together for same time example use of television were hear sound and see picture also listening song or music, While non linear multimedia are like radio we hear the sound but not see who talking.* Moreover, other candidates were able to provide the meaning of multimedia in part (a), but failed to answer part (b). Extract 7.1 shows a sample of an incorrect response form one of the candidates.
Extract 7.1: A sample of a response from a candidate who wrote incorrect definition of multimedia in part (a) and failed to differentiate linear from non-linear multimedia in part (b).

Furthermore, the analysis shows that the candidates (22.3%) who scored average marks (2.0 to 2.5) were able to define multimedia in part (a) and managed to give one difference between linear and non-linear multimedia in part (b). Also, some candidates mixed up the concept of multimedia with that of computer network, and others, mixed it up with the concept of internet. Other candidates in this category scored average marks because they failed to give clear explanations due to poor proficiency in English Language.

On the other hand, few candidates (15.6%) who scored high marks (3 to 4) were able to define the term multimedia in part (a) and provided two correct differences between linear and non-linear multimedia in part (b). Other candidates did not score full marks because they provide partial explanations in part (b). Extract 7.2 shows a sample of a correct response from one of the candidates.
Extract 7.2: A sample of a response a candidate who managed to define correctly the term multimedia in part (a) and clearly explained the differences between linear and non-linear multimedia in part (b).

2.8 Question 8: Computer Basics and Networks

The question intended to measure the candidates’ knowledge on computer basics and networks. The candidates were required to briefly explain the two main parts of a computer and give two examples in each part.

All 3,074 candidates (100%) attempted this question, out of which 682 (22.2%) scored from 0 to 1.5 marks, 470 (15.3%) scored from 2.0 to 2.5 marks and 1,922 (62.5%) scored from 3.0 to 4.0 out of 4 the marks allocated. The data shows that the general candidates' performance in this question was good, because 77.8 percent scored above 1.5 marks. Figure 8 shows the candidates' performance in this question.
The analysis shows that most of the candidates who scored high marks (3 to 4) were able to explain clearly the two main parts of a computer and gave correct examples. This indicates that, the candidates had enough knowledge on computer hardware and software. However, some of the candidates in this category, failed to score full marks because they gave incorrect examples. Extract 8.1 shows a sample of a correct response provided by one of the candidates.

Extract 8.1: A sample of a response from a candidate who managed to explain correctly the two main parts of computer.

Furthermore, the analysis shows that the candidates (15.3%) who scored average marks (2.0 to 2.5) were able to explain the computer hardware with examples, but they failed to explain clearly computer software with examples. For
example, one candidate wrote: *Computer software is program which tell the hardware what to do eg: screen, monitor.* The candidate defined correctly the term computer software but failed to give correct examples. The candidates gave examples of computer hardware instead of computer software.

On the other hand, few candidates (22.2%) who scored low marks (0 to 1.5) failed to explain the two main parts of a computer with their examples. Some candidates explained the parts of computer as *Hard Computer* and *Soft Computer*, while others explained the Input and Output devices as the main parts of a computer. This reveals that, the candidates lacked knowledge on computer basics and networks. Extract 8.2 shows a sample of an incorrect response provided by one of the candidates.

Extract 8.2: A sample of a response from a candidate who failed to explain the two main parts of a computer.

<table>
<thead>
<tr>
<th>Two main parts of computer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Output example: mouse, speaker</td>
</tr>
<tr>
<td>2. Input example: processor, speaker</td>
</tr>
<tr>
<td>Output is the one of part of computer which deals with the output put in the computer. Example mouse speaker.</td>
</tr>
<tr>
<td>Input is the one of part of computer deal with input processes like CPU and speaker, processor</td>
</tr>
</tbody>
</table>

2.9 **Question 9: Computer Basics and Networks**

The question intended to measure the candidates’ knowledge on computer basics and networks. The candidates were required to outline three ways on how computer viruses can be spread.

A total of 3,074 candidates (100%) attempted this question, out of which 476 (15.5%) scored from 0 to 1 mark, 1,087 (35.3%) scored from 1.5 to 2.0 marks and 1,511 (49.2%) scored from 2.5 to 3.0 out of 3 the marks allocated. The data shows that the general candidates' performance in this question was good, because 84.5 percent scored above 1.0 mark. Figure 9 shows the candidates' performance in this question.
The analysis shows that most of the candidates who scored high marks (2.5 to 3) were able to outline correctly three ways of spreading viruses. This implies that, the candidates had sufficient knowledge on computer basics. However, few candidates could not score marks because they did not provide clear explanations on how computer viruses are spread in the computer system. Extract 9.1 shows a sample of a correct answer provided by one of the candidates.

<table>
<thead>
<tr>
<th>9. (i) Downloading information from untrusted sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Sharing information with another computer which has viruses</td>
</tr>
<tr>
<td>(iii) Using peripheral devices like flash or CDs without scanning them first.</td>
</tr>
</tbody>
</table>

Extract 9.1: A sample of a response from a candidate who outlined correctly ways on how computer viruses are spread in the computer system.

Furthermore, the analysis shows that candidates (35.3%) who scored average marks (1.5 to 2.0) were able to outline either one or two ways of spreading viruses, but they failed to get full marks due to insufficient explanations and poor English language in their descriptions. These candidates often mentioned the use of affected flash disks and memory cards as the ways of spreading viruses.

On the other hand, the analysis shows that few candidates (15.5%) who scored low mark (0 to 1) failed completely to mention the ways of spreading viruses.
viruses. These candidates mentioned things like *slow performance of computer, fire and system* as the ways of spreading viruses. This shows that these candidates did not have knowledge on the concept of virus spreading in the computer system. Extract 9.1 shows a sample of an incorrect response from one of the candidates.

Extract 9.1: A sample of a response from a candidate who failed to outline the ways on how computer viruses can be spread.

2.10 Question 10: Socio-Economic and Cultural Aspects of ICT in Society

This question required the candidates to describe four advantages of Information and Communication Technology in business.

All 3,074 candidates (100%) attempted this question, out of which 75 (2.4%) scored from 0 to 1.5 marks, 109 (3.6%) scored from 2.0 to 2.5 marks and 2,890 (94.0%) scored from 3.0 to 4.0 out of 4 the marks allocated. The data shows that the general candidates' performance in this question was good, because 97.6 percent scored above 1.5 marks. Figure 10 shows the candidates' performance in this question.

![Figure 10: The candidates' performance in question 10.](image)
The analysis of candidates’ responses shows that some candidates with high marks (3.0 to 4.0) were able to describe correctly four advantages of Information and Communication Technology in business. For instance, one candidate wrote: *it save time and money, it reduce number of worker in the business, it facilitate E business, it help in advertisement.* Other candidates in this group, were able to describe correctly only three advantages. The responses that these candidates gave, show that they had adequate knowledge in the topic. Extract 10.1 shows a sample of a correct response from by one of the candidates.

```
(i) Information and Communication technology helps in advertising services available for consumption.
(ii) ICT allows buying and selling goods online through E-commerce.
(iii) Improved the banking system example used of ATM.
(iv) Businessman meeting: ICT helps businessman to conduct huge meetings online so it reduced the cost of travelling from area to another for the purpose of conducting meetings.
```

Extract 10.1: A sample of a response from a candidate who managed to describe correctly the advantages of information and communication technology in business.

The analysis further indicate that most candidates who scored average marks (2.0 to 2.5) managed to outline the advantages of information and communication technology in business. The candidates were able to show many real life experiences where information communication technology is applied in business. For instance, some candidates mentioned advertisement, E-commerce, networking and resource sharing as well as mobile transactions, without giving any descriptions. Others were not able to express themselves clearly in English language which made them score average marks.

Lastly, the analysis shows that few candidates (2.4%) performed poorly by scoring from 0 to 1.5 marks. The analysis shows that these candidates had inadequate knowledge on the subject matter. For example, one candidate wrote: *resource sharing eg network, help in communication eg phones, printing of materials and transportation of goods by the use of E-mail.*
Extract 10.2 shows a sample of an incorrect response from one of the candidates.

<table>
<thead>
<tr>
<th>10 (i)</th>
<th>Information and communication technology enable to create licence form.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 (ii)</td>
<td>Information and communication technology help to create RIIT</td>
</tr>
<tr>
<td>10 (iii)</td>
<td>Information and communication technology help to prepare books for assets and reliability.</td>
</tr>
</tbody>
</table>

Extract 10.2: A sample of a response from a candidate who failed to describe the advantages of information and communication technology in business.

2.11 Question 11: Socio Economic and Cultural Aspects of ICT

This was an essay type question which required the candidates to examine with examples five areas where ICT is applied.

A total of 3,026 candidates (98.4%) attempted this question, out of which 8 (0.3%) scored from 0 to 5.5 marks, 190 (6.2%) scored from 6.0 to 10.0 marks and 2,828 (93.5%) scored from 10.5 to 15.0 out of 15 the allocated marks. The data shows that the general candidates' performance in this question was good, because 99.7 percent scored above 5.5 marks. Figure 11 shows the candidates' performance in this question.

Figure 11: The candidates' performance in question 11.
The analysis of candidates' responses shows that candidates with high marks (10.5 to 15.0) were able to explain different areas where ICT is applicable with appropriate examples. For example, one candidate mentioned *bank, hospital, education, office, communication system* as the areas where ICT is applicable. The responses that the candidates gave, implies that they had adequate knowledge on where ICT is applicable. Also, these candidates scored high marks because they managed to write their essays logically, starting with an introduction ending with a good conclusion. However, some did not score full marks because their introductions and conclusions were incomplete. Extract 11.1 shows a sample of a correct response from one of the candidates.

**Extract 11.1**

*If: ICT is the short form of Information Communication Technology. ICT refers to the application of hardware and software in different fields. The innovations of science and technology has lead ICT to be applied in many fields. The following are the areas where ICT is applied:*

*Education: In education, ICT is applied where by teachers and students use ICT to find different teaching and learning materials. Also, registering students in different courses at schools, storing records of students' results or performance. Nowadays the introduction of paying school fees or college fees is done online by using a credit card number a student can pay the school fees.*
Banking: ICT is applied in banks where by people can use their mobile phones to transfer money from a bank to a phone or transferring of money from a phone to a bank. A customer or a user may get service bank services online from without going to bank. For example the use of ATM (Automatic Teller Machine) in drawing money from the account. The National Xenonankine Bank (NMB) uses a system from South Africa which is super computer.

Hospitals: Also ICT is used in hospitals whereby doctors can use the system in operating a patient. Also doctors can use ICT learn or to gain experience from those big hospitals with competent doctors. Also in hospitals they use ICT in paying the cost of the services to patients. For example the use of tombo card, ultra sound, and X-ray.

Transport: ICT is used in transport system to control and ensure the safety of passengers who use a certain transport. For example in airports they use ICT to communicate with a pilot who is flying with an aeroplane, and also they allow aeroplanes to land in a port or not to land. Also in railways the use of standard gauge trains which are electronic.

Office: ICT is applicable in different offices whereby workers use ICT systems to communicate or spreading informations. For example writing typing meeting minutes, processing information and storing informations or records.

Therefore, ICT is applicable or applied in many areas. And the application of ICT has brought to development either of a Community or at National levels.

Extract 11.1: A sample of a response from a candidate who correctly explained the application of ICT in different areas and including examples.

Moreover, the analysis indicates that some of the candidates who scored average marks, were able to write correct introductions and outline areas
where ICT is applied, but they could not give clear explanations. Others were able to give correct introductions and conclusions, and explain few areas where ICT is applicable.

On the other hand, few candidates (0.3%) who scored low marks had a problem of providing clear explanations. Also, they lacked essay writing skills and therefore they did not write introductions and conclusions. In addition, most of them wrote two, three or four areas which lead them to lose some marks. Extract 11.2 shows a sample of an incorrect response from one of the candidates.

<table>
<thead>
<tr>
<th>Information and Communication Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>This refer to the use of mobile phone, TV, internet, and radio due to the result of transferring information or text from one to another area. Or is the networking system which used in storing and transforming data from one area to another. It becomes an umbrella of network. The following are the uses of information and technology.</td>
</tr>
</tbody>
</table>

- It is applied when we need to communicate. Means that in order communication to take place there must be the use of information and communication technology. For example, we can communicate through social media such as Facebook, Twitter, and websites www. www.

- It is applied when we need to search materials from the internet. Means that ICT can be used during searching different materials from the internet. For example, the use of Google.

- It is applied when we need to use the process of E-learning. Means that without ICT no easy introduction in academic issues. For example we use the process of World Wide Web (WWW) for sharing academic issues.

- ICT is applied when we need to store data or information. Means that through the process of word Microsoft Word and also Microsoft Excel we can success to store data and to retain for long time.

- ICT is applied when we want to transfer the
Extract 11.2: A sample of a response from a candidate who failed to explain the application of information and communication technology in different areas.

2.12 Question 12: Socio Economic and Cultural Aspects of ICT

This was an essay type question which required the candidates to use five reasons to justify the notion that the usage of computers in offices is better than using other means of writing, processing and keeping information.

A total of 2,733 candidates (88.9%) attempted this question, out of which 270 (9.9%) scored from 0 to 5.5 marks, 1,124 (41.1%) scored from 6.0 to 10.0 marks and 1,339 (49.0%) scored from 10.5 to 15.0 out of 15 the allocated marks. The data shows that the general candidates' performance in this question was good, because 90.1 percent scored above 5.5 marks. Figure 12 shows the candidates' performance in this question.

![Figure 12: The candidates' performance in question 12.](image)

|  |  
|------------------|------------------|
| 11.11 The information from one area to another, and can be inside or outside the country. For example, the sending of process of sending message we use the process of Short Services Message (SMS). Generally, the programme of having the information and communication technology is very important in the socio economic even also the country due to various work such as of storing data. |  

The analysis of candidates' responses shows that candidates who scored high marks (10.5 to 15) were able to write correct introductions, conclusions and reasons for opting for computer in offices as the means of writing, processing and keeping information. Some of the candidates failed to write conclusions which made them lose few marks. Extract 12.1 shows a sample of a correct response from one of the candidates.

<table>
<thead>
<tr>
<th>12</th>
<th>Usage of computer in offices is better than using other means (5) proving justify</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Computators, refer to an electronic device in which information can be preserved computer has the following types that are super computer, mainframe computer, mini computer, micro computer, personal and palm computer.</td>
</tr>
</tbody>
</table>
|    | It is true that usage of computer is better than using other means due to the following:
|    | Speed, the use of computer in various sector enable much production of good as well as simplifying work because computer perform various works in a short time, this include writing, editing, scanning, searching and others, all activities can be conducted clearly in short time. |
|    | Accuracy, the use of computer is much important than other machine because it perform allot of activities with accurate there is no mistake in a computer, sing it works as instructed by a user, though this machine much people where able to perform well in their studies as well as production activities. |
|    | Diligence, the use of computer in daily activities is much important to the people because the computer can not get tired, may perform billions of activity in all time, due to this faster people they are able to perform their activity through whole day, day with helping of computer as a result of modern society. |
Extract 12.1: A sample of a response from a candidate who managed to justify the notion that the usage of computers in offices is better than using other means of writing, processing and keeping information.

Moreover, most of the candidates who scored average marks (6 to 10) were able to explain correctly some reasons for opting using computer in offices rather than other means of writing, processing and keeping information, but failed to write clear introductions and conclusions. Others wrote correct introductions and conclusions but they gave wrong explanations of some points in the main body. Furthermore, some of the candidates concentrated in writing disadvantages of using computer as the means of writing, processing and keeping information in offices. For example, one of the candidates wrote: *It increases laziness among the office member. They depends only to use computer to every computation.*

On the other hand, the majority of the candidates who scored low marks (0 to 5.5) were able to write the reasons for opting for computer in offices as the means of writing, processing and keeping information, but failed to provide explanations of some of the points that they mentioned. Others had poor English language proficiency which prohibited them from giving correct
explanations. In addition, some of the candidates concentrated on explaining application of computer in school offices especially on the uses of office application programs such as word processor, excel and power point presentation instead of explaining the reasons for opting for using computer in offices rather than other means of writing, processing and keeping information. Others explained functions of computer such as input, output and processing data. This signifies that the candidates did not understand the requirements of the question. Extract 12.2 shows a sample of an incorrect response from one of the candidates.

| [a] | Computer is an electronic device that accepts data, process data and give out information. It is selective because it can not be used by non-educated people. It is not true that the usage of computers in offices is better than using other means of writing, processing and keeping information. The following are the reasons why a computer is a better tool to be used in writing, processing and keeping information:
|     | It increase unemployment among the people. People in the society normally a computer can perform a lot of tasks which can be performed by many numbers of people, hence using computers result in unemployment among the people;
|     | It increase laziness among the office member. This is due to the factor that they depend on the use computer to every computation, something which brings some other problem when a computer has damaged;
|     | It can increase crimes among the office member. Terrorist uses computer to plan their activities, also hackers uses computers to destroy the application syste-
Extract 12.2: A sample of a response from a candidate who failed to justify the notion that using computers in offices is better than using other means of writing, processing and keeping information.

2.13 Question 13: Computer Programming Languages

In this question, the candidates were required to give factors to consider in selecting a programming language to use in preparing a certain program.

A total of 397 candidates (12.9%) attempted this question, out of which 91 (22.9%) scored from 0 to 5.5 marks, 104 (26.2%) scored from 6.0 to 10.0 marks and 202 (50.9%) scored from 10.5 to 15.0 out of 15 the marks allocated. The data shows that the general candidates' performance in this question was good, because 77.1 percent scored above 5.5 marks. Figure 13 shows the candidates' performance in this question.
The analysis of candidates' responses shows that candidates who scored high marks in this question were able to mention correctly factors to consider in selecting a programming language. Most of them had sufficient knowledge on factors to consider in selecting a programming language. For example, one candidate wrote: factors to choose and selecting a programming language are fit for purpose, speed of developing a program, easy to understand and learning and portability of the program. However, some candidates failed to score full marks because they did not provide clear explanations. Extract 13.1 shows a sample of a correct response from one of the candidates.
Programming language is the artificial language which is used to write sequence of instructions that can be run by the computer.

The following are the factors that you need to consider in selecting a programming language to use in a certain program:

- The factor to consider in selecting a programming language to use in a program is the purpose of the program. Make sure that the language you select must fit your purpose of your program.

- Easy to locate error. This is another factor that you can use to select a programming language. Your programming language must have easy-to-locate errors. This helps you to use good programming language.

- Easy to read. This is another factor that you can use to select a programming language that is easy to read by the type of program you use.

- Easy to understand. This is another factor that you can use to select a good programming language that helps you to easily debug. When you consider this factor, you can develop good programs.

- Easy to debug. This is another factor that you can use to select a good programming language that helps you to easily debug. When you consider this factor, you can develop good programs.

- Easy to develop. When you want to develop your program, you must follow this factor that it can help you to develop a program that is suitable.
Furthermore, the analysis show that most of the candidates who scored average marks (6 to 10) were able to mention two to three factors, but they could not give sufficient explanations in the introductory part. For example, one candidate wrote the following introduction: *Programming language; this is the language designed in order to use in certain program, or is the language used by a programmer in a certain program.* This signifies that, the candidates lacked skills in writing introduction.

Furthermore, the candidates who scored low marks (0 to 5.5) were able to write introduction correctly but did not understand the requirements of the question. For example, one candidate wrote: *to define problem, to make plan of it, program design, program test and documentary program,* which are basically the stages of developing program and not factors to consider in selecting a certain programming language. This indicates that the candidates had insufficient knowledge of programming. Extract 13.2 shows an example of an incorrect response from one of the candidates.
Extract 13.2: A sample of a response from a candidate who wrote the stages of developing a program instead of giving the factors to consider in selecting a certain programming language.
2.14 Question 14: Computer Laboratory Management Skills.

This was an essay type question which required the candidates to analyse five computer laboratory safety regulations.

A total of 3,049 (99.2%) candidates attempted this question, out of which 268 (8.8%) scored from 0 to 5.5 marks, 1,698 (55.7%) scored from 6.0 to 10.0 marks and 1,083 (35.5%) scored from 10.5 to 15.0 out of 15 the marks allocated. The general candidates' performance in this question was good, because 91.2 percent scored above 5.5 marks. Figure 14 shows the candidates' performance in this question.

![Figure 14: The candidates' performance in question 14.](image)

Most of the candidates who scored high marks (10.5 to 15) wrote correct introductions and conclusions about computer laboratory safety regulations. However some of the candidates in this category failed to write correct conclusions which made them score fewer marks. Others gave and explained all the five computer laboratory safety regulations as it was required. Although some failed to explain in detail one or two points. Extract 14.1 shows a sample of correct responses provided by one of the candidates.
The following are the safety regulations of a Computer Laboratory.

Never store food in the Computer Laboratory. This is one of the safety regulations in the Computer Laboratory because computer equipment needs a safe area in which there is no any kind of dust when using it.

Do not enter the computer laboratory with any kind of liquid. When you require to enter in the computer laboratory, you must not allow to enter with any kind of liquid in the computer laboratory.

Do not direct computer to the direction of sun light. This also is one of the safety regulations used in the computer laboratory because when you direct the computer in the sun light direction, it will allow to disturb the computer system.

Turn off all electrical sources before you leave the computer laboratory before closing the computer laboratory. You must turn off all electrical source so as to keep the computer laboratory safe. If there is an any electrical shock happen means the source are off so there is no any effect.

Do not remove computer from its place or position without any problems in the computer laboratory. You must not allow to remove the computer from its position without any issue or problem arise in the computer laboratory.

The above explanation is about safety regulations for computer laboratory. It is very important to observe these safety regulations in the computer laboratory so as to keep the computer safe.
Moreover, majority of the candidates who scored average marks (6 to 10) were able to explain some safety regulations in computer laboratory but with poor English in the introductions and conclusions. Furthermore, few candidates wrote correct introduction and conclusion but gave wrong explanations to some of the points. For example, one candidate wrote: *do not allow sharing storage devices like flash and CD in computer laboratory*. This candidate did not know that sharing of storage devices like flash disc and CD is not a computer laboratory safety regulation, but a way to preventing the spread of computer virus from one computer to another.

On the other hand, the candidates who scored low marks (0 to 5.5) were able to give the meaning of computer laboratory but failed to analyse computer laboratory safety regulations. Others were poor in English which made them failed to give correct explanations. For example, one of the candidates wrote, *among the safety regulations in computer laboratory is to indicate position of air condition and uninterruptable power supply*. In addition, some of the candidates explained the computer laboratory requirements instead of computer laboratory safety regulations. Others explained factors to consider in setting up of computer laboratory such as space, ventilation and location of building. Such responses suggest that these candidates did not understand the requirements of the question. Extract 14.2 shows a sample of an incorrect response from one of the candidates.
Extract 14.2: A sample of a response from a candidate who explained health problem caused by computer users instead of laboratory safety regulations.

<table>
<thead>
<tr>
<th>Computer Laboratory - Is the special room or building where computers and other peripheral devices are stored for practical purposes. The following are laboratory safety regulations:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical impairment:</strong> Sitting for long time causes pains in joints, muscles, tendons and other physical parts of the body. Symptoms of physical impairment are headache, pains.</td>
</tr>
<tr>
<td><strong>Eye impairment:</strong> Sitting for long time lead to eye impairment. Symptoms of eye impairment are red eyes, sore eyes, and also headache, numbness.</td>
</tr>
<tr>
<td><strong>Fatigue:</strong> Working for long time in a computer leads to fatigue where by a person feel much tired and fail to perform other task or other activities. So people should not stay to the computer for a long period of time since leads to fatigue.</td>
</tr>
<tr>
<td><strong>Stress:</strong> Staying to the computer for a long period of time leads to stress. So it is not advised to work on computer for a long period of time since can cause stress to a person working to the computer in long period of time.</td>
</tr>
<tr>
<td><strong>Backbone Diseases:</strong> Working to the computer for a long period of time can lead to backbone diseases which has lead to pain due to the use of computer for long time. Therefore people should not work for a long time to the computer also people should use adjustable chairs in order to minimize these effects.</td>
</tr>
</tbody>
</table>
2.15 Question 15: Assessment Procedures for Information and Computers Studies

This was essay type question which required the candidates to explain three advantages and two disadvantages of using essay test items in an examination.

A total of 3,007 candidates (97.8%) attempted this question, out of which 7 (0.2%) scored from 0 to 5.5 marks, 193 (6.5%) scored from 6.0 to 10.0 marks and 2,807 (93.3%) scored from 10.5 to 15.0 out of 15 the marks allocated. The data shows that the general candidates' performance in this question was good, because 99.8 percent scored above 5.5 marks. Figure 15 shows the candidates' performance in this question.

The analysis shows that majority of the candidates who scored high marks (10.5 to 15) were able to explain correctly the advantages and disadvantages of essay type items. Also, these candidates managed to write their essay logically by beginning with an introduction, ending with a conclusion. However, some of the candidates in this category failed to write appropriate introduction, they only defined the key terms in the question. These candidates had no skills on write good introductions. Extract 15.1 shows a sample of correct response from one of the candidates.
Essay Test Items: These are
the test items which are asked in such a way that for each one there is only one predetermined answer. These essay test items are also categorized into two types, i.e., extended essay test items, in which the respondent (student) is free to answer as he or she can; and the last type of essay test item is restricted essay test item, in which under this type of essay test item, students given the limitations while they are answering, for example, list two types of computers, but for extended, the question can be asked that list types of computers but there is no clear limitations. The following are the advantages of using essay test items in an examination:

Firstly, it is easy to construct, because only few questions which are very short and very clear are needed under this category of test item; so a teacher can construct very faster, for example, if the academic master announced to the subject teachers for classes that on tomorrow every subject teacher should submit the examination to the academic master; so due to shortage of time, a teacher can use this category of test item which is essay test item to construct very quickly to the academic office. Examples of those essay questions can be as follows: What are the four principles of teaching, information, and communication techniques?
Extract 15.1: A sample of a response from a candidate who managed to provide advantages and disadvantages of using essay test items in an examination.

The analysis further indicates that some of the candidates who scored average marks (6 to 10) were able to give advantages and disadvantages of essay test item by giving relevant introduction, but they provided insufficient explanations which made them to score average marks.

On the other hand, few candidates who scored low marks (0 to 5.5) were able to give some advantages and disadvantages of essay test items, but failed to
give correct explanations. The responses that the candidates gave show that they lacked knowledge of the subject matter as well as proficiency in the English language which hindered them from composing clear sentences. For example, one candidate wrote: *It is used to strength and weakness; This one used for used to know the candidate to make mistake which to an understanding with environment to connection to made to consistence of the test which applied.* Extract 15.2 shows a sample of an incorrect response from one of the candidates.


<table>
<thead>
<tr>
<th>Extract 15.2: A sample of a response from a candidate who was unable to explain the advantages and disadvantages of using essay test in an examination.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essay test: little science of knowledge, skills, and attitude. The advantage and disadvantage of essay test item in examination form advantage. It used of strength and weakness. This one used for used to know the student to make mistake which to an understanding with environment to connection to made to consistence of the test which applied. It used for curiosity test. The one which decision made in the development in to connection with student to made in performance to home get information in development to thinking capacity to understanding. It used for knowledge, skills, and attitude. This one used to made in development to connect in development in knowledge in people to made in increase in to attitude in case in the be to illiteracy to the written and speaking in to specificity from the disadvantage of the essay to essay test in due to connect. It consume time. This one used to consume time with to made with development in made in countries in cost in people with in develop in more.</td>
</tr>
</tbody>
</table>
2.16 Question 16: Computer Basics and Networks

This was an essay type question which required the candidates to describe five type of equipments used for ICS data back-ups.

Only 72 (2.3%) candidates out of 3,074 attempted this question, out of which 39 (54.2%) scored from 0 to 5.5 marks, 4 (5.5%) scored from 6.0 to 10.0 marks and 29 (40.3%) scored from 10.5 to 15.0 out of 15 the marks allocated. The data shows that the general candidates' performance in this question was average, because 45.8 percent scored above 5.5 marks. Figure 16 shows the candidates' performance in this question.

![Pie chart showing scores distribution](image)

**Figure 16: The candidates' performance in question 16.**

The analysis shows that many candidates (54.2%) gave incorrect responses. Their responses show that they did not understand the question. For example, one candidate described: *observation, survey, interview* and *portfolio* which are assessment tools, instead of describing the equipment for data back-ups such as external drives, floppy discs, flash or memory cards. Extract 16.1 shows an example of an incorrect response from one of the candidates.
| 6 | LCS means the study of information and computer study which was designed to teaching and learning in the school by using the science and technology was going on this subject they found ICT information and communication technology which allow in the process of teaching and learning process to use the computers, laptops and multimedia in order to understand well. The following are the equipments used in ICT data back-ups.

Syllabus, is the book that summed up the topic in which found in the textbook that they contain the objective, topics, strategies, teaching and learning activities and teaching aids which the teacher can refers or back up to know the different data which can be followed.

Scheme of work, is the plan which are designed by the teacher to plan all activities which should done in the class, this planned per term, year or month according to teacher term, so when they want to know the last ICT must back up with see the frame work which has planned to go and this scheme of work was directed those activities of teacher.

Lesson Plan, Are plan which designed by the teacher to specific time or for the single periods or doubled and this they are important for the teacher because they used to back up what they planned to taught during the teaching and learning process. Also it contain the methods which was used and teaching aids which are best in sub-topic. |
Extract 16.1: A sample of a response from a candidate who described teaching preparation tools such as syllabus, scheme of work, lesson plan, lesson notes instead of describing equipment for data back-ups.

The analysis further shows that the candidates (5.5%) who scored average marks (6 to 10) were able to explain correctly only three types of equipment used for ICS data back-ups. For example, one candidate mentioned: *modem, floppy disc, flash disc, compact disc and memory and ROM/RAM*. However, modem and RAM/ROM are not used for data back-up. Also, few candidates scored average marks because they failed to write appropriate introductions or conclusions of their essays.

On the other hand, the candidates who scored high marks (10.5 to 15) were able to describe five equipment used for ICS data back-ups. Their responses demonstrated that the candidates had sufficient knowledge on data back-ups. However, few of the candidates failed to score full marks because they failed
to write good introductions and conclusions. Extract 16.2 shows a sample of a correct response from one of the candidates.

Extract 16.2: A sample of a response from a candidate who was able to mention and describe equipments used for ICS data back-ups correctly.
3.0 ANALYSIS OF CANDIDATES' PERFORMANCE IN EACH TOPIC

The Information and Communication Technology examination had 16 questions that were set from 9 topics. The short answer questions were composed from the following topics: The Fundamentals of Information and Communication Technology, Computer Basics and Networks, Generic Application Software, Computer Programming Language, Website Design, Socio Economic and Cultural Aspects of ICT, Multimedia. The essay questions were set from the following topics: The Computer Laboratory management skills, Assessment Procedures for Information and Computers Studies, Computer Programming Languages, Socio Economic and Cultural Aspects of ICT and Computer Basics and Networks.

The analysis of the candidates' responses shows that the performance was good in five topics: Assessment Procedures for Information and Computers Studies (99.8%), Socio Economic and Cultural Aspects of ICT (94.7%), Computer Laboratory Management Skills (91.2%), Generic Application Software (81.9%) and Computer Basics and Networks (70.1%). The good performance in the stated topics was attributed to adequate knowledge and correct interpretation of the requirements of the questions. The candidates had average performance in two topics which are: Fundamentals of Information and Communication Technology (67.1%) and Computer Programming Language (43.9%). However, the candidates performed poorly in two topics which are: Multimedia (37.9%) and Website Design (33.3%). Candidates' poor performance was attributed to insufficient knowledge of the concepts taught under the stated topics, wrong interpretation of the requirements of the questions, poor English Language and lack of practical skills. The analysis of performance per topic in this subject is shown in the Appendix A attached to this report.

The comparison of candidates' performance between 2018 and 2019 shows that in 2018 the performance was good in 3 topics, average in 4 topics and weak in 2 topics, while in 2019, the performance is good in 5 topics, average in 2 topics and weak in 2 topics. The candidates' performance has not changed in Assessment Procedures for Information and Computers Studies (good) and Website Design (weak). In addition, the topic of Socio Economic and Cultural Aspects of ICT which had poor performance in 2018, has a good performance in 2019. Furthermore, 3 topics namely Computer Laboratory Management Skills, Generic Application Software and Computer Basics and
Networks had average performance in 2018, but has good performance in 2019. Moreover, Multimedia which had an average performance in 2018 has weak performance in 2019. The comparison of candidates' performance between 2018 and 2019 is displayed in Appendix B.

4.0 CONCLUSION
In general, the performance of the candidates in ICT subject in DSEE 2019 was 99.84 percent which is a good performance. This performance implies that majority of the candidates had sufficient knowledge on the examined concepts.

The analysis on individual items shows that most candidates experienced difficulties in answering questions number 4, 5, 7 and 16, which were set from the topics of Computer Programming Languages, Website Design, Multimedia and Computer Basics and Networks. The factors which seem to have contributed to candidates' failure include, insufficient knowledge of the concept taught under the stated topics, incorrect interpretation of the requirements of the questions, poor English language proficiency and lack of practical skills.

5.0 RECOMMENDATIONS
In order to improve the performance of future candidates, it is recommended that:

(a) Tutors should teach prospective candidates how to read and identify the requirements of the questions.

(b) Tutors should motivate and guide student teachers to master English language which will improve their ability to express their ideas clearly and logically.

(c) Tutors should assist Student teachers to form ICT clubs, which will help them improve their practical skills. In such clubs Student teachers will have opportunities to share different ideas and experiences as well as practicing what they learn in class.

(d) Tutors should organise seminars and meetings to exchange ideas and experience on ICT. This can be done by the teachers in the same school or with different schools to share their experiences.
(e) Tutors should provide enough exercises, tests and assessments to enhance student teachers' mastery of different concepts.
## APPENDIX A

### Analysis of the Candidates' Performance in each Topic

<table>
<thead>
<tr>
<th>S/N</th>
<th>Topic</th>
<th>Number of Questions</th>
<th>Percentage of Candidates who Scored 40% Marks or Above</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assessment Procedure for ICS</td>
<td>1</td>
<td>99.8</td>
<td>Good</td>
</tr>
<tr>
<td>2.</td>
<td>Socio Economic and Cultural Aspects of ICT</td>
<td>4</td>
<td>94.7</td>
<td>Good</td>
</tr>
<tr>
<td>3.</td>
<td>Computer Laboratory Management Skills</td>
<td>1</td>
<td>91.2</td>
<td>Good</td>
</tr>
<tr>
<td>4.</td>
<td>Generic Software Application</td>
<td>1</td>
<td>81.9</td>
<td>Good</td>
</tr>
<tr>
<td>5.</td>
<td>Computer Basics and Networks</td>
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<td>70.1</td>
<td>Good</td>
</tr>
<tr>
<td>6.</td>
<td>The fundamentals of Information and Communication Technology</td>
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<td>67.1</td>
<td>Average</td>
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<td>7.</td>
<td>Computer programming Languages</td>
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<td>43.9</td>
<td>Average</td>
</tr>
<tr>
<td>8.</td>
<td>Multimedia</td>
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<td>37.9</td>
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</tr>
<tr>
<td>9.</td>
<td>Website Design</td>
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<td>33.3</td>
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</table>
## APPENDIX B

### The Comparison of Candidates' Performance in 2018 and 2019

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<td>Number of Questions</td>
<td>Percentage of Candidates who Scored 40 % or Above</td>
<td>Remarks</td>
<td>Number of Questions</td>
<td>Percentage of Candidates who Scored 40 % or Above</td>
<td>Remarks</td>
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<td>Average</td>
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<td></td>
<td>Communication Technology</td>
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<td>7.</td>
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</tr>
<tr>
<td>8.</td>
<td>Multimedia</td>
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<td>44.4</td>
<td>Average</td>
<td>1</td>
<td>37.9</td>
<td>Weak</td>
</tr>
<tr>
<td>9.</td>
<td>Website Design</td>
<td>1</td>
<td>8.4</td>
<td>Average</td>
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<tr>
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<td>94.7</td>
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<td></td>
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</tbody>
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