



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



CANDIDATES' ITEM RESPONSE ANALYSIS REPORT  
ON THE ADVANCED CERTIFICATE OF SECONDARY  
EDUCATION EXAMINATION (ACSEE)  
2021

INFORMATION AND COMPUTER STUDIES



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**137 INFORMATION AND COMPUTER STUDIES**

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## FOREWORD

The National Examinations Council of Tanzania is pleased to issue the Candidates' Item-Response Analysis (CIRA) report on Information and Computer Studies, Advanced Certificate of Secondary Education Examination (ACSEE) 2021. The analysis is intended to provide feedback to students, teachers, parents, policy makers and other education stakeholders on how the candidates responded to questions.

The candidates' general performance in the 2021 Information and Computer Studies Examination was weak, as only 30.5 per cent of the candidates passed. The weak performance in this subject is attributed to the lack of knowledge and practical skills of the assessed topics. However, only one topic of *Computer Basics* had a good performance.

Feedback provided in this report is expected to enable educational administrators, school managers, teachers and students to identify proper measures to take to improve candidates' performance in future examinations administered by the Council.

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



Dr. Charles E. Msonde  
**EXECUTIVE SECRETARY**

## **1.0 INTRODUCTION**

This report presents an analysis of candidates' performance in the 2021 Information and Computer Studies for the Advanced Certificates of Secondary Education Examination (ACSEE). The examination assessed knowledge and competences acquired by candidates in the advanced level of secondary education.

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

A total of 2,610 candidates sat for the Information and Computer Studies examination in 2021. Out of these, 796 (30.5%) passed the examination and 1,814 (69.5 %) failed. In 2020, a total of 37 candidates sat for the Information and Computer studies examination, out of which, 6 (16.2%) passed and 31 (83.8%) failed. This means that there is an increase in the performance by 14.3 per cent in 2021.

The analysis of the candidates' responses is done by showing the requirements of questions, what candidates wrote and mistakes they made while attempting questions. Furthermore, extracts of candidates' responses are provided to illustrate the cases presented. Candidates' performance on each question/topic is presented in ranges, where from 0 to 34 is poor performance, from 35 to 59 is average performance and from 60 to 100 is good performance. These intervals stand for the per cent of the candidates who scored 35 per cent or above of the marks allocated to different questions. The candidates' performance is also presented using charts and tables coloured red, yellow and green, which stand for weak, average and good performances, respectively. Finally, the report presents conclusions and recommendations.

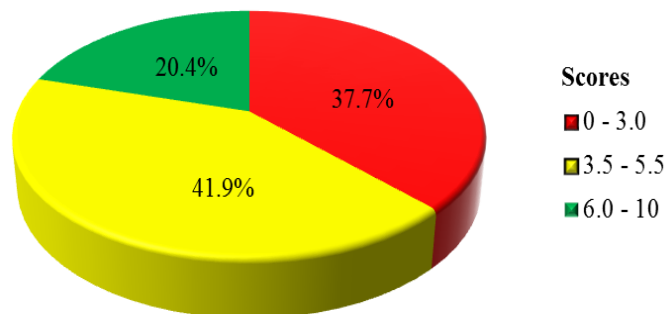
## 2.0 THE ANALYSIS OF THE CANDIDATES' RESPONSES IN EACH QUESTION

### 2.1 Question 1: Computer Basics

This question tested candidates' knowledge of computer parts and its functions. The question required candidates to:

- (a) write the long form of the following types of computer memory; and in each case, state its function; (i) ROM, (ii) RAM and (iii) CD-ROM.
- (b) differentiate Control Unit (CU) from Arithmetic Logic Unit (ALU)
- (c) explain the importance of saving a document before shutting down a computer by giving one reason.
- (d) identify three possible causes that make computer fail to respond when it is switched on.

The question was attempted by 2,610 (100%) candidates, out of which, 984 (37.7%) scored from 0 to 3 marks and 1,093 (41.9%) scored from 3.5 to 5.5 marks. The candidates who scored from 6 to 10 marks were 533 (20.4%) out of 10 marks allocated to the question. The performance of the candidates in this question is summarised in Figure 1.



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

This question had a good performance because 62.3 per cent of the candidates scored 3.5 marks or above. However, the majority of the candidates scored average marks (3.5 to 5.5) as shown in Figure 1. In part (a), some of these candidates wrote the long forms of the ROM, RAM and CD-ROM and their functions correctly. Others gave the correct long form of RAM and ROM but interchanged their functions. For example,

one of the candidates wrote, *ROM is used to store information temporary and RAM is used to store information permanently* instead of ROM is non-volatile memory used to store information permanently and RAM is a volatile memory used to store information temporarily. It was also noted that some of the candidates faced difficulties in writing the long form of CD-ROM; as some wrote, *Card Disk Read Only Memory*. Others wrote, *Central Disk Read Only Memory* instead of Compact Disk Read Only Memory.

Some of the candidates differentiated Control Unit (CU) from Arithmetic Logic Unit (ALU) in part (b) correctly. In part (c), some of them had an idea of the importance of saving a document before shutting down the computer but failed to give a clear explanations. Further analysis showed that most of the candidates who attempted part (d) identified only one possible reason which causes the computer to fail to respond when switched on. The cause of the problem identified by these candidates is *availability of electricity*. However, the candidates were supposed to understand that the computer cannot respond when switched on if there is a loose connection of power cables to the system unit.

Apart from the good performance, 37.7 per cent of the candidates had a weak performance; as they scored from 0 to 3 marks. In part (a), some of the candidates wrote the long forms of the memory ROM, RAM and CD-ROM correctly but failed to give their functions. This indicates that the candidates had insufficient knowledge of the computer memory. Others gave the long forms and functions of ROM and RAM correctly yet failed to differentiate Control Unit (CU) from Arithmetic Logic Unit (ALU) in part (b).

The analysis showed that most of them did not have knowledge of the computer parts and their functions which caused them to give answers which are contrary to the requirement of the question. For example, one of the candidates wrote, in part (a) the long form of RAM as *Relative Assessment Memory* instead of *Random Access Memory*. Another candidate wrote in part (b), *control unit takes information from input to output while ALU takes information from secondary to primary source*. It



was noted that some of the candidates wrote, *Control Unit used to control all Computer activities while Arithmetic Logic Unit It control only a specific task given.* Some of them failed to know the factors that causes the computer to fail to respond (boot up) when switched on. The analysis reveals that some of the candidates thought that the virus and window problem are among the causes of the computers failure. This indicates that candidates lacked practical skills of using computers. They did not know that when the computer is attacked by the virus it stops working properly (malfunction), but can be switched on. Extract 1.1 represents a sample of incorrect responses in this question.

1	(a) (i) ROM - Random organiser memory
	(ii) RAM - Random Access memory - It is the brain of the computer - stores the data entered in a computer.
	(iii) CD ROM - control digital random organiser memory.
	(b) Arithmetic Logic unit (ALU) - It is used in operations such as multiplication, addition and the like.
	Control Unit (CU) - stores the data
	(c) It is important to save the document before shutting down a computer because in a computer there viruses that normally delete document. so it is better to save it. - Once in booting the computer normally restart it self. So if the document is not saved will be deleted.
	(d) (i) Failure to identify steps to follow in order to <sup>switch on</sup> a document computer. (ii) May be the computer had not enough charge. (iii) It can be a computer being infected with viruses.

Extract 1.1: A sample of incorrect responses to question 1

Extract 1.1 shows responses of a candidate who correctly wrote the long form of RAM in part (a) but mixed up RAM with Control Unit (CU), which is the brain of the computer. The candidate also failed to differentiate Control Unit (CU) from Arithmetic Logic Unit (ALU) in part (b). Responses provided in part (c) and (d) are also wrong.

On the other hand, candidates who scored high marks (6 to 10) correctly wrote the long forms of ROM, RAM and CD-ROM in part (a). They also stated their functions correctly. It was noted that some of the candidates differentiated correctly Control Unit (CU) from Arithmetic Logic Unit (ALU) in part (b). Responses such as *Control Unit (CU) - refers to a part of CPU that perform all activities of Computer while Arithmetic Logic Unit (ALU)-refers to a part of CPU that perform mathematical operations* were given by these candidates. However, the analysis showed that some of them had problems in part (c) and (d), as they failed to score full marks. In part (c), such candidates wrote, *to avoid data loss* but failed to give detailed explanations. It was also observed that a few of them correctly wrote possible causes which lead the computers failure to respond when switched on. For example, one of the candidates wrote, *failure of switch*. Extract 1.2 is a sample of correct responses in this question.

Q no. 1.	<p>(a) i. ROM - Read Only Memory. This is a form of primary memory that stores data permanently. (Permanent storage).</p> <p>ii. RAM - Random Access Memory. Is a memory that stores data temporarily (temporarily stores).</p> <p>iii. CD ROM - Compact Disk Read Only Memory. Is a tangible material used for storing data permanently.</p>
	<p>b. Control Unit, is a part that is responsible for controlling the whole system running, WHILE Arithmetic Logic Unit (ALU), mainly to perform calculation and operation functions.</p>
Q1. (c)	<p>Because saving a document in a computer makes it - stored in a permanent storage thus does not erase even when the computer is shut down.</p>
Q1. (d)	<p>i. <del>Wrong</del> <del>wire</del> Poor computer network ii. No electricity iii. Wrong wire connection.</p>

Extract 1.1: A sample of correct responses to question 1

In Extract 1.1, the candidate wrote the correct answers in part (a), part (b) and part (c). However, the candidate wrote the wrong cause of the computer failure to respond in part (d) (i).

## 2.2 Question 2: Generic Application Software

This question intended to test candidates' skills of creating a document using Microsoft word. The question was as follows;

A Form Two student was assigned to type six confidential letters in a shared computer. The student decided to use Microsoft word program in typing the document. As an IT expert;

- (a) explain how the candidate can protect the document from unauthorised access.
- (b) identify four steps which can be followed by the candidate to create the feature mentioned in part (a).
- (c) name the feature which can enable the candidate to create one document that generates six letters.
- (d) states three main steps which the candidate should follow to accomplish the feature mentioned in part (c) and
- (e) state other requirement needed by the candidate to generate six letters and give the name of the program which can be used to prepare this requirement.

The analysis showed that all 2,610 (100%) candidates attempted this question, out of which, 2,554 (97.9%) candidates' scored from 0 to 3 marks and 50 (1.9%) scored from 3.5 to 5.5 marks. A few candidates, 6 (0.2%), scored from 6 to 10 marks. Table 1 presents the candidates' performance in this question.

**Table 1: The Summary of the Candidates' Performance in Question 2**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,554	97.9
3.5 - 5.5	50	1.9
6.0 - 10	6	0.2

Generally, the performance of the candidates in this question was weak because 97.9 per cent of the candidates scored 3 marks or less, as illustrated in Table 1.

The analysis showed that most of the candidates who performed weakly in this question faced difficulties in answering all parts of the question, as 69.5 per cent scored a zero marks. In part (a), most of the candidates misinterpreted the question as they wrote a method that protects the document loss instead of a method that protects a document from unauthorised access. For example, some of the candidates wrote, *saving a document* instead of *password protection*. Some of the candidates wrote steps required in opening the Microsoft word program. The candidates' failure in recognising a password as a feature that can protect a document from unauthorised user led to the failure in identifying steps required to create a password asked in part (b). It was also observed that some of the candidates wrote steps for saving a typed letter in a folder created on the desktop, instead of creating a password. For example, one of the candidates wrote, *Right click to the desktop, create the folder to save, rename the folder and write the letters*.

Further analysis revealed that, the majority of the candidates lacked knowledge of the functions of the mail merge feature in part (c), which cause them to give responses which are contrary to the question demand. Some of the incorrect responses provided by such candidates were *Microsoft publisher, Microsoft word, and keyboard*. Lack of knowledge of the mail merge feature asked in part (c) resulted in the failure to state steps required in creating the mail merge in part (d). Some of the candidates who attempted part (d) wrote steps for creating web pages. In part (e), most of the candidates mentioned *Microsoft word* as a requirement for mail merging instead of data source which can be generated by using the Microsoft excel program. A few of the candidates correctly wrote only the first step and the second step which involves "*opening file*" and clicking "*save as*" respectively. Extract 2.1 presents a sample of incorrect responses from one of the candidates.

02 (a) Through avoiding the physical damage by touching with the hand since they are Microsoft word programming

- (b) I/ Switch on the computer device and make sure it's on
- II/ or make the windows to be active through activating it
- III/ then open the files and enter in the Microsoft word programming
- IV/ then finally start to type your letters

(c) must be the IT experts, understand to use computers

- (d) I/ should get the lesson the meaning of the computers and how it's functioned
- II/ should have the computer so as it will help them to learn practically learned by doing
- III/ should understand the safety laws of the computer device.

(e) Other requirement by need by student to generate six letters is keyboard and mouse and program which can be used to prepare this requirement is website.

Extract 2.1: A sample of incorrect responses to question 2

In Extract 2.1, the candidate explained, in part (a), how to protect the computer instead of protecting a document. The candidate also wrote steps for switching on the computer and typing letters in part (b), contrary

to the question demand. Furthermore, in part (d), the candidate gave the requirements for typing letters instead of the main steps for accomplishing the mail merge process.

However, a few of the candidates (1.9%) who scored average marks in the question were able to explain the word processing feature that enables the student to protect a confidential document from unauthorised access. Some of them identified *Password protection* and steps followed by the student in creating a password. It was also observed that there were candidates who had insufficient knowledge of the mail merge as they mixed steps for generating it. Furthermore, most of them could not recognise other requirements that need to be met by the student to generate six letters. A limited number of the candidates managed to give a feature in word processing that enables a student to protect a confidential document from unauthorised access, but failed to identify steps which can be followed by the student to create a password.

### 2.3 Question 3: Website Development

The question required candidates to; (a) give the importance of notepad in designing a website, (b) explain four factors to consider when creating an effective website, (c) (i) differentiate the effect of a radio button from textbox on the webpage and (ii) Write HTML codes which can enable a student to select only one course at a time.

This question was attempted by 2,610 (100%) candidates, out of which, 2,607 (99.9%) scored from 0 to 3 marks. The analysis indicates that 2,349 (90.0%) candidates scored zero marks while 2 (0.1%) scored from 3.5 to 5.5 marks. Only 1 candidate scored above 5.5 marks. The performance of the candidates in the question is summarised in Table 2.

**Table 2: The Summary of the Candidates' Performance in Question 3**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2607.0	99.9
3.5 - 5.5	2.0	0.1
6.0 - 10	1	0
<b>Total</b>	<b>2,610</b>	<b>100</b>

This question had a weak performance because 99.9 per cent of the candidates scored 3.5 marks or less. The candidates' mass failure in this question is attributed to the lack of knowledge and practical skills. Statistical data show that 90 per cent of the candidates scored zero marks. The majority of these candidates did not understand the term "notepad" in part (a). Some of them explained the notepad as a tool which can help the computer user in searching for the information on the webpage. Others explained it as an electronic device used to connect the computer to the website.

Furthermore, some of them had an idea of the notepad but failed to give clear explanations about it. For example, one of the candidates wrote, *we need notepad to design website because a designed website need to be planned, creating and updated so you must use notepad* instead of writing the notepad has all required features for web programming. Some of the candidates also described the notepad as a device used to simplify and store a website. In part (b), the candidates could not give the factors to consider when designing an effective website. It was noted that some of them wrote the factors for installing the computer network. For example, one of the candidates wrote, *presence of good computer system, availability of data, good climatic condition, availability of capital*, as the factors to consider when designing an effective website.

In part (c), no candidate managed to write the codes required to add radio button in the registration form. The analysis showed that some of the candidates gave explanations instead of writing the codes. For example, one of the candidates wrote, *link is HTML code which can be used to create radio button that will enable candidates to select only one course at time*, instead of writing the codes for adding the radio button. This shows that, these candidates had no knowledge of writing codes. Some of the candidates explained the radio button as an *electronic device which is used to give out voice* while *textbox as the book which transfer information from graphs by reading* instead of the radio button allows user to select one option between two or more options while the textbox is often used on the internet for pages that require inputs from the user. Extract 3.1 presents a sample of such incorrect responses.



3@	Reason for why we need notepad to design a website are
	01. It's used to keep documents and save documents
	02.
ⓑ	Factor to consider when designing an effective website
	01. should be Realistic
	02. should be Reliable
	03. should be simple and clear words
	04. The application area of that website
c i)	RADIO BUTTON      TEXTBOX
	- It's the types of the webpage which contain audio in providing of information.
	- It the types of webpage which contain words in provide information.
ii)	HTML codes can be used to create radio buttons that will enable the students select only one course at a time
	• Audio

Extract 3.1: A sample of incorrect responses to question 3

In Extract 3.1, the candidate defined the notepad as a storage device contrary to its concept. The candidate also wrote the characteristics of effective website instead of the factors to be considered in creating an effective website.

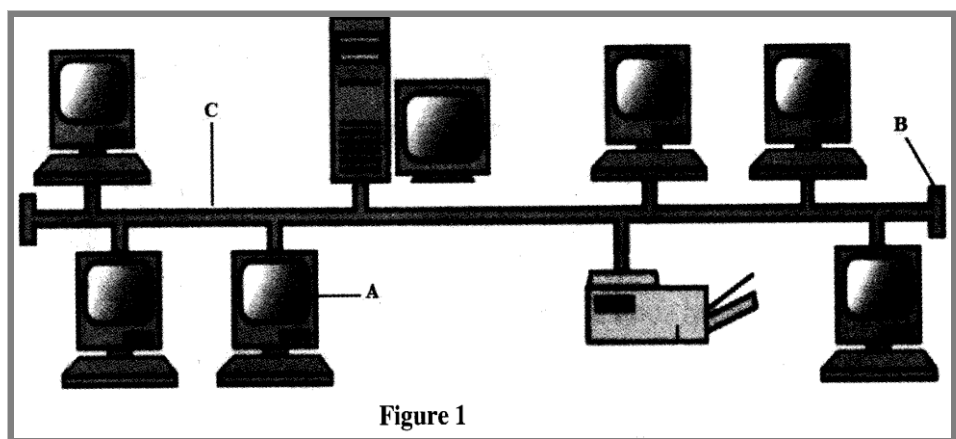
Despite of these weaknesses, 2 candidates who scored average marks were able to explain some factors to consider when designing an effective website in part (b) and they gave the correct use of the notepad in designing a website. However, they could not differentiate the effect of the radio button from textbox on the page. A few candidates had a concept of HTML codes syntax but wrote incorrect codes. For example, one of the candidates wrote “<Header: button/education/ law/computer :/>”, instead of writing “<input type=“radio” name=“c”>Education<br>, <input type=“radio”

`name="c">law<br>`, `<input type="radio" name="c">Computer<br>`. The candidate's responses reveal that a candidate had inadequate knowledge of web designing and development.

#### 2.4 Question 4: Networking and Data Communication

This question intended to test candidates' understanding of the physical arrangement of computers in the network. The question was as follows:

- (a) A school has connected all of its computers in a network as shown in Figure 1. Study the figure carefully and answer the questions that follow:



- (i) Identify the type of physical network topology shown in Figure 1.
- (ii) What are the parts labelled by letters A, B and C?
- (iii) What is the function of the device labelled with letter B in the network?
- (b) A school has decided to increase the number of computers in the network but users experience data transmission problem after this change. As an IT expert;
- (i) Give the reason for such problem.
- (ii) Suggest with a reason the alternative physical network topology to be used.

A total of 2,610 (100%) candidates attempted this question, out of which, 2,407 (92.2%) scored from 0 to 3 marks. The candidates who scored from

3.5 to 5.5 were 199 (7.6%), whereas 4 (0.2%) scored from 6 to 10 marks. The performance of the candidates in this question is summarised in Table 3.

**Table 3: The Summary of the Candidates' Performance in Question 4**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,407	92.2
3.5 - 5	199	7.6
6.0 - 10	4	0.2
<b>Total</b>	<b>2,610</b>	<b>100</b>

The general performance in this question was weak, as 92.2 per cent of the candidates scored 3.0 marks or less. The analysis of the candidates' responses indicates that most of the candidates who scored low marks managed to identify the type of physical network topology in part (a) (i) and the part labeled by letter A (*computer*) in part (a) (ii). Some of them gave the correct reason for the problem experienced by the user after increasing the number of computer in the network in part (b)(i). Some of the candidates only managed to correctly respond in part (a) (i) and (ii). The candidates who did not score any mark wrote other types of arrangement such as *ring topology*, *hybrid topology* instead of *Bus or Linear topology*.

Furthermore, some of the candidates failed to identify devices labelled by letters B and C, as they wrote devices which are not related with the computer network. For example, some of the candidates wrote a name of device B as *end rooting*, *supplier*, *rooting transfer*, *socket* and *end receiver* instead of the terminator. Some of the candidates mixed up the part labelled by letter C (Bus) with the table. These candidates could not give the functions of a part labelled with the letter B because they failed to identify it. Some of them interpreted directly from the given figure the function of the device labelled by letter B. For example, one of the candidates wrote that the function of part labeled with letter B as *to transmit information from one end to the other end of the computer*. Others wrote; *to supply the internet to another computer* instead of *to*

avoid signals from bouncing back and forth on the cable causing signal distortion. Extract 4.1 shows a sample of incorrect responses from one of the candidates.

4.	(a) (i) The type of physical topology is Hybrid topology .
	(ii) part A is Computer .
	part B is Server .
	part C is cable or root node.
	(iii) Function of the device B is to keep all computer connected and share and exchange the same data.
4	(b) (i) The problem was the type of network topology required less than ten computers
	(ii) Suggested to use tree topology so as to join many computers to form hierarchy.

Extract 4.1: A sample of poor responses to question 4

Extract 4.1 shows responses of a candidate who correctly identified a device labeled by letter A (computer) but gave wrong responses in other parts.

The candidates who got average marks (3.5 to 5.5) correctly identified the type of physical network topology in part (a) (i) and gave the names of the parts labeled by letters A, B and C in part (a) (ii). However, they failed to give the function of a device labelled by letter B in part (a) (iii). The candidates also failed to give the reason for the problem which occurred after increasing the number of computers to the network in part (b) (i). The analysis showed that some of them suggested *mesh topology* as the alternative physical network topology to be used in part (b) (ii) which was wrong. This response was wrong because mesh topology is more expensive due to its cable redundancy. Hence the school cannot afford its cost. The candidates did not understand that the alternative topology that be used is star network because it allows the growth of the network structure as per the institution's (school) requirement. This

indicates that the candidates had insufficient knowledge of network topologies.

## 2.5 Question 5: Multimedia

This question tested candidates' skills in elements of multimedia and formatting different video files. The question was as follows;

- (a) The knowledge of the multimedia involves the skills of formatting different video files. Why MPEG video is more preferred than AVI video format? Give two points.
- (b) What could be the elements of multimedia used in the following events?
  - (i) Watching the live match on the television
  - (ii) Reading a newspaper
  - (iii) Listening to music from the radio
- (c) How would you advice the web administrator to solve the problem related to low quality of video with large size?

The statistics shows that 2,610 (100%) candidates attempted this question, of which 2,146 (82.2%) scored from 0 to 3 marks, 433 (16.6%) scored from 3.5 to 5.5 marks and 31 (1.2%) scored from 6 to 10 marks, out of 10 marks allocated to the question. Table 4 summarises the candidates' performance in this question.

**Table 4: The Summary of the Candidates' Performance in Question 5**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,146	82.2
3.5 - 5.	433	16.6
6.0 - 10	31	1.2
<b>Total</b>	<b>2,610</b>	<b>100</b>

Generally, the candidates' performance in this question was weak because 82.2 per cent scored 3 marks or less. The analysis showed that some of the candidates only answered one part of the question. A few answered two parts and none of them answered correctly all parts.

In part (a), most of the candidates had inadequate knowledge of MPEG. Hence they failed to compare it with AVI video format. The candidates

thought that MPEG decreases the size of the video, which was not correct. The candidates did not know that MPEG is more preferred because *it has extremely higher output quality* than AVI format. Some of the candidates guessed answers due to insufficient knowledge of the multimedia. For example, one of the candidates wrote, *MPEG has greater chance of getting a virus*. Some of the candidates answered part (b) correctly due to the fact that the elements of the multimedia asked in this part are commonly used in the daily life. The element of the multimedia for watching the live match on television is *video*, whereas for reading the newspaper is *text and image* and for listening to the music from the radio is *audio*.

The majority of the candidates had a problem in answering part (c). Most of them wrote, *the web administrator should use the MPGE video format to solve the problem related to low quality of video with large size*. These candidates did not understand that the web administrator needs video editing software to edit and save video files in a compressed file format so as to reduce the file size and maintain the video quality. Others wrote answers which are contrary to the requirement of the question. For example, one of such candidates wrote, *to increase good connection of system*. Extract 5.1 represents incorrect responses.

5	(a) (i) The reason of why MPEG video format is more preferred than AVI video format. (i) It is easy to use. (ii) Easy to get.
	(b) The element of Multimedia used in the following events are: (i) Television. (ii) <del>Textbook</del> News paper. (iii) Radio.
	(c) We can advise the web administrator to solve the problem related to low quality of video with the large size by (a) Using the accurate instrument. (b) Using Modern or advanced instrument. (c) Research the instrument before using.

Extract 5.1: A sample of wrong responses to question 5

Extract 5.1, shows that the candidate who gave a wrong reason in part (a). The candidate also wrote the types of communication media in part (b), instead of the elements of multimedia.

The 433 (16.6%) candidates who scored average marks (3.5 to 5.5) in this question only answered two parts of the question, part (a) and part (b) correctly. Some of these candidates gave only one correct reason for choosing MPEG format over AVI video format. The reason provided by these candidates is extremely higher output quality. The analysis showed that such candidates had adequate knowledge of the elements of multimedia, given that they wrote correct elements for watching the live match on the television, reading the newspaper and listening to music from the radio. However, many of the candidates could not suggest an advice that could help the administrator to solve the problem related to low quality of video with large size as asked in part (c). Such candidates used the general knowledge to answer the question. For example, some of the candidates wrote *the web administrator should use modern instruments*. Some wrote *the web administrator should use modern skills of preparing videos*.

## **2.6 Question 6: Generic Applications Software**

This question tested candidates' knowledge of the functions of different application software. Candidates were supposed to know the functions of Microsoft excel, Microsoft Access, Microsoft word and Microsoft publisher. The question was as follows:

The Principal at your college wishes to use two office applications software, one for calculating students' results and preparing teachers' salary and another for preparing college fliers and magazine. The principal was advised to choose Microsoft office word and Microsoft access which were not appropriate software.

- (a) explain why the software chosen by the principal were not appropriate.
- (b) advice the principal on the appropriate software for the intended tasks.

- (c) give a reason, identify the category of applications software that the software proposed in part (b) belong and
- (d) explain how the two applications identified in part (b) differ in function from those chosen by the principal by giving two points.

A total of 2,610 (100%) candidates attempted this question, out of which 2,272 (87%) scored from 0 to 3 marks, 294 (11.3%) scored from 3.5 to 5.5 marks and 44 (1.7%) scored from 6 to 10, out of 10 marks allocated to the question. The performance of the candidates is summarised in Table 5.

**Table 5: The Summary of the Candidates' Performance in Question 6**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,272	87.0
3.5 - 5.5	294	11.3
6.0 - 10	44	1.7
<b>Total</b>	<b>2,610</b>	<b>100</b>

This question was performed weakly because 87 per cent of the candidates scored 3 marks or less, as shown in Table 5. Statistical data show that 49 per cent of the candidates could not score any mark in this question. Generally, the candidates' responses showed that they had no any concept on computer software. This made them give contrary responses. For example, in part (a), one of the candidates wrote, *it cannot perform the task demanded* and *memory* as appropriate software for the intended tasks in part (b). Some of these candidates wrote the factors to consider when choosing software, instead of giving a reason why Microsoft word and Microsoft access were not appropriate software to be used. For example, one of the candidates wrote *compatibility*, *cost* and *user friendly*. The majority of these candidates did not attempt part (c) and (d). A few of the candidates had knowledge of Microsoft excels as a software used for calculating students' results and preparing teachers' salary. Nonetheless they could not explain why Microsoft access was not appropriate software. Extract 6.1 presents a sample of such incorrect responses.



6	a) The software chosen by the principal were not appropriate because they are not dealing with entering such data that the principal wants to do.
	b) My advice to the principal, is that; In order to accomplish the intended task, He must use MICROSOFT EXCEL that is essential for entering data such as: Calculations of students' results, preparing Teachers' salary and Magazine.
	c) MICROSOFT EXCEL used in entering data that is Multiple form example Students' Results, Teachers' salary as the principal wants or intended to do.
	d) MICROSOFT EXCEL APPLICATIONS, differ with that chosen by the principal through that the, one which are chosen by the principal they dealing with the entering data like Letters, but not more, and making or typing notes, but the Microsoft excel application can not do such kind of functions.

Extract 6.1: A sample of incorrect responses to question 6

In Extract 6.1, the candidate wrote in part (a) that, *proposed software are not dealing with data entering* which is not correct because the proposed software can enter data but are not designed for preparing fliers and magazines. However, the candidate identified Microsoft excels as a correct software in part (b), but the responses provided in part (c) and (d) were incorrect.

Further analysis showed that the candidates (294) (11.3%) who scored average marks explained the functions of the software chosen by the principal in part (a) correctly and managed to advise the principal the appropriate software for intended task in part (b). The responses given by such candidates in part (a) were; *the principal's decisions was not correct because, Microsoft office word is an application software designed to enable user to create, edit, format and print text-rich documents not for*

*calculating students' results and preparing teachers' salary.* Conversely, many candidates had a problem in attempting part (c). Many of the candidates failed to identify the required category of application software. It was observed that, some of such candidates wrote *system software*, while others wrote *application software* instead of the generic software. Lastly, the analysis showed that a few of the candidates correctly differentiated the advised software from the proposed ones in part (d).

Moreover, 44 candidates who scored high marks (from 6 to 9) were able to explain why the software chosen by the principal were not appropriate for the intended tasks in part (a). They also gave correct advice to the principal on appropriate software for the tasks in part (b). The candidate's responses revealed that they had adequate knowledge of Microsoft word. However, most of the candidates failed to identify the category of application software in part (c) which is the Generic Software. Some of the candidates wrote, areas where Microsoft word and Microsoft access can be used while others explained Microsoft excel but could not explain its difference from the software chosen by the principal in part (d). This indicates that the candidates had insufficient knowledge of the computer software.

## **2.7 Question 7: Problem Solving**

This question required candidates to; (a) differentiate pseudocode from flowchart, (b) (i) to identify the mistakes that appeared in the pseudocode written by a student and re-writes it correctly, part (b) (ii) state the type of program control structure presented in the pseudocode. In part (b) (iii), draw a flowchart which is error free from a presented pseudocode. The following pseudocode was presented to the candidate;

- 1 Print Area
- 2 Input Radius
- 3  $\text{Area} = 3.14 \times \text{Radius} \times \text{Radius}$

This question was attempted by 2,610 (100%) candidates, of which 2,508 (96.2%) candidates scored from 0 to 3 marks and 52 (2%) scored from 3.5 to 5.5 marks. The analysis of data shows that 48 (1.8%) candidates scored 6 to 10 marks. The general performance in this question was weak

because 96.2 per cent of the candidates scored 3 marks or less while 86.5 percent scored zero marks. The performance of the candidates in this question is summarised in Table 6.

**Table 6: The Summary of the Candidates Performance in Question 7**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,508	96.2
3.5 - 5.5	52	2
6.0 - 10	48	1.8
<b>Total</b>	<b>2,610</b>	<b>100</b>

The analysis showed that 86.5 per cent of the candidates who scored zero marks lacked knowledge and skills in program development. Such candidates wrote answers which are contrary the question’s requirement. For example, in part (a), one of the candidates wrote, *pseudocode is the code that shows how the computer can be used in different forms while flow chart is the chart showing the item inside the computers*. Another candidate wrote; *pseudocode is the rule governing to telling a computer system what to do while flowchart is the special place which consist rows and columns for the purpose of performing various jobs for example designing website*. These candidates were supposed to know that pseudocode is a set of statements written in a human readable language expressing the processing logic of a program, while flowchart is a diagrammatic representation of the short statements and symbols which express the solution of a problem.

It was observed that the candidates could not identify the mistakes made by the students in the presented pseudocode. The candidates could not understand the syntax of writing pseudocode, which made them fail to identify an expression to start with. Some of the candidates wrote *the repetition of the radius in the area of finding circle*, which was a mistake. Others wrote *no mistakes made*. Other responses were; *debugging in order to remove the mistakes for those students should be using debugging*. The candidates were supposed to identify the input, process and output in the expression presented. The mistakes made were that, the candidates interchanged the input, processing and output information, in

the given algorithm. These candidates were supposed to understand that the input was Radius, the output was Print Area whereas the process was  $\text{Area} = 3.14 \times \text{Radius} \times \text{Radius}$ .

In part (b) (ii), all of the candidates did not know the program control structure. This led them to guess answers. The analysis further showed that some of them wrote the application programs. For example, one of the candidates wrote, *Microsoft Excel, word processor*. Others wrote the types of programming language such as *language programming and higher-level generation*, instead of the sequence control structure. Moreover, in part (b) (iii), the candidates drew the pie chart, histogram and tables, instead of the flowchart. This indicates that these candidates had no knowledge of the flowchart. Extract 7.1 presents a sample of incorrect responses.

7.	Pseudocode is a device in a computer which concern with video recording process while flow chart is a device in a computer which deals with pro word process
b.1	- It was suppose to write calculate Area
2	- Input <del>at</del> the figure name which is required to be found its area.
3	- He should write Answer.

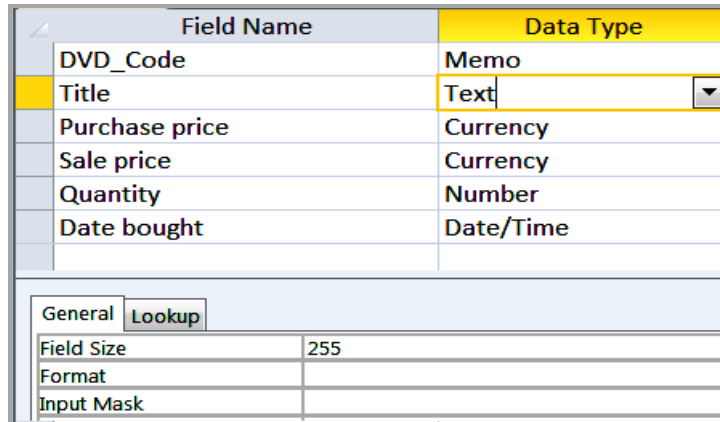
Extract 7.1: A sample of incorrect responses to question 7

In Extract 7.1, the candidate explained the pseudocode as a device in the computer which concerns with video recording; contrary to the question's demand. The candidates also identified the mistakes wrongly in part (b).

## 2.8 Question 8: Database Management Systems

The question intended to test the candidates' understanding of the application of database in daily life. The question was as follows;

Ruhia Company Ltd is an entertainment company that deals with sales and rental of music, video disks and tapes. All of its information is stored in a database object shown in Figure 2. Study it carefully and answer the questions that follow;



Field Name	Data Type
DVD_Code	Memo
Title	Text
Purchase price	Currency
Sale price	Currency
Quantity	Number
Date bought	Date/Time

General	Lookup
Field Size	255
Format	
Input Mask	

**Figure 2**

- What is the name of the of the database object shown in Figure 2?
- identify the data types which were shown in the figure.
- What is the advantage of setting the title field size to 25?
- The company wants to know the customers who bought more than 100 items between 1<sup>st</sup> June 2018 and 31<sup>st</sup> December 2019. Develop the customers query to display the intended records.
- What are the procedures for setting DVD- code as a primary key?

The statistics shows that 2,610 (100%) candidates attempted this question, out of which 2,588 (99.5%) scored from 0 to 3 marks and 88.6 per cent scored zero marks. The candidates who scored from 3.5 and 5.5, were 9 (0.3%) while 3 (0.2%) scored from 6 to 10 marks. Table 7 summarises the performance of the candidates in this question.

**Table 7: The Summary of the Candidates Performance in Question 8**

Scores	Number of Candidates	Percentage of Candidates
0 - 3.0	2,588	99.5
3.5 - 5.5	9	0.3
6.0 - 10	3	0.2
<b>Total</b>	<b>2,610</b>	<b>100</b>

The general performance of the candidates in this question was weak because the majority of the candidates 99.5% scored 3 marks or less. The analysis showed that the candidates (88.6%) who scored zero marks lacked knowledge of the database and its objects which caused them to guess the answers or to skip the question. It was observed that some of the candidates wrote the company name, *Ruhila Company Ltd* as a database object in part (a), instead of table. Others wrote *financial database*. Some of the candidates had knowledge of the database object but failed to identify the object given as they wrote *form* or *report*. Such candidates also could not identify the data types in part (b). They also failed to explain the advantage of setting the title field size to 25 because they did not know the term “field size” asked in part (c). Some of the candidates gave a response which explained the advantage of using the large font size.

Others could not recognise the program used to create the given object. For example, one of the candidates wrote; *In order to minimize the size of the spreadsheet, in order for each candidates or person see very easy, for easy observation or evaluation*. The candidates did not know that Microsoft access was used to create the given object.

In addition, the candidates failed to give the correct expression for developing a customer query in part (d). Some of them copied the object given while others performed accounting calculations and some listed the field names and their respective data types. *For example*, one of the candidates wrote;

<i>DVD code</i>	<i>Memo</i>
<i>Title</i>	<i>Customer who bought</i>
<i>Purchase [price</i>	<i>Currency</i>
<i>Sale price</i>	<i>Currency</i>
<i>Quantity</i>	<i>100 items</i>
<i>Date bought</i>	<i>1<sup>st</sup> June 2018 – 31<sup>st</sup> December 2019</i>

In part (e), the candidates wrote the procedures of burning DVD/CD or installing DVD ROM instead of the procedures for setting DVD\_Code as primary key. For example, some of the candidates wrote, to *switch on computer, then switch on DVD or CPU, then put CD into a DVD, then copy all necessary material in a CD/DVD for storage data, after storage data switch off computer*. However, some of the candidates listed the data types given in the figure correctly and gave the correct database object. Extract 8.1 represents such incorrect responses from one of the candidates.

8.	(a) The name of the database is customer exchanger
	(b) The four data types which are shown: (i) Purchase price. (ii) Sale price (iii) Quantity (iv) Date bought.
	(c) The advantage of setting the title field size to 25 is - to avoid the reduplication of the information which are being placed on the time of the period.
	(d) The number of items $\frac{100}{5} = 20$ items ∴ The customer's query to display the intended records
	(e) The procedures for setting DVD codes as a primary key? are: (i) To create the number of movies (ii) To select the partition of the system in general, (iii) To rearrange the items given properly.

Extract 8.1: A sample of incorrect responses to question 8

In Extract 8.1, the candidate wrote the name of the database object which does not exist in part (a). The candidate also gave names of fields instead of the datatypes. The responses provided in part (d) and (e) were also wrong.

Moreover, the candidates who scored average marks gave the correct name of the database object given and identified the data types as

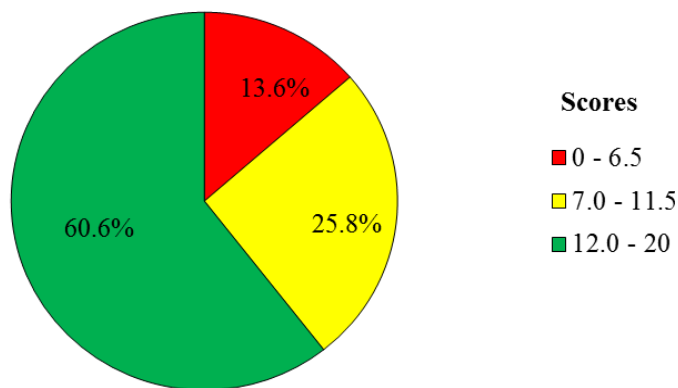


required. They also gave the correct procedures for setting DVD – code as primary key. The procedures provided by some of the candidates are Open a table in the design view, Select the field (DVD\_Code) and Click primary key icon on the toolbar. However, these candidates had a problem with developing the customers query in part (e). The analysis showed that majority of them lacked knowledge of creating query, which caused them to give irrelevant answers. For example one of the candidates wrote #1/6/2018#, instead of *BETWEEN* #1/6/2018# *AND* #31/12/2019#.

## 2.9 Question 9: Multimedia

This was an optional question which carried a total of 20 marks. This question required candidates to suggest five advantages of using multimedia in teaching and learning at school.

A total of 2,221 (85.1%) candidates attempted the question, of which, 301 (13.6%) scored from 0 to 6.5 marks. The candidates who scored from 7 to 11.5 were 575 (25.8%), whereas 1,345 (60.6%) scored from 12 to 20 marks. The performance of the candidates in this question is summarised in Figure 2.



**Figure 2:** The candidates' performance in question 9

Generally, the candidates' performance in this question was good because 86.4 per cent scored from 6.5 out of 20 marks. This high performance is due to the fact that, multimedia is currently, as the used much in the teaching and learning. The analysis of the candidates' response showed that the candidates (60.6%) who scored high marks managed to give the correct introduction of the multimedia and suggested the correct

advantages of the multimedia in the teaching and learning at school. This indicates that the candidates had adequate knowledge of multimedia. However, some of the candidates could not give exhaustive explanations of the multimedia which led them to lose some marks. It was also observed that some of the candidates correctly suggested the advantages of multimedia in the teaching and learning but failed to give clear introduction and conclusion. Extract 9.1 represents correct responses from one of the candidates.

9.	<p>The term multimedia is originated from two words, which are multi and media where multi means many and media means different platforms that can be used as the source of information. Generally multimedia can be defined as the means of using different platforms of the information content to inform or to entertain the users. Multimedia consists of the five elements which are text, video, Audio, pictures and graphics. Multimedia is useful in different fields like in education, in Business, Social development and Entertainment. The following are the advantage of using multimedia in the process of teaching and learning in education field:</p> <p>It motivate the learners; In the process of teaching and learning, there is a need of attention during the lesson to the students, one of the way that a teacher can use to motivate learner, or to make learner attentive to the lesson is to use multimedia during teaching process. Teacher can use maybe text, pictures, videos and audios.</p> <p>It clarify the concepts; Another major advantage of using multimedia in the process of teaching and learning, is this multimedia give a chance to a teacher to make the clarification to some concepts from abstracts to concrete so that can be understood by each student in the class.</p> <p>It give learners positive attitudes towards what they learning; This is another advantage of using multimedia in teaching and learning. It's only through the use of multimedia learners</p>
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Extract 9.1: A sample of correct responses to question 9

In Extract 9.1, the candidate gave the correct introduction of the multimedia and suggested correct advantages of the multimedia in the teaching and learning at the school.

The candidates with an average performance (25.8%) suggested the advantages of the multimedia in the teaching and learning but failed to give clear explanations. Others mixed up the advantages and disadvantages of the multimedia. For example, one of the candidates wrote, *Multimedia is time consuming in teaching and learning process, because candidates spend much of their time surfing over the internet.* This indicates that the candidates had insufficient knowledge of the multimedia application.

On the other hand, some of the candidates (13.6%) who scored from 0 to 6 marks did not understand the requirement of the question. Such candidates explained the elements of the multimedia instead of the advantages of using the multimedia. For example, one of the candidates wrote, *audio recording music, video for shooting movies and clips, and text for writing notes.* Some of them explained the advantages of ICT in the learning and teaching process. For example, one of the candidates wrote, *it enables transferring of materials from one place to another.* A few of the candidates interpreted multimedia as communication station in different areas. For example, one of such candidates wrote, *multimedia is a device used to transfer information at a school.* Moreover, some of the candidates outlined the advantages without giving explanations. For example, one of the candidates wrote, *the advantages of multimedia in teaching and learning are to simplify the teaching and learning process and attract learners to love the subject.* Extract 9.2 presents a sample of incorrect responses from one of the candidates.

9.	<p>It providing knowledge; means that the skills and knowledge people can get or learn from the multimedia because, clip, video and other knowledge of people are created and deposited to the multimedia so as people can get and learn.</p>
	<p>Entertainment also can be provided during the information of getting announcement about something like job; which it will easily to the users to see and after entered through the website created.</p>
	<p>It providing for business; this is due to the information which presented by the owner for the means of business maker. Here can provide more business and get announcement about other people who want to make business with the user through online.</p>
	<p>To a society; free to get skill about what things did not learn earlier. It can help those societies to get understand through multimedia where there are some other information like such as videos, audio sounds, image and pictures.</p>
	<p>Generally, the multimedia is more advantage to the society since it is more applicable and useful all the days in our daily life. So we should use more multimedia because it provide more employment to other us if they it can used properly.</p>

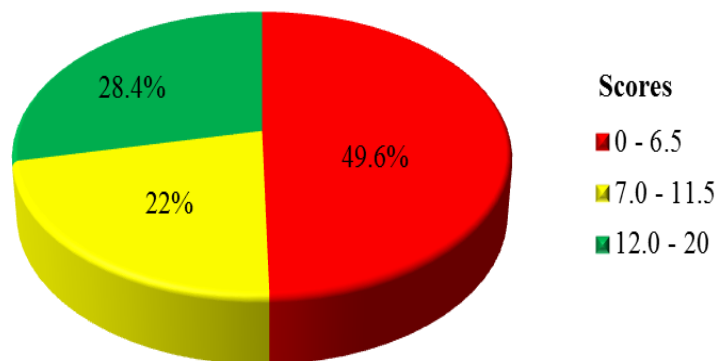
Extract 9.2: A sample of poor response to question 9

In Extract 9.2, the candidate wrote the advantages of internet instead of the advantages of the multimedia. The candidate also could not give the introduction and conclusion of the essay.

## 2.10 Question 10: Application Areas of ICT

This was an optional question which carried a total of 20 marks. Candidates were required to analyse three effects that a society faces from the improper disposal of ICT devices and suggest three proper ways to dispose ICT devices.

A total of 363 (13.9%) candidates attempted the question, of which, 180 (49.6%) scored from 0 to 6.5 marks. The candidates who scored from 7 to 11.5 were 80 (22%), whereas 103 (28.4%) scored from 12 to 20 marks. The performance of the candidates in this question is summarised in Figure 3.



**Figure 3:** *The candidates' performance in question 10.*

This question was skipped by many candidates and the general performance was average as 50.2 per cent scored 6.5 marks or more. Although the performance of the candidates in this question was average, majority (49.6%) of the candidates scored low marks. Some of the candidates wrote the negative effects of ICT to the society whereas others explained the types of pollution such as *land pollution*, *water pollution* and *air pollution*. Other candidates wrote the requirements for using ICT devices. For example, one of the candidates wrote, *provision of electrical power*, *provision of education among the society on ICT use of ICT device* and *provision of education among the society on use of ICT device* and *provision of enough security*. Extract 10.2 shows a sample of incorrect responses from one of the candidates.

10. Information and Communication Technologies (ICT) device. These are devices which are used to transfer information and communication from one area to another area which consist input, output, storage, process device and so on. Like computer, television, radio, magazine, mobile phone and so on.

The following are the effect that a society faces from improper disposal of ICT devices to the environment.

**Unemployment:** Due to Information and Communication Technology (ICT) it lead to unemployment in the society because people they do not do proper works for finding raw material, basic needs and so on but too much time they use for getting information and communication in the society where by its not good to them for doing that issue. Unemployment is the effects that a society faces from improper disposal of ICT device to the environment.

It lead to moral decay in the society. This is occur when due to information and communication Technology (ICT) it lead to moral decay in the society when people they use ICT devices for looking like sexual intercourse, wearing style and so on do to those imitation takes place. were people start to ~~were~~ in wear in bad way also people increase sexual desire.

10.	<p>It lead to health risk in the society for exam ple eyes problem, ears problem also it affect brain. This is occur when due to the use of long time information and communication devices like phones, com puter, radio and so on all those it can lead to the health risk to human being due to those radiations of devices.</p>
	<p>The following are the proper ways to dispose them:</p>
	<p>To avoid the use of information and communication technology for a long time. This is occur when in order to dispose the effect that a society faces from improper disposal of ICT device to the environment we must avoid the use of those devices for a long period and time.</p>
	<p>To provide education about the effects of information and communication technology devices, for example to educate how health risk we get from those device, unemployment, wastage of time and so on. So we must provide education in the society due to effect that cause by the information and communication technology devices.</p>
	<p>To provide good way on how we can use information and communication technology devices: for example for finding teaching and learning material, for looking information, for communicating with other and so on. All those it can lead to proper ways of disposing them.</p>
	<p>Generally in all Information and communication technology devices are so important in the society because it help us to get different materi</p>

Extract 10.1: A sample of incorrect responses to question 10

In Extract 10.1, the candidate explained the negative impact of ICT in the society instead of the effects of the improper disposal of ICT devices.

On the other hand, the candidates who scored average marks gave the correct introduction with the correct effect of the improper disposal of ICT devices to the society. However, some of them could not give the proper ways to dispose them. Others mentioned the correct effects that a society faces from the improper disposal of ICT devices but could not give clear explanations. Furthermore, 28.4 per cent of the candidates scored high marks because they correctly explained the effect of improper disposal of ICT devices and suggested the proper ways to dispose them. The analysis of data showed that many candidates failed to score full marks because they could not give the detailed explanations. Other candidates wrote the proper ways to dispose them such as, *provision of education, burying of ICT devices, incineration (burning), in a special place and return to the manufacture*. This shows that the candidate had adequate knowledge of disposing ICT devices. Extract 10.1 represents sample of a correct responses in this question.

10.	<p>Re-cycling: This involves the manufacturing of new low products from the old waste, ICT devices can be re-cycled in order to reduce the effect to the environment.</p> <p>Re-using: It includes the modification of the ICT device into new ones that it used more usefully, ICT devices which are no longer needed can be modified to a new one in order to be used again.</p> <p>Reducing: This refer to the process where reduce by ICT devices are reduced. by This it includes the process of burning them and other process that leads to the reduction of ICT devices that are no longer needed.</p> <p>Generally the above points explain about the effect caused by improper disposal of the ICT device as well as the measure to be taken in order to reduce those effects or proper ways to disposal those devices.</p>
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10.	To block unnecessary information that will lead to bad situation so as to ensure every member of the society being busy in finding fast and important things.
	To ensure presence of rules and regulation of proper use of ICT and punishment to all breakers and fines also who are engaged in improper use of ICT.
	To ensure preservation of culture any which is acceptable in that community will help every body to follow their culture and not otherwise.
	Formulation of policies and laws which encourage the proper use of computer.
	ICT have advantages of entertaining society, preserving culture, transferring of information and advertisement.

Extract 10.1: A sample of correct responses to question 10

In Extract 10.1, the candidate correctly explained the effects of the improper disposal of ICT devices and suggested the proper ways to dispose them, but failed to give clear introduction and conclusion.

### 3.0 THE PERFORMANCE OF THE CANDIDATES IN EACH TOPIC

The Information and Computer Studies paper comprised 10 questions from 10 topics. The analysis done in relation to each topic showed that only one topic had a good performance. Two topics had an average performance whereas five topics had a weak performance. A topic with a good performance was *Computer Basics* (62.3%). The good performance in this topic is attributed to the candidates' adequate knowledge of the computer parts and their functions. The candidates' performance was average in topics of *Multimedia* (52.1%) and *Application Area of ICT* (50.4%). It was observed that, the lack of clarity in explaining points given contributed to this performance.

The candidates' performance was weak in the topics of *Generic Networking and Data Communication* (7.8%), *Application Software* (7.6%), *Problem Solving* (3.8%), *Web Development* (0.1%) and *Database Management Systems* (0.5%). The poor performance in these topics is attributed to the lack of knowledge and practical skills in the assessed topics. The *Appendix* summarises the performance of the candidates in each topic.

## **4.0 CONCLUSION AND RECOMMENDATIONS**

### **4.1 Conclusion**

In general, the candidates' performance in the ACSEE 2021 Information and Computer Studies Examination was weak, as only 30.5 per cent of the candidates passed.

The analysis of the candidates' responses showed that the majority of the candidates performed weakly because they lacked knowledge of the assessed concepts. Likewise some of them could not understand the demands of the questions. The candidates faced difficulties in attempting questions from the topics of Generic Application Software, Web Development, Networking and Data Communication, Multimedia, Problem Solving and Database Management Systems respectively. It has been noted that the weak performance in these topics was a result of the candidates' insufficient knowledge of the tested concepts, lack of practical skills, and failure to understand the questions' requirements. As a result, the candidates provided irrelevant responses.

### **4.2 Recommendations**

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

- (a) Teachers should demonstrate the functions of application software (*Microsoft word, Microsoft excel, Microsoft access and Microsoft publisher*) in daily life.
- (b) Teachers should emphasize on the essential elements in planning a website and step by step website development.

- (c) Teachers should guide students to discuss the program control structures (sequence, controlling and looping).
- (d) Teachers should guide students to identify the types of computer networks according to the physical arrangement of computers, functions of all devices in the network as well as their advantages/disadvantages.
- (e) Teachers should guide students to discuss the functions of database and data manipulation in daily life.
- (f) Teachers have to lead students through practical work to develop practical skills in using ICT resources.
- (g) Teachers should lead students in categorising the multimedia uses into education community development and business.
- (h) Candidates should read the examination questions carefully so as to understand the requirements of the questions clearly.

## APPENDIX

### Analysis of Candidates Performance per Topic

S/n	Topic	Number of Questions	Percentage of Candidates who Scored 35% Marks or Above	Remarks
1	Computer Basics	1	62.3	Good
2	Multimedia	2	52.1	Average
3	Application Areas of ICT	1	50.4	Average
4	Networking and Data Communication	1	7.8	Weak
5	Generic Application Software	2	7.6	Weak
6	Problem Solving	1	3.8	Weak
7	Website Development	1	0.1	Weak
8	Database Management Systems	1	0.5	Weak



