THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CANDIDATES' ITEM RESPONSE ANALYSIS REPORT FOR THE CERTIFICATE OF SECONDARY EDUCATION EXAMINATION (CSEE) 2015

036 INFORMATION AND COMPUTER STUDIES
(For School Candidates)

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FOREWORD

The Information and Computer Studies Candidates Item Response Analysis Report on the Certificate of Secondary Education Examinations (CSEE) 2015 has been written in order to provide feedback to the candidates, teachers, parents, policy makers and other educational stakeholders on the candidates' performance in this subject.

The Certificate of Secondary Education Examinations marks the end of four years of secondary education. It is a summative evaluation which, among other things, shows the effectiveness of the education system in general and education delivery system in particular. Essentially, candidates' responses to the examination questions is a strong indicator of what the education system has been able or unable to offer to the candidates in their four years of Ordinary Secondary Education.

The analysis presented in this report is intended to contribute towards understanding of the reasons behind the *good* performance of candidates in this year's examination. The report highlights factors that made many candidates to score high marks. Such factors include ability to identify the requirements of the question, ability to express themselves in English Language and adequate knowledge on the concepts related to the subject. The report also highlights the factors that made some of the candidates to have weak performance. The *poor* performance may be attributed to; wrong interpretation of the requirements of the questions, lack of practical skills in responding to the question and inadequate knowledge on the materials taught under the tested topics. The feedback provided will enable the educational administrators, school managers, teachers and students to take proper measures in order to improve the candidates' performance in future examinations administered by the Council.

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

Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report on Information and Computer Studies is based on the performance analysis of the candidates who sat for the CSEE in 2015. The examination was set according to the examination format which was developed in accordance with the 2005 Information and Computer Studies syllabus for Ordinary Secondary Education.

In this report, the candidates' performance has been analyzed by showing the question demands, what the candidates were able to do and the observed mistakes made by candidates while attempting the questions.

The Information and Computer Studies examination had two papers; theory and practical papers. The theory paper had three (3) sections, A, B and C. Section A consisted of three (3) objective questions with ten items each and section B had six (6) short answer questions. All questions in both sections were compulsory. Section C had three (3) essay questions and the candidates had to answer any two. The practical paper had three questions and the candidates were required to answer any two.

The number of candidates who sat for the CSEE 2015 in Information and Computer Studies was 2,099, out of which 1,291(61.51%) of the candidates passed the examination and 808 (38.49%) failed. The candidates who sat for the Examination in the year 2014 was 1,738, out of which 58.29 percent passed and 41.71 percent failed. This indicates that the performance in the year 2015 has increased by 3.22 percent. The summary on the performance is presented in Figure1.

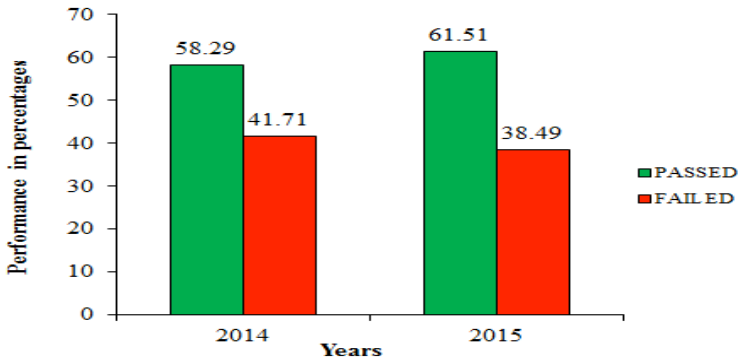


Figure 1: The candidates perfomance in 2014 and 2015.

In analyzing the candidates' performance in each question/topic, the performance was graded as *good, average or weak* if the percentage of candidates who scored 30 percent or above of allocated marks to that

question lies in the intervals of; 45-100, 30-44 and 0-29 respectively. The candidates' performance is presented in different charts whereby the red color represents *weak* performance, yellow color represents *average* performance and the green colour signifies *good* performance. Furthermore, the extracts for both *good* and *weak* responses from the candidates have been attached to illustrate the cases presented.

2.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 1

2.1 Question 1: Multiple Choice Items

The question consisted of ten (10) multiple choice items which were composed from the topics of: *Computer software, The computer, Impact of Information and Communication Technology (ICT) on the Society, Spreadsheet, Computer Networks and Communications*. The candidates were required to choose the most correct answer among the given five alternatives (A - E).

All 2,100 (100%) candidates attempted this question, out of which 19.5 percent scored from 0 to 2 marks, 43.3 percent scored from 3 to 4 marks and 37.2 percent scored from 5 to 10 marks. Figure 2 represents the candidates' performance in this question.

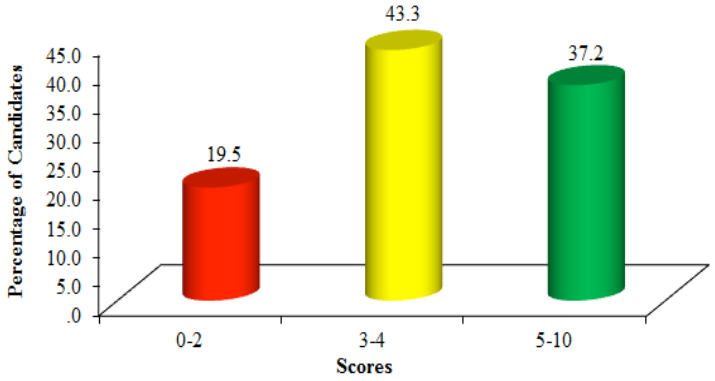


Figure 2: Candidates' performance in question 1.

The general performance in this question was good because 80.5 percent of the candidates scored from 3 marks or above. They managed to choose the correct answer in most of the items. However, 19.5 percent of the candidates performed poorly. The analysis carried out in the scripts of the candidates' indicates that most of the candidates who scored poorly had problems in item; (i), (iii), (v), (vii), (viii) and (ix).

Item (i) stated: *Which of the following is necessary for running application software?*

A Network card
B Utility program
C Graphical user interface
D Operating system
E System software

The correct answer was D "Operating system" but majority of the candidates' chose the other alternatives. The candidates' responses were wrong because alternatives A "Network card" is a hardware device that connect a computer with the network while B "Utility programs" perform commonly used services that make certain aspects of computing go on smoothly. Alternative C "Graphical user interface" provides a communication link between a user and operating system and E "System software" performs a variety of fundamental operations that avails computer resources to the user. The candidates who opted E failed to extract operating system from system software.

Item (iii) was as follows: *The electronic pathways where information travels between the CPU and other parts within the motherboard is called*

A Link bus
B Register bus
C Instructional bus
D Line bus
E Data bus

The correct answer was E "Data bus" but most of the candidates chose the other options. The alternatives A, B, C and D were not related with electrical pathways/buses. The candidates' who scored zero mark lacked knowledge on the electrical pathways or links (control bus, address bus and data bus) which are used to transfer information in the Arithmetic and Logic Unit, Control Unit and Main memory.

The following item was given in (v): *The fraud which occurs when a* fraudster *uses a false or fake identity to gain access to an electronic service is called*

A Roaming
B Clip-on
C Subscription
D Calling card
E Superimposed

This item tested candidates' knowledge on Information and Communication Technology (ICT) criminals. The correct answer was C "subscription". The candidates who scored zero mark chose other alternatives. Option A "Roaming" is the technical ability of connecting an electronic device to the internet. B "Clip-on" occurs when the fraudster taps into an existing telephone line and can therefore communicate without being charged. D "Calling card", the fraudster obtains the calling card details from the victim by a variety of means and use those card details to make their own calls. Lastly, E "Superimposed" fraud is where a service is used and charged to the account of an unsuspecting payee who has an account. The failure in this item indicates that, the candidates lacked knowledge on ICT crimes.

Item (vii) was as follows: *A spreadsheet that already includes labels and formulas is called*

A Template
B Macro
C Graphic
D Worksheet
E Workbook

The correct answer was A "template" but some of the candidates chose wrong options. The options were wrong because B "Macros" are used to eliminate the need to repeat the steps of common tasks over and over. C "graphics" consists of still pictures such as drawings and photographs D "worksheet" is the work area made up of columns where data is entered and E "workbook" is referred as spreadsheet file.

Item (viii) required the candidates to choose the correct alternative of the question *"which function is used to enter current time in a worksheet cell?"* The options given were *A =hour(), B=currentTime(), C =today(), D =time() and E =now().*

The correct answer was E "= NOW ()" but most of the candidates chose B "current time". The candidates might be attracted with the term "current time" which used in the question. Other options were also not correct because the function in A "=HOUR()" returns the current hour as number 0 to 23, C "=TODAY" returns a number that represents today's date and option D "=time()" was not true because there is no such function in date and time functions. This indicates that the candidates lacked knowledge on date and time functions.

Lastly, the item given in (ix) was as follows: *A computer network media that supports large volumes of data transfer is called*

A Network Interface Card
B Fiber optical cable
C Twisted pair cable
D Coaxial cable
E Network cable

The correct answer was B "Fiber optical cable" which has bandwidths of up to 50 Gbps "Gigabits per second". The candidates who scored zero mark in this item chose one among the alternatives A, C, D and E. The candidates' responses were not correct because C "twisted pair cable" can support high data rates up to 100Mbps. D "Coaxial cable" have bandwidths of up to 1Gbps and E "Network cable" includes bound transmission media like twisted pair cables, coaxial cables, fiber optical cables. On the other hand, some of the candidates failed even to differentiate computer network device and data communication devices like Network Interface Card (NIC) as they opted A.

2.2 Question 2: Matching Items

In this question, the candidates were required to match the characteristics of electronic memory devices in **List A** with their corresponding electronic devices in **List B** by writing the letter of the correct option beside the item number. The question was intended to measure the candidate's ability to identify characteristics of electronic memory devices. The following question was given:

List A		List B	
(i)	A special temporary storage available in the ALU.	A	Removable storage
(ii)	Special memories that are found in input/output devices.	B	Fixed storage
(iii)	Memory devices which are becoming unpopular due to the entry into market of affordable mass storage.	C	Flash disk
(iv)	Memory devices which are suitable for recording motion pictures.	D	Buffer storage
(v)	Storage media that are not housed inside the computer.	E	Register
(vi)	Memory storage whose content can be accessed and read but cannot be changed.	F	Permanent storage
vii)	The main memory in a virtual memory system.	G	ROM storage
(viii)	Working storage that is used to hold instructions and data needed by the currently running applications.	H	Volatile storage
(ix)	Non-volatile storage media that employs integrated circuits rather than mechanical or optical technology.	I	Real storage
(x)	Computer storage where data is written and read from them uses a laser beam.	J	RAM storage
		K	Floppy disks
		L	Optical storage
		M	Non-volatile storage
		N	Digital Versatile Disks

The question was attempted by 2,098 (99.9%) candidates, out of which 51.2 percent scored from 0 to 2 marks, 26.8 percent scored from 3 to 4 marks and 21.9 percent scored from 5 to 10 marks. This data indicates that, the performance of the candidates was average as shown in Figure 3.

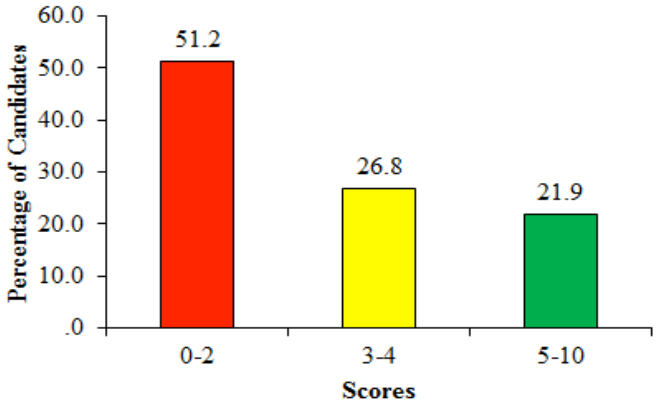


Figure 3: The candidates' performance.

Items which most of the candidates scored zero marks include (i), (vii) and (viii).

Item (i) tested the candidates' ability on a special temporary storage available in the ALU. The correct answer was E "Register" but most of the candidates chose D "buffer storage". This shows that, the candidates had an idea on the catch memory but failed to differentiate between buffer storage which are memory found in input/output devices and register are found inside the Central Processing Unit.

Item (vii) required the candidates to identify the type of memory found in a virtual memory system. The correct answer was H "Volatile storage" but most of the candidates wrote M "Non-volatile storage". This shows that candidates failed to differentiate volatile (temporary) memory from non-volatile (permanent) memory.

Item (viii) tested the candidates' knowledge on the working storage that is used to hold instructions and data needed by the currently running application. The correct answer was J "RAM storage" but some of the candidates' wrote E "Register" and others wrote D "buffer storage". This shows that, the candidates failed to differentiate main memory from special purpose memories like Registers, buffers and catch memory.

Generally, the candidates failed to score high marks in this question because of inadequate knowledge on computer memories available in computer systems.

2.3 Question 3: True/False Items

The question consisted of ten (10) True/False items composed from the topic of: *Word processing, Presentation, Database as information system and Computer software*. The candidates were required to write (T) for the true statements/items and (F) if the statement is not correct.

The following items were given:

(i) Headers and footers are not necessary to identify a document.
(ii) Each publication window can include horizontal and vertical rulers.
(iii) Timing slide show allows the slide presentation to view automatically.
(iv) In database, tables have records which are columns and fields which are rows.
(v) A query is really nothing more than a question you ask to access your data.
(vi) Power point presentations can only be viewed by hand out.
(vii) Computer chips are made out of silicon.
(viii) Database keeps all the information in a file about one person, thing, and event.
(ix) Many word processors can convert standard text document into the HTML format.
(x) Operating system can be classified into three categories according to user interface.

The statistics shows that, 99.9 percent of the candidates attempted this question, out of which 0.5 percent scored from 0 to 2 marks, 10.0 percent scored from 3 to 4 marks, 89.5 percent scored from 5 to 10 marks. Figure 4 represents the candidates' performance in this question.

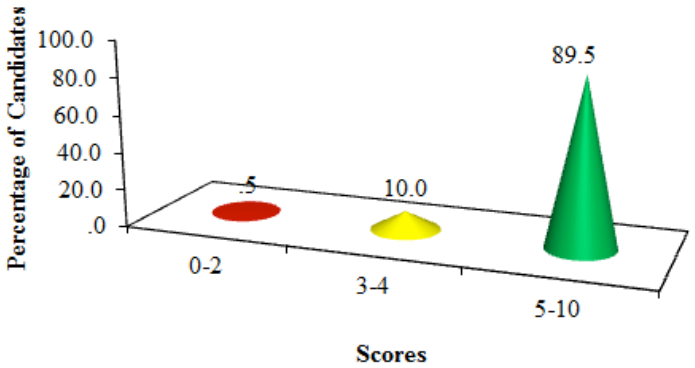


Figure 4: The candidates' performances in question 3.

Most of the candidates performed well in this question. The candidates were able to give the correct response in many items while those who performed poorly failed to give correct responses in item (i), (iv), (vi), (vii) and (x).

Item (i) tested the candidate's knowledge in formatting the document. The correct answer was F but most of them wrote T. These candidates lacked knowledge on formatting a document especially the importance of headers and footers.

Item (iv) tested the candidates' ability to identify the terms used in databases. The correct answer was F but candidates wrote T. These candidates could not recognize that, a table is made up of rows and columns which are called records and fields respectively.

The candidates wrote T in item (vi) that means, PowerPoint can only be viewed in handout mode instead of F. This shows that, the candidates lacked knowledge on the other ways of viewing PowerPoint such as slide show and slide notes which can be presented electronically through TV or Projector.

Item (vii) tested the candidates' knowledge on the materials which are used to create computer chips. The candidates wrote F instead of T. They meant that, computer chips are not made up of silicon. These candidates lacked concept that electronic chips are made up of semiconductor materials which include silicon and germanium.

The candidates wrote F in the last item (x). The correct answer was T because operating system can be classified into three categories according to user interface as Command line, menu driven and Graphical user interface.

2.4 Question 4: The Computer

In this question, the candidates were required to; (a) explain the main reason for using BIOS in the computer, (b) mention two types of buses that affect the speed of computer and explain the function of each type and (c) differentiate the fourth generation from fifth generation computers.

A total of 1,971 (93.9%) candidates attempted this question, out of which 91.7 percent scored from 0 to 2 marks, 6.1 percent scored from 2.5 to 3 marks and 2.2 percent scored from 3.5 to 7 out of 7

marks. Figure 5 shows the candidate's performance in this question.

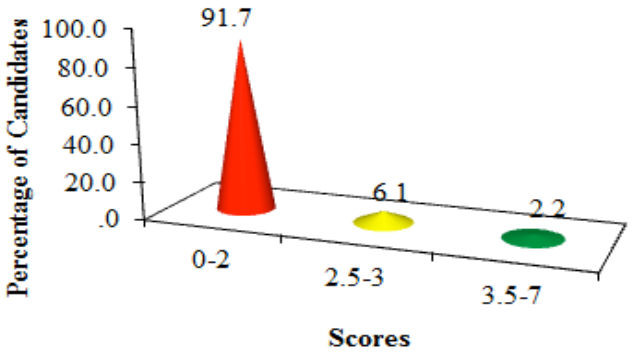


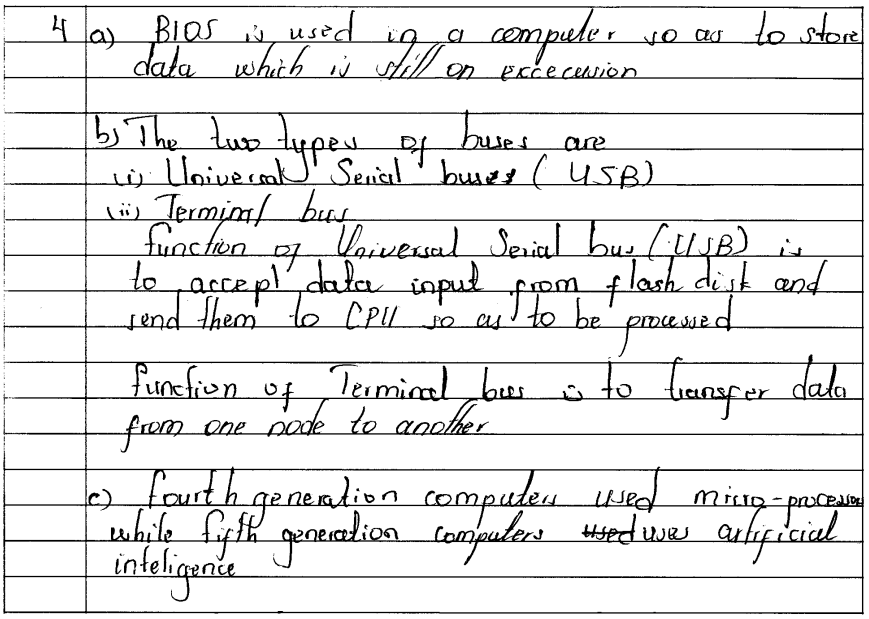
Figure 5: The candidates' performance in question 4.

42.8 percent of the candidates who scored zero mark failed to explain the main reason for using BIOS in the computer in part (a), one of the candidates wrote that *BIOS is used for storage purpose as well as publishing input to the viewers in form of output* instead of BIOS performs a hardware check and makes sure that, certain crucial pieces of hardware are present and functioning properly.

Candidates who performed poorly responded incorrectly in part (b) because of inadequate knowledge on computer buses that affect the speed of computer. For example, some candidates wrote two types of buses that affect the speed of a computer as *Link buses* and *Line buses* instead of the data bus, control bus and address bus.

However, some of the candidates couldn't differentiate the fourth generation from the fifth generation in part (c). For example some candidates wrote "Fourth generation computers *there was development of portable computers, GUI and Internet* while in the fifth generation there was *a developments of robots and voice recognition*" instead of the year that the generation started such as fourth generation begun at 1970 to 1990 while fifth generation of the computer started in 1991 to date or Fourth generation computers are characterized by Very Large Scale Integrated (VLSI) while fifth generation are characterized by artificial intelligence. Extract 4.1 serves as a sample of a poor answer from one of the candidates.

Extract 4.1


4 a) BIOS is used in a computer so as to store data which is still on excecution

b) The two types of buses are
(i) Universal Serial buses (USB)
(ii) Terminal bus
function of Universal Serial bus (USB) is to accept data input from flash disk and send them to CPU so as to be processed

function of Terminal bus is to transfer data from one node to another

c) Fourth generation computers used micro-processor while fifth generation computers ~~used~~ uses artificial inteligence

In extract 4.1 the candidate explained BIOS as a storage system contrary to its function. He/she mentioned USB as a type of buses which was wrong. However, the candidate managed to differentiate fourth from fifth generation computers.

The candidates who scored average marks in this question were able to differentiate fourth generation from fifth generation computers. Some of the candidates managed to list the types of buses in part (b) but failed to give explanations, which led to score low marks. The candidates also were not able to give the importance of using BIOS in the computer.

Despite of these weaknesses, there were few (2.2%) candidates who scored high marks. Some of the correct responses provided in part (b) were; ***Address bus:*** *The address bus determines the number of individual memory locations the micro- processor is capable of addressing.* ***Control signal:*** *These buses carry control signal from ALU to memory and from memory to ALU. In part(c) were; fourth generation Computers are characterized by very low emission of heat, small in size* ***while*** *Fifth generation computers are characterized by very high processing power and speed, also size is increasingly becoming smaller*. This shows that the candidates had adequate knowledge on the concepts taught under the topics of "The Computer and Computer Evolution. Extract 4.2 is a sample of a good response in this question.

Extract 4.2

4a BIOS or Basic Input Output System in the compute r is used to check the devices connected to the computer if are working properly.

4b - ~~Address Bus~~ Data Bus
- Control Bus

Data Bus is an ~~bus~~ electronic pathway in which information travels between the CPU and other parts of the computer.

Control Bus: Is an electronic pathway in which all timing in the CPU are controlled

4C	FOURTH GENERATION	FIFTH GENERATION
	- Emitted a heat than Fifth Generation	- Emitted less heat than Fourth
	- low processing speed compared to fifth	- High processing speed compared to fourth

In extract 4.2, the candidate explained correctly the main reason for using **BIOS**, gave the types of buses that affect the speed of computer and the difference between the fourth and fifth computer generations.

2.5 Question 5: Database as Information System

The question had two parts; (a) and (b) as given below:

(a) Give four disadvantages of traditional databases.

(b) A mail order company selling plastic equipment's keeps details of its stock on a database. Part of the database is shown in the following table:

Code_Num	Colour	Speakers Power (W)	No.of CDs	Price (Tsh)
13416	Black	450	4	650000
13425	Silver	260	1	500000
13504	Silver	480	5	750000
14001	Black	100	3	110000
14005	Black	1000	4	900000
14010	Silver	240	6	350000

The questions asked were:

(i) Which field should be used as the key field?

(ii) Which code_Num data will be listed if the following search condition is applied? (speakers power>400) AND (No of CDs>4)

(iii) Write down a search condition to find all the equipment's which are silver coloured or a price greater than 500,000/=

(iv) Write down the order of the Code_Num after the price (Tsh) field has been sorted in ascending order.

This question tested the candidates' ability in manipulating the data in the database. The candidates were required to use the given part of the database to answer the asked questions.

The question was attempted by 2,010 (95.7%) candidates, out of which 48.7 percent scored from 0 to 2 marks, 20.0 percent scored from 2.5 to 3.5 marks and 31.3 percent scored from 4 to 8 marks. Figure 6 shows the pictorial presentation of statistical data in this question.

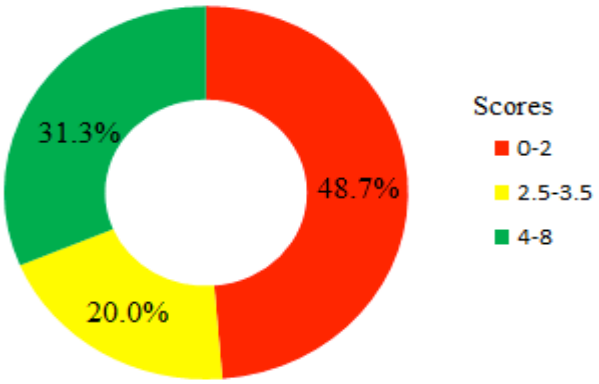
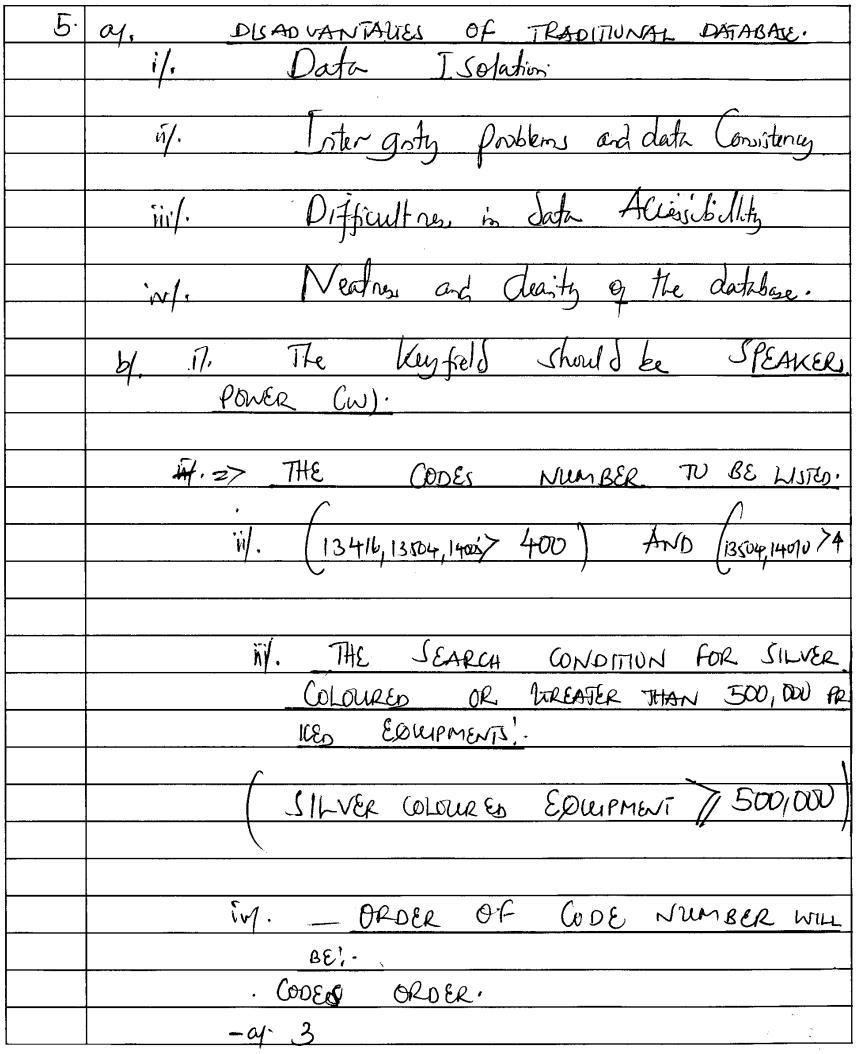


Figure 6: The candidates' performance in this question.

Figure 6 shows that, the candidates (48.7%) who scored low marks failed to identify the requirement of the question in part (a). They wrote traditional ways of disseminating information instead of disadvantages of traditional databases. Some of the candidates had an idea of the answer but failed to organize the ideas. For example, one of the candidates wrote *it consume a lot of time for information to be transmitted* instead of it consumes a lot of time during searching of data/information. However, they only managed to

give the key field correctly in part (b)(i) and failed to answer the other parts. Extract 5.1 presents a sample of such incorrect responses.

Extract 5.1



Extract 5.1 shows that, the candidate had an idea of database but failed to organize an idea. For example, in part (a), the candidate wrote *difficult in data accessibility* instead of difficult in searching data. He/she also gave the key field speakers power(w) which is not unique as well as search conditions provided are wrong.

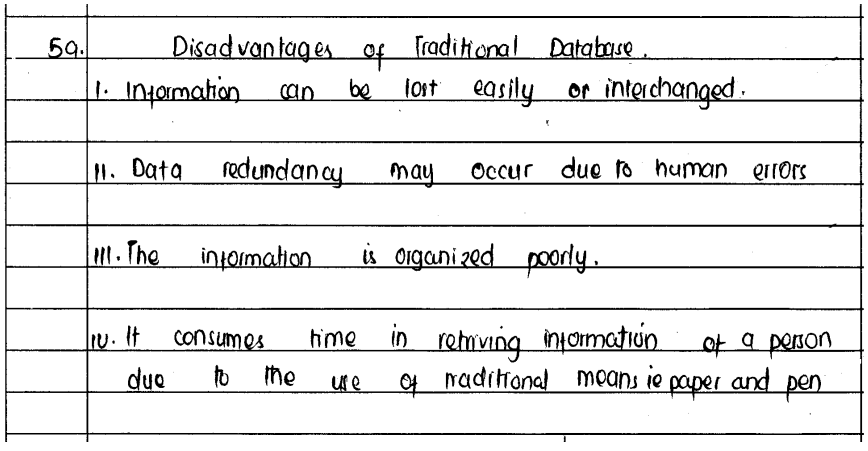
The candidates with average performance were able to give the disadvantages of traditional database but failed to answer part (b) (ii) and (iii). These candidates had problems in writing the code_Num to be displayed when the (speakers power>400) AND (No of CDs>4) is applied and in writing a search condition to find

all the equipment which are silver in colour or the price is greater than 500,000/=. Some of the candidates were able to identify the code_Num of speakers power > 400 but failed to extract the number of CDs > 4, as they included the code_ Num of Number of CDs that are equal to 4. For example, one of the candidates wrote *code_Num 13416, 13504* and *14010* where the number of CDs in the code_Num 13416 is 4. This might be attributed by poor knowledge of mathematical and practical skills.

The candidates who performed well were able to give the disadvantages of traditional databases in part (a) correctly. Some of the correct responses provided were; *Time consuming - data processing takes a long time since the data is entered manually and processed manually, information and data can be easily lost, unnecessary duplication of data and poor updates of records.*

They also gave correct responses in part (b) which were; (i) Code_Num (ii) 13504, (iii) (colour="silver") or (price>500000) and (iv) 14001, 14010,13425,13416,13504, and 14005. These responses indicate that, the candidates had adequate knowledge of database manipulation. Extract 5.2 represents a sample of a good response which was provided by one of the candidates.

Extract 5.2

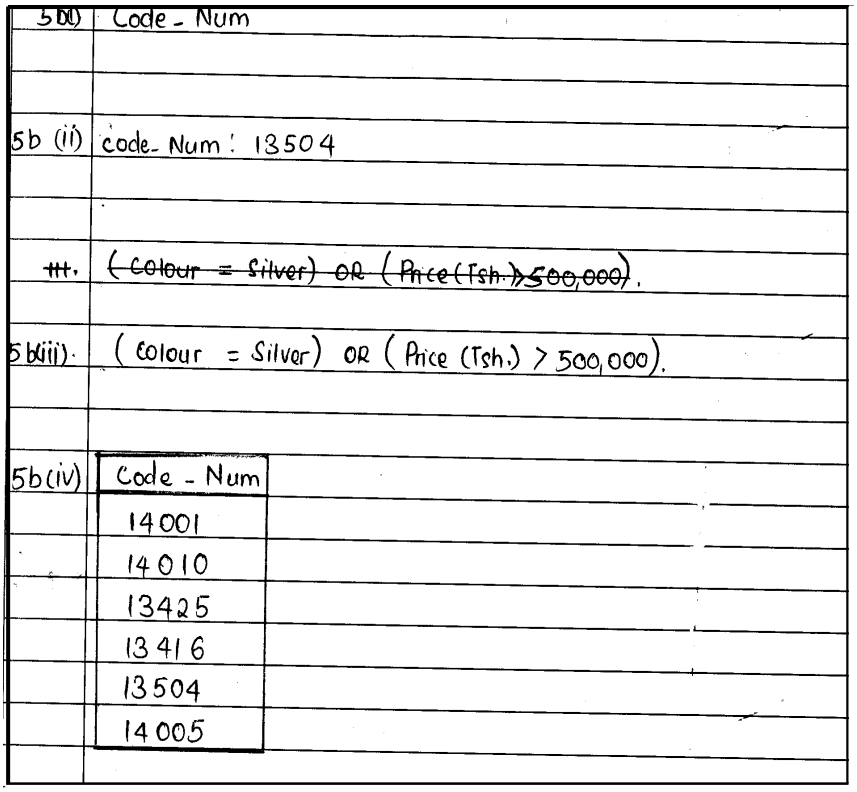

5a. Disadvantages of Traditional Database.

i. Information can be lost easily or interchanged.

ii. Data redundancy may occur due to human errors

iii. The information is organized poorly.

iv. It consumes time in retriving information of a person due to the use of traditional means ie paper and pen



Extract 5.2 shows a sample of a response from a candidate who managed to give the correct answers to all parts of the question. This shows that the candidate had adequate knowledge on database developments.

2.6 Question 6: The Internet and Computer software

This question consisted of three parts; (a), (b) and (c). In part (a), the candidates were required to describe three applications of internet in the area of education. Part (b) required the candidates to mention four components of the computer. Part (c)(i) they were required to differentiate system software from application software and part (ii) give four functions of an operating system.

A total of 2,085 (99.3%) candidates attempted this question, out of which 54.1 percent scored from 0 to 2.5 marks, 27.5 percent scored from 3 to 4 marks and 18.4 percent scored from 4.5 to 9 marks. Figure 7 represents the candidate's performance in this question.

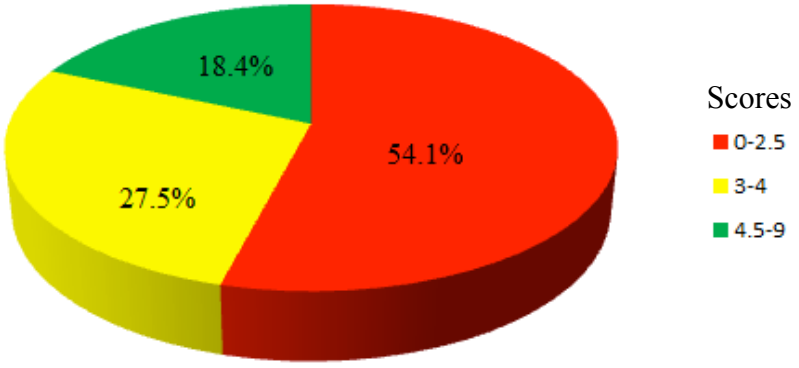


Figure 7: The candidates' performance in question 6.

Figure 7 shows that, 45.9 percent of the candidates scored from 3 to 10 marks and therefore, the general performance in this question was average.

Some of the candidates who scored average marks (3 to 4) managed to list certain applications of internet in the area of education but failed to give detailed explanations. For example, one of the candidates mentioned that, internet can be applied *in e-learning, help teachers to send assignment to students*. Other candidates were able to provide some components of computer in part (b) such as *hardware and software* but failed to mention the humanware (users) and computer data/ information.

On other hand, 18.4 percent of the candidates who scored high marks managed to describe applications of internet based on the area of education in part (a) but failed to give detailed explanations, which led them to lose some marks. Responses such as *searching email, publication and distant education online* were provided by the candidates. Some of the candidates gave correct differences between system software and application software as well as correct functions of an operating system. Extract 6.1 represents a sampled good response.

Extract 6.1

6. Applications of Internet in the area of education

i) E-learning.

This is one of the internet applications in education. This refers to electronic learning. This involves people learningor, taking classes through online classes in the internet.

ii) Also another application is Research.

The internet has enabled research in education. Internet provides us with useful materials that are needed in research. Internet provides us with alot of information concerning various aspects by the use of various websites and search engines.

iii) Computer Aided instruction. (CAI) and Computer aided learning

This is also an application of internet in education. This involves learning through the internet that comes along with demostrations when delivering lessons.

b) Components of the computer.

i) Hardware.

ii) Software.

iii) Liveware.

iv) firmware.

c) i) System software is the software that is used to manage or control the hardware and the application software. It connects the hardware and the application software Examples Unix, Linux, Obuntu, google etc WHILE Application software is the one that is used to satisfy user's needs. They are programs that perform various tasks for the users. Example Microsoft word, Database (Access), Excel, Adobe pagemaker, MYOB CAM, CAI etc.

ii) functions of operating system.

i) Job scheduling

ii) Security

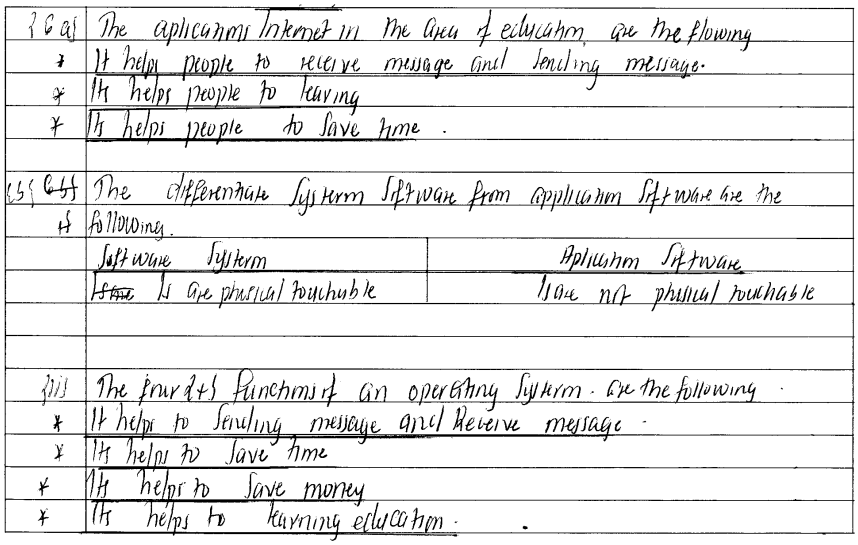
iii) Interrupt handling

iv) Resource control and allocation.

Extract 6.1 is a sample of a response of a candidate who gave the correct applications of internet and components of computer as well as the functions of operating system.

Further analysis shows that, some of the candidates who scored low marks (0 to 2.5) gave the general use of internet instead of focusing on education area. For example, one of the candidates wrote that, internet can be applied in *communication and e-commerce* instead of electronic emails are used in communication at schools/colleges between teachers/tors/lecturers and students. Other candidates wrote in part (b) *central unit and memory unit* as components of computer which were incorrect responses. These responses were wrong because central unit and memory unit are components of CPU. The correct responses were hardware, software, humanware, and computer data/information. In part (c) (i), the candidates were not able to differentiate system software from application software because they did not have adequate knowledge on application software's. Most of them wrote that, *system software controls all the programs in the computer* but failed to give elaboration on application software. Some of the candidates lacked knowledge on operating system which led them to give wrong functions. For example, one of the candidates wrote, *time sharing and save time* instead of controlling the function of peripherals, controlling the application software, file managements and protecting hardware and software. Extract 6.1 represents a sampled poor response which was provided by a candidate.

Extract 6.2



In extract 6.2 the candidate wrote the general application of Internet and failed to relate it with education. The candidate gave the difference between hardware and software instead of system and application software. He/she also gave wrong functions of operating systems.

2.1.7 Question 7: Computer Networks and Communications

This question had two parts; (a) and (b). In part (a), the candidates were required to differentiate bound transmission media from unbound transmission media by giving three examples for each category. Part (b) required the candidates to explain why LANs are characterized by comparatively high speed than WANs.

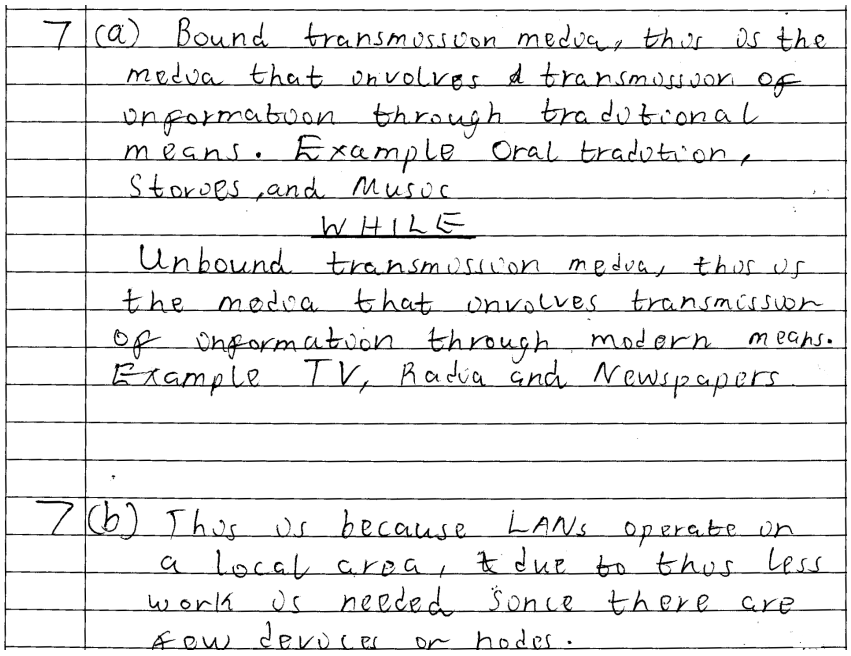
The analysis shows that, 1,901 (90.5%) candidates attempted this question, out of which 88.5 percent scored from 0 to 2 marks, 3.9 percent scored from 2.5 to 3 marks and 7.6 percent scored from 3.5 to 6.5 marks. Table 1 shows a summary of candidates' performance in this question.

Table1

Candidates' Performances	
Scores	**Valid Percent**
0-2	88.5
2.5-3	3.9
3.5-7	7.6

The candidates who scored a zero mark failed to classify the requirement of the question. They confused the term bound/unbound transmission media with traditional and modern ways of disseminating information. For example, one of the candidates wrote *"bound transmission media is the media that involves transmission of information through traditional means while unbound transmission media is the media that involves transmission of information through modern means such as TV"*. The candidates were supposed to understand that, bound transmission media are cables that are tangible or have physical existence; example twisted pair cable, coaxial cable and fiber optic cable while unbound transmission media are the ways of transmitting data without using cable (wireless) example microwaves, radio waves and infra-red. However, some of the candidates were able to differentiate bound from unbound transmission media but failed to provide the correct examples. Extract 7.1 shows a sample of a relatively poor response which was provided by a candidate.

Extract 7.1


7 (a) Bound transmission media, this is the media that involves a transmission of information through traditional means. Example Oral tradition, Stories, and Music

WHILE

Unbound transmission media, this is the media that involves transmission of information through modern means. Example TV, Radio and Newspapers.

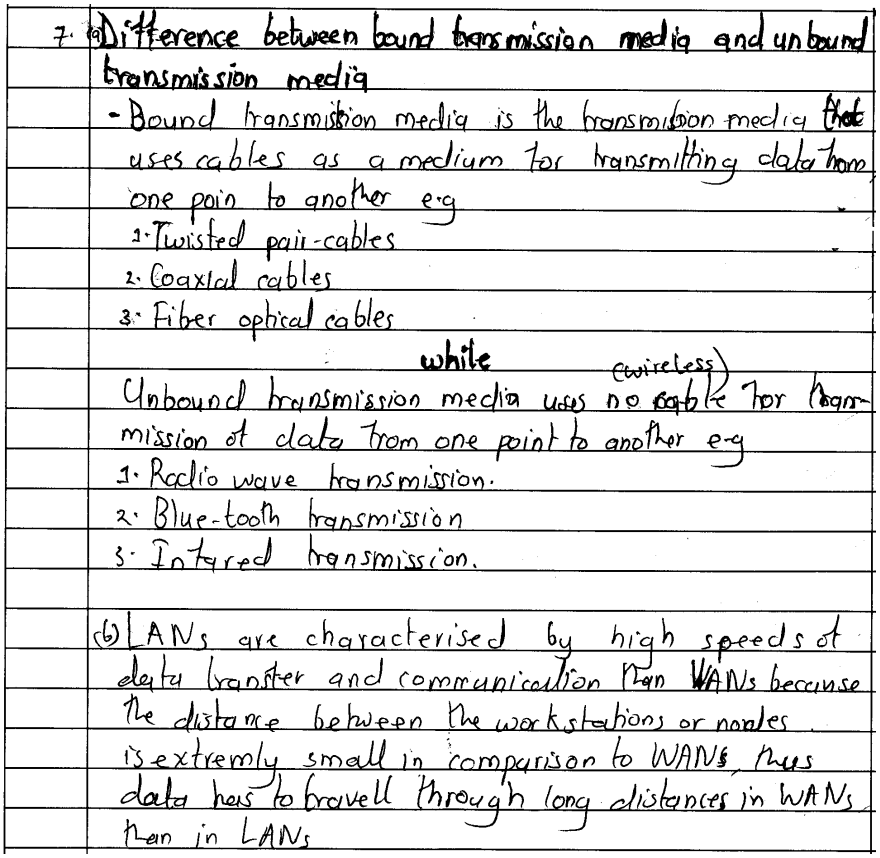
7 (b) This is because LANs operate on a local area, due to this less work is needed since there are few devices or nodes.

Extract 7.1 shows a response from a candidate who wrote the difference between modern ways of transmission and traditional ways instead of bound and unbound transmission media. The candidate had an idea that LANS cover small area but failed to compare its speed with WANs.

On the other hand, 3.9 percent of the candidates who scored average marks gave the correct examples of bound transmission media such as coaxial cable, twisted pair cable as well as radio wave and microwave as examples of unbound media. Although they managed to give examples but they failed to give the correct explanation on the bound and unbound transmission media. Some of the candidates seemed to have an idea about transmission media in general but failed to understand that, the term bound transmission is the way of transmitting data by using cables which are tangible or have physical existence while unbound transmission media are the ways of transmitting data without using any cable that means wireless. Majority of the candidates wrote very short reason as to why LAN is characterized with high speed compared to WAN. For example one of the candidates wrote “LAN is used by few people while WAN accommodates a number of users”.

The candidates who scored high marks were able to give correct differences between bound and unbound transmission media but failed to give satisfactory reasons as why LANs are characterized by comparatively high speed than WANs. For example, one of the candidates wrote that "LAN tend to be used in small area such as home or school hence the number of users won't be high which make the flow of network fast compared to WAN". The correct reason was "LAN is typically comprised of one transmission media type such as Coaxial cable, or twisted pair or fiber optic within a specific confined space not exceeding 5km, like school, hospital, industry as compared to WAN which covers extremely large area with more than one transmission media involved" This shows that, the candidate had insufficient knowledge on transmission media used in computer networks. Extract 7.2 presents a sampled good response.

Extract 7.2


7. (a) Difference between bound transmission media and unbound transmission media

- Bound transmission media is the transmission media that uses cables as a medium for transmitting data from one pain to another e.g
1. Twisted pair-cables
2. Coaxial cables
3. Fiber optical cables

white (wireless)
Unbound transmission media uses no cable for transmission of data from one point to another e.g
1. Radio wave transmission.
2. Blue-tooth transmission
3. Infared transmission.

(b) LANs are characterised by high speeds of data transfer and communication than WANs because the distance between the workstations or nodes is extremly small in comparison to WANs, thus data has to travell through long distances in WANs than in LANs

Extract 7.2 shows a sample of a response of a candidate who managed to provide the correct answers in almost all parts but failed to provide sufficient response on why LANs are characterized by comparatively high speed internet than WANs.

2.8 Question 8: Spreadsheet and Word processing

The question had three parts; (a), (b) and (c). Part (a) required the candidates to explain three components of electronic spreadsheet. In part (b), they were required to outline the three factors to be considered when choosing a word processor and in part (c) to explain how a document can be protected from unauthorized opening or altering.

A total of 1,949 (92.8%) candidates attempted this question, out of which 87.3 percent scored from 0 to 3 marks, 7.8 percent scored from 3.5 to 4.5 marks and 4.9 percent scored from 5 to 10 out of 11 marks. Table 2 shows the scores with their corresponding percentages of the candidates.

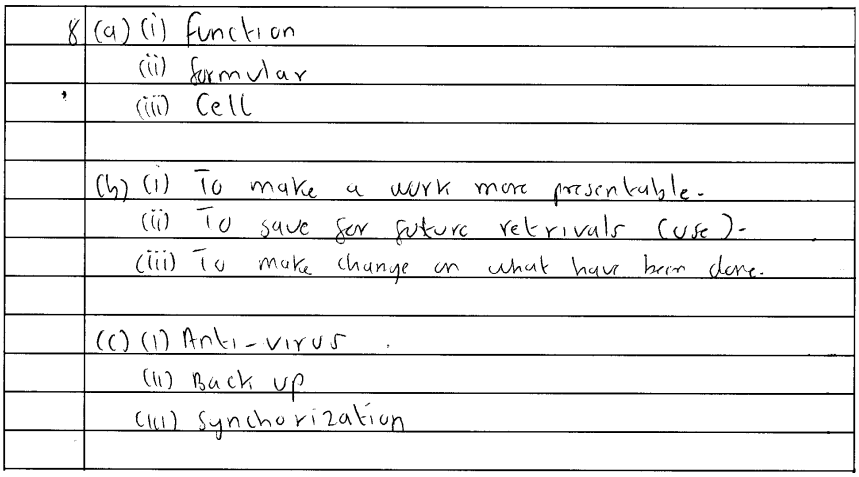
Table 2

Candidates' Performances in percentages	
Scores	**Percent**
0-3	87.3
3.5-4.5	8.9
5-10	3.8

The general performance on this question was poor as 87.3 percent of the candidates performed poorly and is indicated in Table 2.

Some of the candidates who performed poorly (0 to 3) wrote the features of spreadsheet such as *cell, menu bar* and *formula bar* as components of electronic spreadsheet instead of worksheet/workbook, database and graphs/charts. Other candidates wrote *speed, type of processor and cost* as factors to be considered when choosing a word processor. The correct factors were the type of operating system, user friendliness and its editing/formatting features. They managed to mention password as the method of protecting a document from unauthorized person but gave wrong explanations. Extract 8.1 represents a sample of poor answer in this question.

Extract 8.1



Extract 8.1 shows a sample of a response of a candidate who wrote function and formula which are used to solve mathematical problems and not component of spreadsheet. He/she also gave the ways which cannot protect a document from unauthorized opening.

Some of the candidates with average performance were able to mention the components of electronic spreadsheet but failed to give explanations. Other candidates managed to give one or two factors to be considered when choosing a word processor. In the last part several candidates wrote the answer as password without giving any details, which led them to score less marks. The correct answer was the use of password/PIN/Encryption with the explanations "A password is a combination of characters that prevents other users from accessing/ changing a document without permission. If a document is protected by a password, only the person who knows the password can open the document or edit it".

Further analysis shows that, few candidates (3.8%) scored high marks. Some of these candidates were able to mention and explain components of spreadsheet program, factors to be considered when choosing a word processor as well as explaining how to protect a document from unauthorized opening or altering. Some of the factors for choosing a word processor that were mentioned are; operating system, user friendliness and its editing/formatting features were mentioned as factors required for choosing word processor. This shows that, the candidates had an adequate knowledge on word processing and spreadsheet program. Extract 8.2 provides a sample of a good response which was provided by a candidate on this question.

Extract 8.2

8 a) i) Worksheet

This is the work area of a spreadsheet. It is made up of columns and rows which have letters and numbers respectively. An intersection between a row and a column is known as a cell. Each cell is identified by a column and row header. This is where data is entered.

ii) Database

This is a structred collection of related data. These data are arranged in a manner that is easier for the user to access.

iii) Charts

This refers to the graphical presentation of data in a spreadsheet. Types of charts include line charts, column charts, bar charts and pie charts.

b) i) One should consider the type of the operating system. For instance Microsoft Word is suitable for Windows OS.

ii) The available editing and formating features should be considered.

iii) One should consider the purpose that makes him choose the word processor example if it is to write letters.

c) • Using a secure password can help protect a document. for example the password should have both uppercase, middlecase and lowercase letters so that it can not be guessed easily

• Also, the document can be encrypted into codes that only authorized user can understand. Hence even if an unauthorized person gain access, he or she will not understand or alter it

Extract 8.2 shows a response of a candidate who managed to provide correct components of spreadsheet (worksheet, chart and database) and ways of protecting document but provided incorrect answer in part(b) (iii).

2.9 Question 9: Web Developments

This question had two parts, (a) and (b). The candidates were required to:

(a) State the reason why the content of the web page need to be written between the <body> and </body> tags

(b) Show the output of the following HTML codes

```
<html>
<body>
Congratulation for opting computer studies
<h1>
<OL>
<LI>Age<LI>Telephone<LI>Address
</OL>
My favorable subjects are
<UL type=”square”>
<LI> Computer studies
<LI> Mathematics and
<LI> English <br>
<INPUT TYPE=”SUBMIT” NAME=”SUBMIT” VALUE=”Submit”>
           
<INPUT TYPE=”SUBMIT” NAME=”SUBMIT” VALUE=”Exit”>
</body></html>
```

The question was attempted by 1,773 (84.4%) candidates, out of which 49.7 percent scored from 0 to 2 marks, 20.8 percent scored from 2.5 to 3.5 marks and 29.5 percent scored from 4 to 8 marks. Table 3 summarized the data on the performance of the candidates.

Table 3

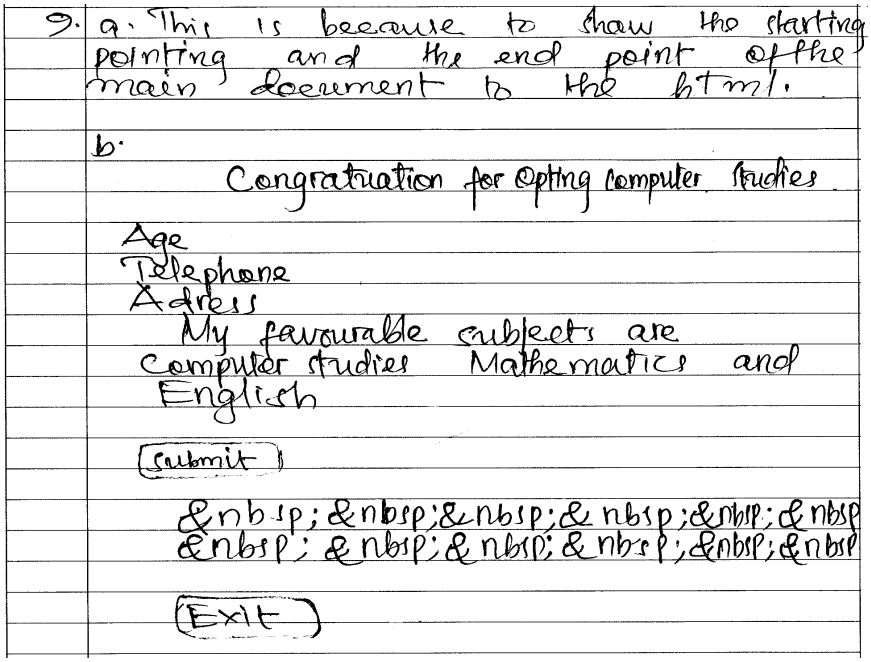
Candidates’ Scores and percentages

Scores	Percent
0-2	49.7
2.5-3.5	20.8
4-8	29.5

Table 3 shows that 60.7 percent of the candidates scored low marks (0 to 2.5), therefore the performance in this question was average.

The analysis shows that, 49.7 percent of the candidates performed poorly. Some of the candidates wrote that, “HTML codes must be written between <body> and </body> tags” in part (a) but failed to give the reason. Other candidates explained the importance of opening and closing tags. These candidates failed to recognize that the web browser displays only contents which are written between <body> and </body> tags otherwise the content cannot be displayed on the page. In part (b), candidates wrote their personal details that is age, telephone number and address instead of showing the output of ordered list of age, telephone and address as well as unordered list of favorable subjects and submit buttons. This indicates that, the candidates lacked practical skills and failed to understand the requirement of the question. Extract 9.1 shows a sample of a poor response provided by one of the candidates.

Extract 9.1

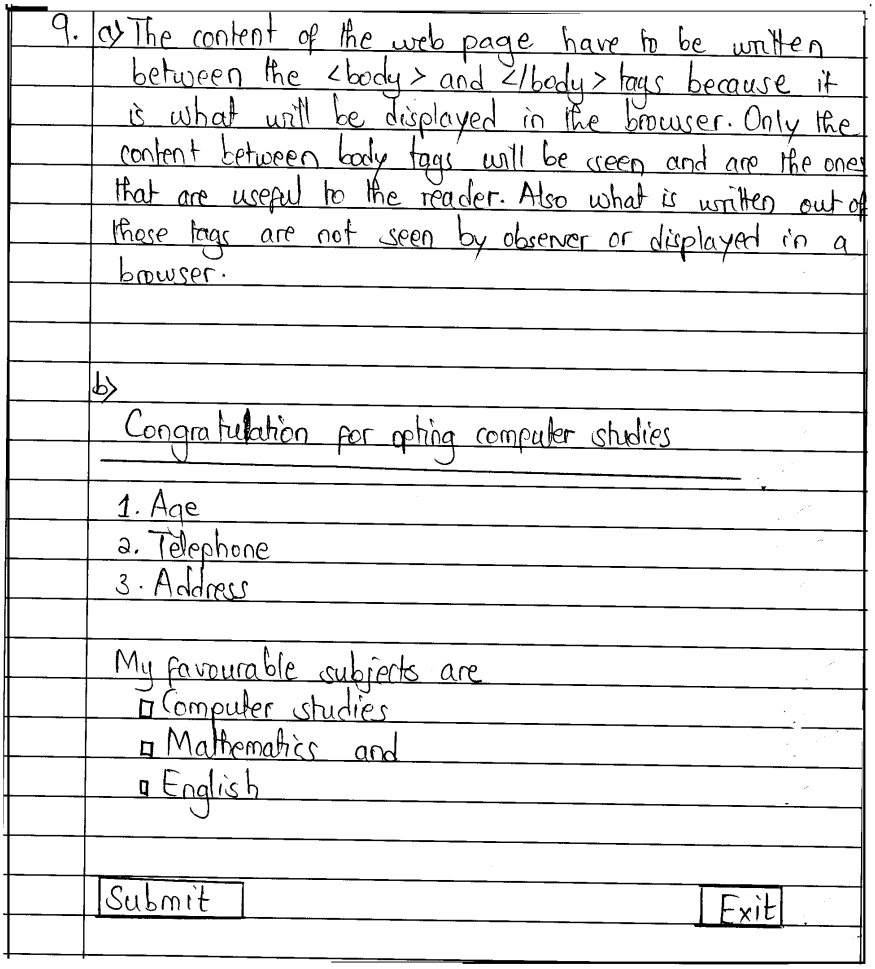


Extract 9.1 shows a sample of a candidate’s response who wrote age, telephone and address without interpreting the ordered (OL) and unordered list (UL) codes. He/she managed to give the submit buttons but failed to arrange them on the same line.

Some of the candidates who scored average marks explained correctly that web browser displays only the contents which are written between <body> and </body> tags in part (a). They also managed to give the output such as: My favorable subjects are, Congratulation for opting computer studies and horizontal line but failed to write the ordered and unordered list.

On the other hand, the candidates who scored high marks were able to give a reason why the content of the webpage are written between <body> and </body> tags. Most of them managed to give the output of the given HTML tags by showing the heading, horizontal line and both the ordered and unordered list correctly but some failed to distinguish between underline and horizontal line required. The problem was also observed on arranging submit buttons. The codes given shows that, the buttons should lay on the same line but the candidates' drew them on different line, this might be attributed to wrong interpretation of codes. Extract 9.2 is a sample of a good response in this question.

Extract 9.2



Extract 9.2 provides a sample of an answer from a candidate who wrote that, browser displays only the contents which are written between <body>tags. He/she also managed to give correctly the horizontal line, ordered list (1, 2 and 3), unordered list (square) as well as submit and exit buttons.

2.10 Question 10: Impact of Information and Communication Technology on the Society.

This was an essay type question which required the candidates to describe four computerized banking services available today.

The analysis shows that, 905 (43.1%) candidates attempted this question, out of which 34.6 percent scored from 0 to 2.5 marks, 16.6 percent scored from 3 to 4 and 48.8 percent scored from 4.5 to 10 marks. Figure 8 illustrates the candidates' performance in this question.

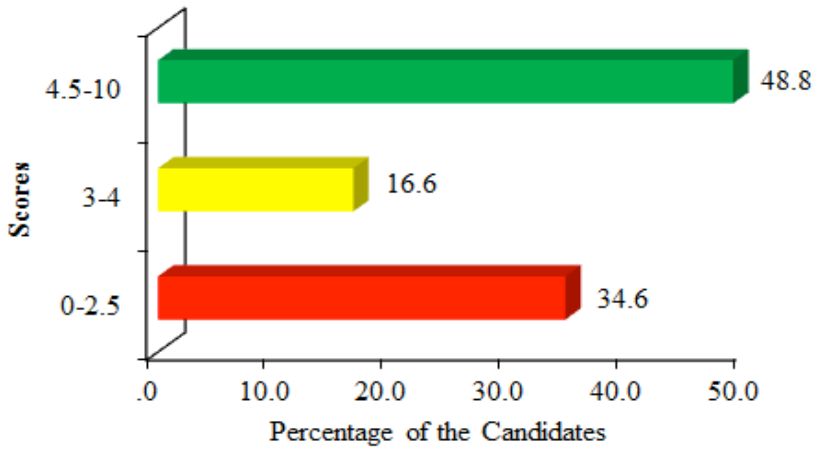


Figure 8: The candidate's performance in question 10.

Figure 7 shows that, 65.4 percent of the candidates scored from 3 to 10 marks and therefore the performance in this question was good.

Most candidates (48.8%) scored high marks because they managed to describe correctly four computerized banking services available today. Some of the banking services they described includes; *the use of Automatic Teller Machine (ATM), e - banking, SIM banking* and *e – Commerce*. However, some of the candidates failed to score full marks because they were not able to provide detailed explanations. Extract 10.1 shows a sample of a relatively good response.

Extract 10.1

Banking Industry as the earliest consumer of ~~app~~ ICT (Information and Communication technology) has develop ed faster among other sectors. The Banking systems that were once done manually and were not so sufficient have improve d in providing their services in 24 hours 7days now. The follow ng are some computerized banking services available today

Processing customers transactions; By the presence of the Automated Teller Machine (ATM) that works 24/7, the customer are able to withdraw and deposit money at any time of the day, and the banks are able to maintain customers withdrawals, deposits and savings accounts.

Cheque clearing and processing; The cheques are cleared and processed by the use of Magnetic Ink Character Recognition (MICR) machine which can read any ink magnetized on checks/cheques, hence one can use their cheque to deposit money in their account after it is electronically transferred in the computer from the cheque.

Electronic Fund Transfer (EFT); It involves the transmi ssion of money from one account to another account electronica lly. This computerised banking service has enabled the use of credit cards when purchasing goods without cash in hand while by banking through EFT.

Mobile Banking; It involves the accessing of bank accounts through mobile phones. The individual customer is able to purchase goods after getting money from his/her accou t in cash and uses it to pay the bills and purchase goods. Example safari-com which has invoted the M-pesa which is an online banking through the use of a mobile phone between customer and sellers accounts.

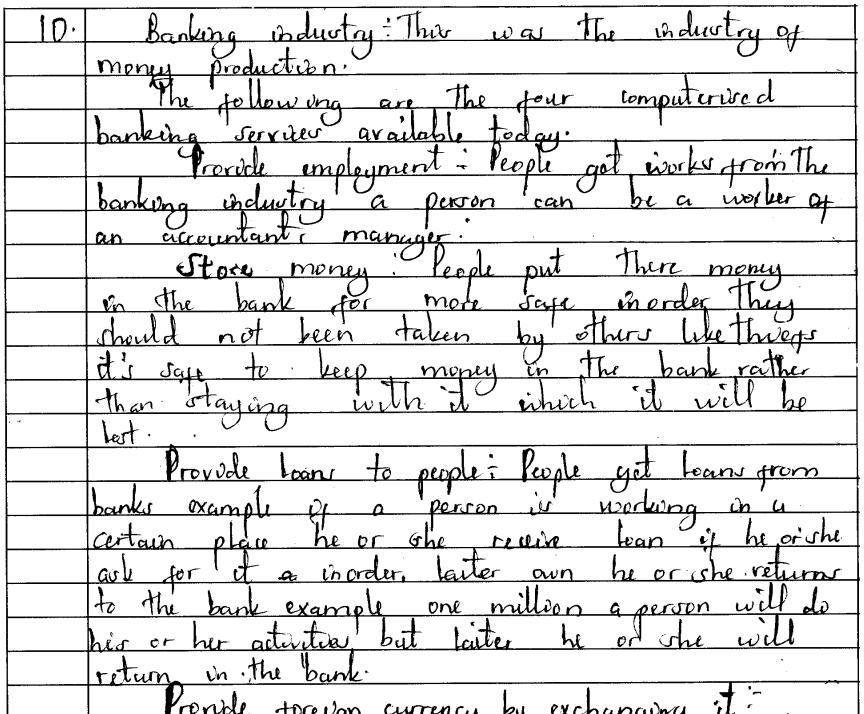
Therefore the Information and Communication technolog has developed the banking services and plays many role like Internet banking, purchasing goods through EFT electroni c fund Transfer and clearing and processing of cheque by the computerized machine (MICR) Magnetic Ink Character Recognition

Extract 10.1 shows that, the candidate managed to describe correctly the computerized banking services such as cheque clearing and processing as well as mobile banking but failed to give clear introduction.

Most of the candidates who scored average marks (3 to 4) managed to mention some computerized banking services such as Automated Teller Machine (ATM), e-banking and SIM banking but failed to give exhaustive descriptions of these services. Some of them got correctly on the ATM and SIM banking only.

Further analysis shows that, some of the candidates who scored low marks were able to explain only the Automated Teller Machine (ATM) service. This might be due to the fact that the ATMs are commonly used in the society. Some of the candidates mentioned types of commercial banks such National Bank of Commerce (NBC), Cooperative and Rural Development Bank (CRDB) and National Microfinance Bank (NMB) which operate by using computers. Other candidates mentioned services offered in banks such as *loans, deposit* and *withdraw*. These candidates lacked adequate knowledge of computerized banking services such as Internet banking, mobile banking, Electronic fund transfer and processing of customer transactions. Extract 10.2 presents a sample of a poor response which was provided by one of the candidates.

Extract 10.2


10. Banking industry: This was the industry of money production.
The following are the four computerized banking services available today.
Provide employment: People get works from the banking industry a person can be a worker of an accountant, manager.
Store money: People put there money in the bank for more safe in order they should not been taken by others like thieves it's safe to keep money in the bank rather than staying with it which it will be lost.
Provide loans to people: People get loans from banks example if a person is working in a certain place he or she receive loan if he or she ask for it ~~a~~ in order, latter own he or she returns to the bank example one million a person will do his or her activities but latter he or she will return in the bank.
Provide foreign currency by exchanging it:

Extract 10.2 shows a sample of a response of a candidate who wrote the advantages of banks such as store money and loans giving instead of explaining the computerized services as required.

2.11 Question 11: The Internet

The candidates were required to explain four factors that affect the speed of Internet connections.

The question was attempted by 1,426 (67.9%) candidates, out of which 70.7 percent scored from 0 to 2.5 marks, 13.2 percent got from 3 to 4 marks and 16.1 percent scored from 4.5 to 10 marks. Figure 9 shows the performances in this question.

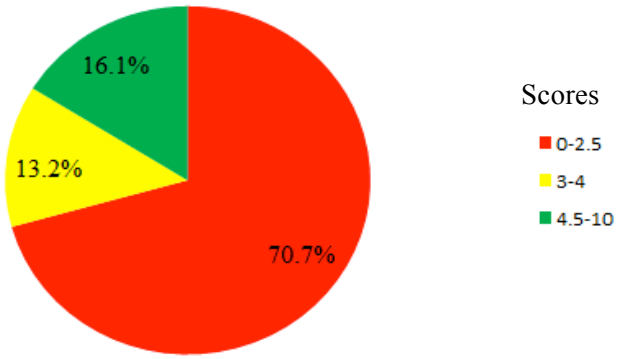


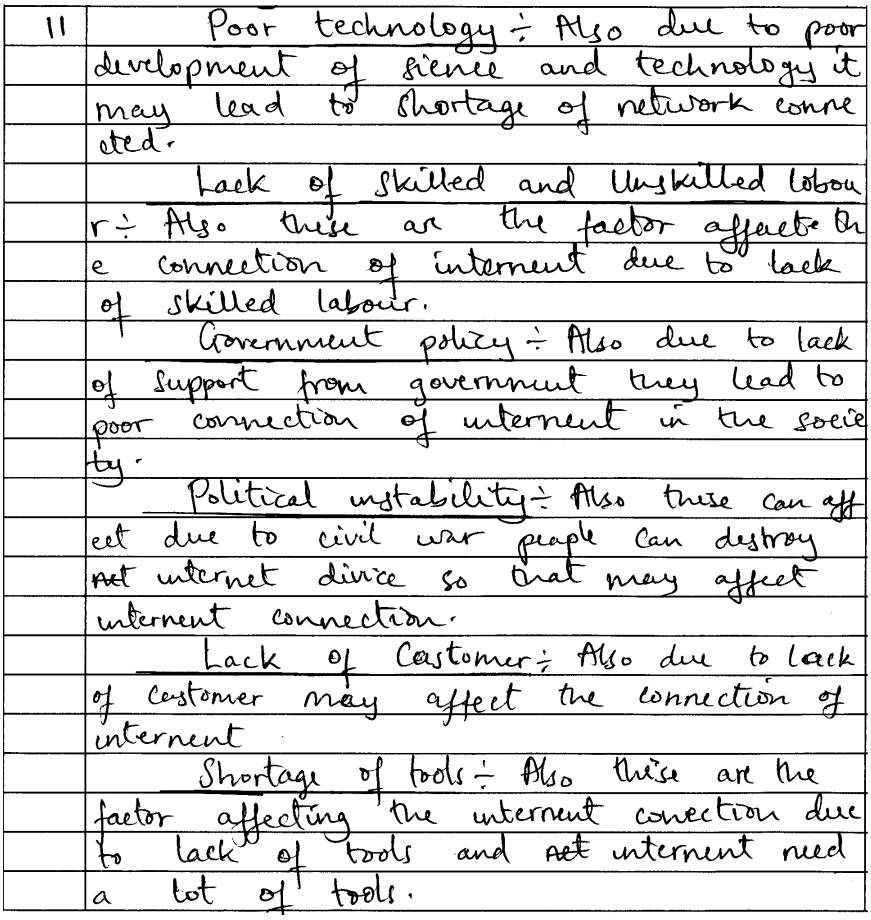
Figure 9: The candidates' performance in question 11.

The performance of the candidates showed in Figure 8 shows that, the candidates performed poorly in this question as 70.7 percent of the candidates scored below 3 marks.

Some of the candidates who scored low marks wrote the advantages of Internet as *efficiency communication, money transfer* and *e-learning*. Other candidates managed to give the correct factors such as the distance the data travels and climatic condition but failed to give the correct explanations. Extract 11.1 is a sample of such poor responses.

Extract 11.1

11	Internet is the conection of outnwos
	that implement open of protocols and
	standard or is the network of network.
	The following are the factor affect the
	speed of Internet conection ÷
	Financial problem ÷ Also due to lack
	of enough money they can lead to affe
	ct of internet connection. due to internet
	nee money in order to connected.



Extract 11.2 presents a sample of a response of a candidate who wrote the limitations of Internet instead of factors that affect the speed of the internet connections. This indicates that, the candidate failed to understand the requirement of the question.

On the other hand, most of the candidates who scored average marks (3 to 4) provided the factors affecting the speed of the Local Area Network (LAN) instead of wide coverage of internet connections that include intranet and extranet. The candidates' response implies that the candidates failed to differentiate the term LAN from Internet that means (WAN). The candidates were supposed to understand that, WAN is the interconnection of Local Area Network worldwide. The following are the examples of the factors that were provided by some of the candidates:

Number of computers connected to the network: *if the number of computers is high then the speed of network tends to be slow and vice versa is true.*

***Type of the cable used to connect to the network**, different cables have different rates of transferring data example fiber optic cable is mostly likely to have high rate of transferring data than other cable.*

Some of the candidates (16.1%) who performed well were able to give satisfactory explanations on the factors that affect the speed of the internet connections. Such factors include; computer virus, modem speed and flood or whirlwind. However, other candidates could not score full marks because they could not provide exhaustive explanations. This shows that, the candidates had adequate knowledge on the materials taught under the topic of internet. Extract 11.2 shows a sample of a good response provided by one of the candidates.

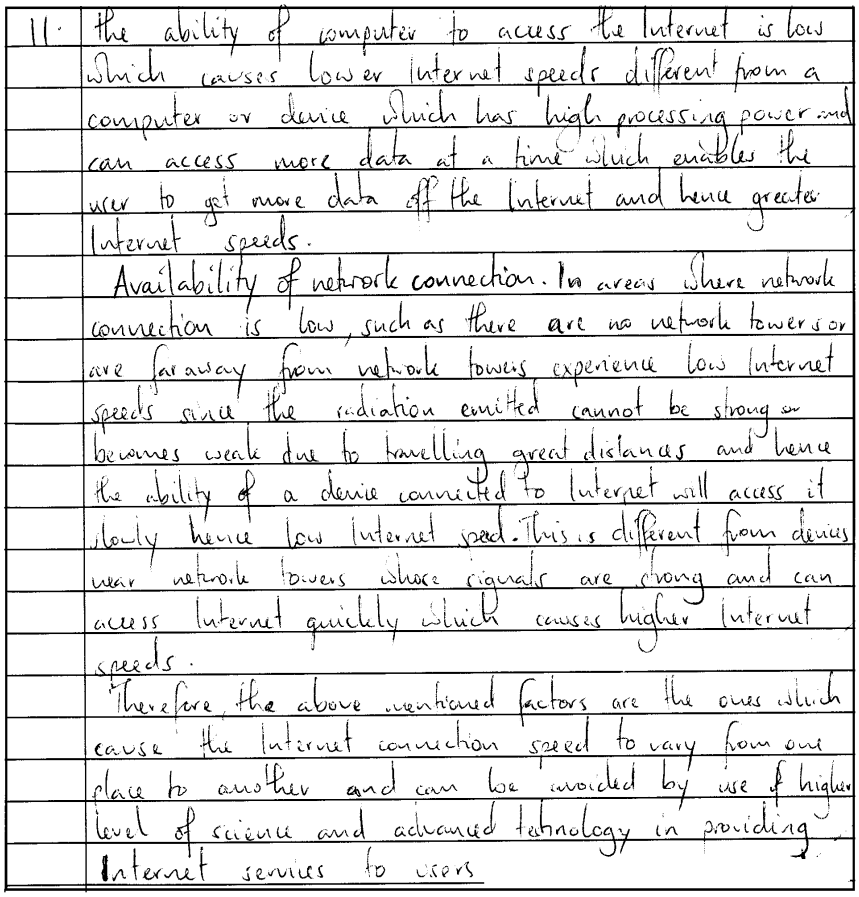
Extract 11.1

11. Internet is a large interconnection of networks from all over the globe which enables giving, receiving and also sharing of data and resources from one device(s) on the network to another device on any other network connected to the Internet. The giving and receiving of data to and from Internet depends much on speed of transmission. The Internet speed determines the time to be used to access or give data on the Internet. The factors which affect the speed of Internet connection are briefly explained below.

Cloud cover or climate. The weather condition of a place greatly determines the speed of Internet connection since the Internet is accessed through radiations sent to and received from the satellite. If there is cloud cover in a particular area, then that area will experience lower Internet speeds due to the radiations being trapped or obscurred from reaching the satellite and back, different from clear sky area which will have higher Internet speed.

Bandwidth of transmission media. The media used to connect to the internet determines the Internet connection speed since those devices connected to Internet through cables, which have lower bandwidth than wireless transmission media, will not be able to access the Internet if there are many other devices accessing the Internet at the same time and are connected to the same cable. Contrary to devices which access the Internet wirelessly which can access it simultaneously with other devices using the same wireless connection which is possible due to high bandwidth of the wireless media.

Processing speed of computer. A computer that has a low processing power can process less data at


11. the ability of computer to access the Internet is low which causes low Internet speeds different from a computer or device which has high processing power and can access more data at a time which enables the user to get more data off the Internet and hence greater Internet speeds.
Availability of network connection. In areas where network connection is low, such as there are no network towers or are far away from network towers, experience low Internet speeds since the radiation emitted cannot be strong or becomes weak due to travelling great distances and hence the ability of a device connected to Internet will access it slowly hence low Internet speed. This is different from devices near network towers where signals are strong and can access Internet quickly which causes higher Internet speeds.
Therefore, the above mentioned factors are the ones which cause the Internet connection speed to vary from one place to another and can be avoided by use of higher level of science and advanced technology in providing Internet services to users

Extract 11.1 shows a sample of a response of a candidate who explained correctly the four factors affecting the speed of internet connections, however he/she failed to score full marks because the conclusion given was not proper.

2.12 Question 12: Multimedia

This question required the candidates to describe four application areas of multimedia in the society.

A total of 1,641 (78.1%) candidates attempted this question, out of which 26.8 percent scored from 0 to 2.5 marks, 19.2 percent scored from 3 to 4 marks and 54.1 percent scored from 4.5 to 10 marks. Figure 10 summarized these data.

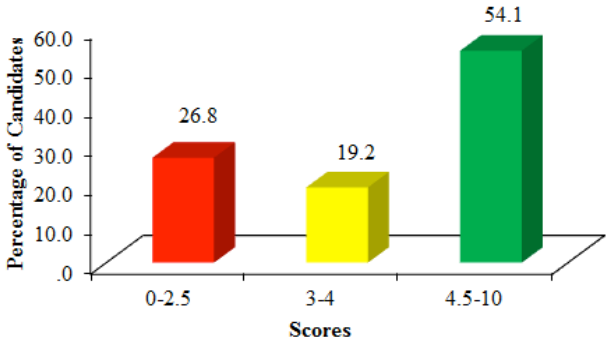


Figure 10: The performance of candidates in question 12.

The performance of the candidates was good as 73.3 percent of the candidates scored from 3 to 10 marks as shown in Figure 10.

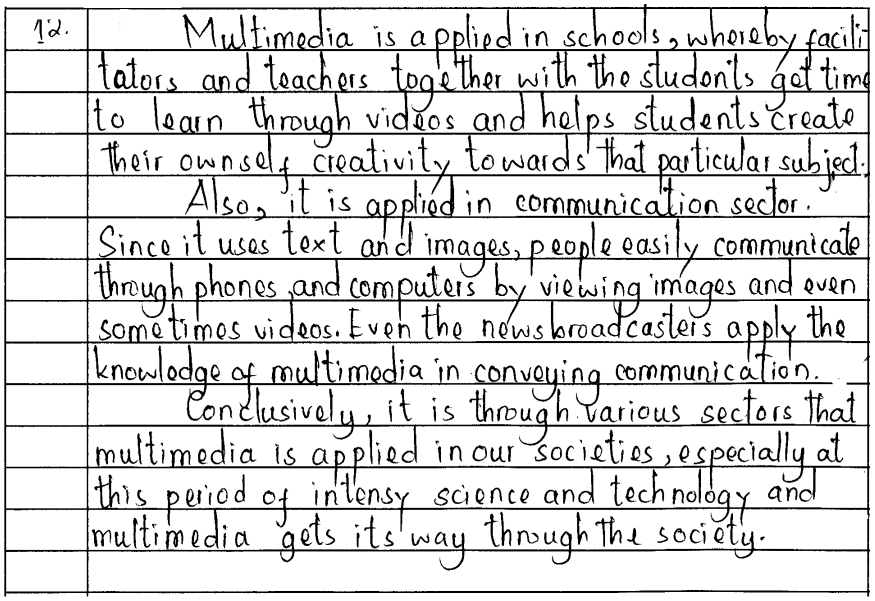
The candidates who performed well (4.5 to 10) in this question were able to describe correctly four areas where multimedia is applicable in the society. The common areas described by the candidates include; *education, engineering, entertainment and medicine*. Such good performance might be attributed by the fact that, multimedia is currently applicable in many areas in the society. However, it was noted that, some of the candidates could not provide detailed explanations and exhaustive conclusion and hence lost some marks. Extract 12.1 is a sample answer from a candidate who gave a good response in this question.

Extract 12.1

12. Multimedia refers to the use of text, videos images and graphics. Multimedia combines all these objec so as to bring about one thing, it is grouped into linea where a person controls the operation such as computer games and non-linear whereby a user is out of control of the operation such as Television programs. The following are the application area of multimedia in the society.

Multimedia is applied in film industries. Due to its basic components, then it is applied in making movies, films, music as a result of combining image, videos and graphics.

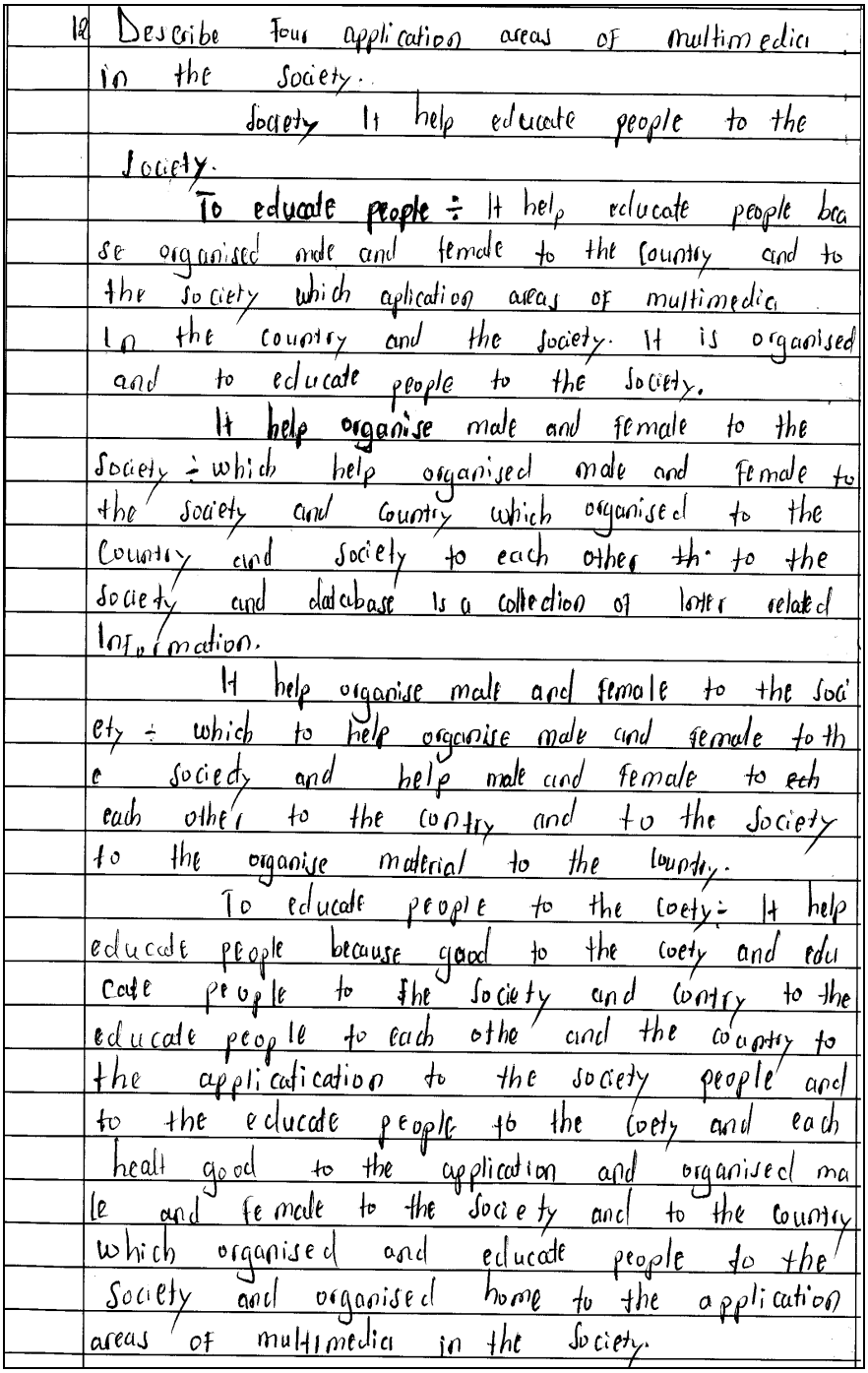
It is used in entertainment. Also people refresh thraugh multimedia components which can either be a movies music and even video, that enables one's mind to get refreshed.



Extract 12.2 is a sample of a response of a candidate who provided correct descriptions of the applications of multimedia in the society. This shows that, the candidate had an adequate knowledge.

The analysis carried out in the candidates script shows that, some of the candidates who performed poorly (0 to 2.5) were able to give correctly the introduction. It was observed that, some of them explained the role of multimedia devices such *as* TV and Radios. For example one of the candidates wrote that, *multimedia help to spread information.* Other candidates described multiple forms of information content and information processing (e.g. text, audio, graphics, animation and video) instead of describing the areas where multimedia is applicable such as education, engineering, commercial, entertainment, industry, medicine and scientific research. This shows that, the candidates had insufficient knowledge on multimedia. Extract 12.1 shows a sampled poor response.

Extract 12.1



12 Describe four application areas of multimedia in the society.

society It help educate people to the society.

To educate people ÷ It help educate people because organised male and female to the country and to the society which application areas of multimedia In the country and the society. It is organised and to educate people to the society.

It help organise male and female to the society ÷ which help organised male and female to the society and country which organised to the country and society to each other th. to the society and database is a collection of later related information.

It help organise male and female to the society ÷ which to help organise male and female to the society and help male and female to each each other to the country and to the society to the organise material to the country.

To educate people to the coety ÷ It help educate people because good to the coety and educate people to the society and country to the educate people to each othe and the country to the applicaticationation to the society people and to the educate people to the coety and each healt good to the application and organised male and female to the society and to the country which organised and educate people to the society and organised home to the application areas of multimedia in the society.

Extract 12.1 shows a sample of a response of a candidate who gave explanations based on advantages of multimedia instead of pointing out areas where multimedia is applicable in the society.

On the other hand, 19.2 percent of the candidates scored average marks. The analysis indicates that, some of these candidates explained only application of multimedia in entertainment and failed to expand their knowledge on other areas where multimedia

is applicable. For example, some of the candidates wrote that multimedia is applied in sports and games, watching movies, listening music, video production and audio recording, playing games at home, cinema show, wedding and ceremony.

3.0 ANALYSIS OF THE CANDIDATES' PERFORMANCE PER QUESTION IN PAPER 2

3.1 Question 1: Database as Information System

In this question the candidates were given Table1 on Library Books and Table 2 on Borrowers and were required to answer the question that follow:

Table 1: Library Books

Code number	Tittle	Authors name	Book returned (Bb)	Borrower number	Date due Back
142	Kalulu	S.Tott	Bb	1230	20 Oct 2011
820	ICS book one	S.Mburu	Bb	1420	6 Apr 2011
403	Comp Science	T.Chemwa	Br	642	2 May 2011
500	B/Maths	TIE	Br	462	2 May 2011

Table 2: Borrowers

Borrower number	Borrowers Name	Borrower Address	Borrowers' Phone Number
1230	Leah Mud	P.O.Box 234, Lindi	065-437328
1420	John Komgo	P.O.Box 56, Dar Es salaam	077-126798

The questions were:

(a) Create a table of books called L**ibrary Books** from the information given in Table1.

(b) Create another table of Borrowers called **Library Borrowers** from information given in Table 2.

(c) Sort the records in part (a) in ascending order of borrowers' number.

(d) Create a query called **"greater than 1000"** with fields: Code number, Title, Name of author, Book returned and Date Due Back, showing Borrowers' numbers that are above 1000.

(e) Create a query, showing only books returned (Br) and the name of the author and save query as **"Br query"**.

(f) Create a relationship between the tables created above.

(g) Create a report of Library Borrower created in part (b) and name the report as **"Borrowers report"**.

(h) Insert the current date as the header of the report in part (g).

(i) Create a form which includes the current date and time using the table created in part (a) and save the form created as **"Books form"**.

The question was attempted by 1,695 (81%) candidates, out of which 14.2 percent scored from 0 to 7 marks, 8.3 percent scored from 7.5 to 11 marks and 77.6 percent scored from 11.5 to 25 marks. The performance of the candidates in this question is shown in Figure 11.

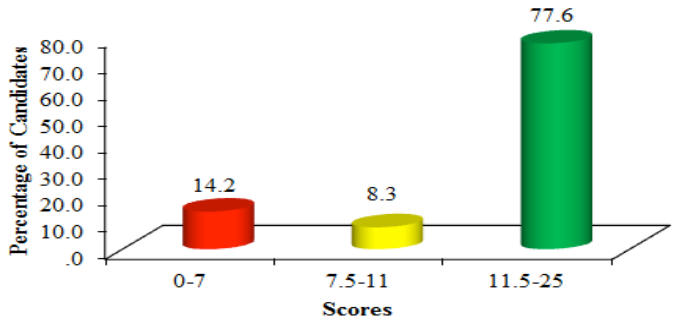
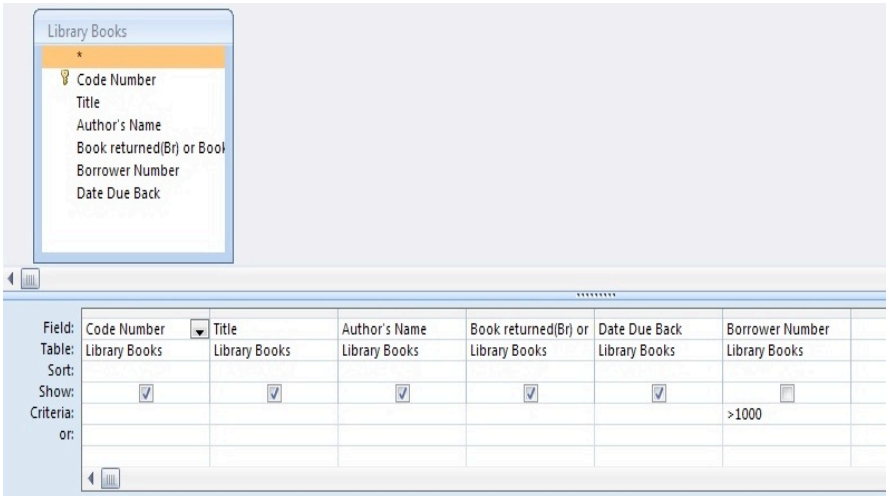


Figure 11: The candidates' performance in question 1.

Majority (77.6%) of the candidates who attempted this question managed to score high marks as shown in Figure 11. The candidates were able to create correctly the database as required, setting the criteria in both queries, creating the relationship and inserting date and time for both report and form. However, some of

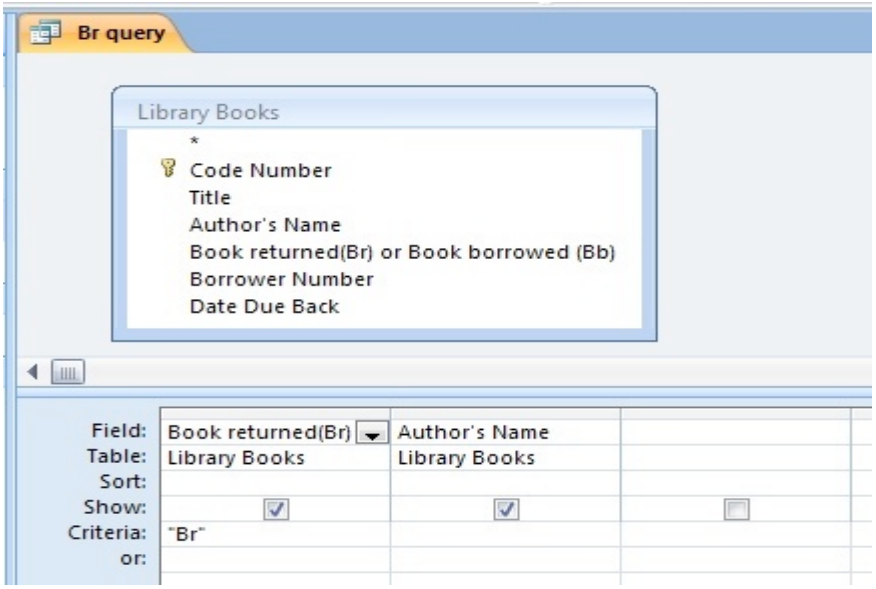
the candidates had problem in inserting fixed date in report and form. This shows that some candidates lacked sufficient knowledge in database manipulation. Extract 3.1.1 shows a sample of such good response.

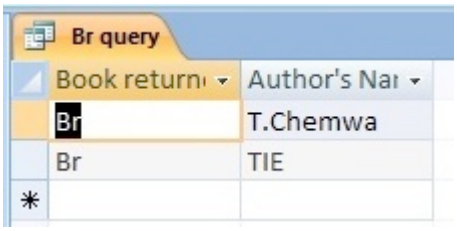
Extract 3.1.1



Extract 3.1.1 shows a sample of correct query “greater than 1000”.

Extract 3.1.2



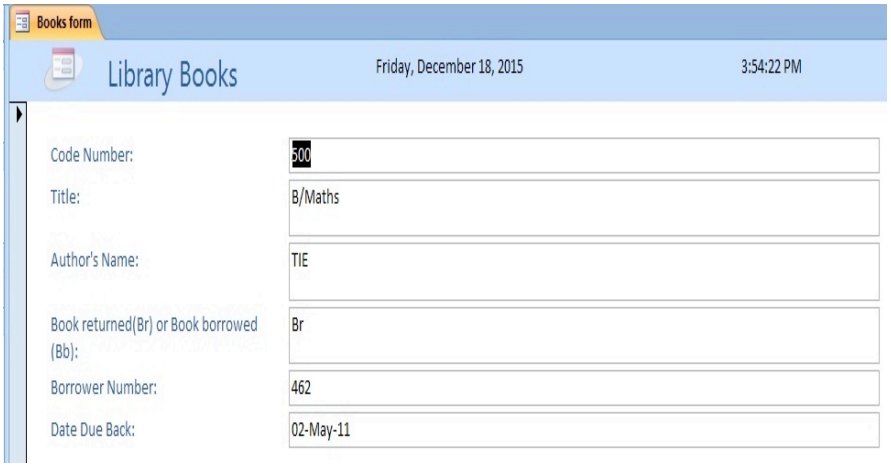


Extract 3.1.2 shows a sample of correct “Br query”.

Extract 3.1.3

Extract 3.1.3 shows a sample of good report.

Extract 3.1.4

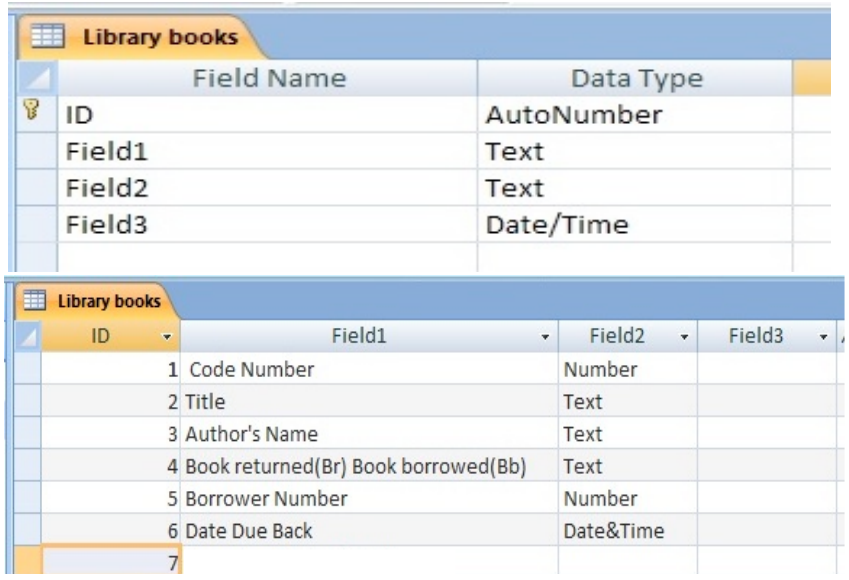


Extract 3.1.4 shows a sample of good report.

Some of the candidates who scored low (0 to 7) marks were able to create the database and give the appropriate data types for few fields. Some of the candidates failed to create queries, relationship, report and form. The problem was also observed in poor saving of the created database as some of them saved their files as shortcut. Further analysis shows that, few candidates who scored a zero

mark in this question used Microsoft excel and Microsoft word to create tables instead of using Microsoft access. These candidates lacked practical skills. Extract 3.1.5 below shows a sample of poor response for this question.

Extract 3.1.5



Library books

Field Name	Data Type
ID	AutoNumber
Field1	Text
Field2	Text
Field3	Date/Time

Library books

ID	Field1	Field2	Field3
1	Code Number	Number	
2	Title	Text	
3	Author's Name	Text	
4	Book returned(Br) Book borrowed(Bb)	Text	
5	Borrower Number	Number	
6	Date Due Back	Date&Time	
7			

Extract 3.1.5 shows the response from a candidate who could not manage to create the correct field in the database design view and he/she typed the titles of the table as the entries.

3.2. Question 2: Web Development

The candidates were required to use HTML codes to design a four pages website about personal information and answer the following questions.

(a) Create a home page for your personal information with navigation links to all other pages and a moving marquee heading:
WELCOME TO XXX'S WEBSITE, where XXX is your Examination number.

(b) The other three pages should be as follows:
(i) Page I: **Bio-Data** i.e. Date of birth, Nationality and Languages spoken.

Other descriptions are:

- Use bullets to list the languages spoken.

- The heading shall be "Welcome to XXX'S Bio-data".
- The link name shall be "Bio-data".
- Arrange your Bio-Data in a proper order. For example
  My Examination number: S.0309/25
  Date of Birth: 12/3/1989

(ii) Page II: **Educational Background** i.e. a table with border five (5) which shows a period of attendance and qualifications acquired.

Other descriptions are:

- The heading shall be "My educational background".
- Use "Educational" as the link name for this page.

(iii) Page III: **Responsibilities Held** i.e. a bulleted list of two responsibilities held e.g. Monitor and Head prefect.

Other descriptions are:

- The heading shall be "Responsibilities held".
- Use the "Responsibilities" as the link name for this page.

NB:

- Use "Form Four examinations" as the title for all pages.
- Use silver as the background colour for all pages.
- Save your web folder as "XXX Website", and print out your codes.

(c) Copy and paste in Microsoft office word, the **educational background** page. Save as background word.

A total of 688 (32.9%) candidates attempted the question, out of which 36.3 percent scored from 0 to 7 marks; 8.2 percent scored from 7.5 to 11 marks and 55.5 percent scored from 11.5 to 25 marks. Figure 12 represents the perfomance in this question.

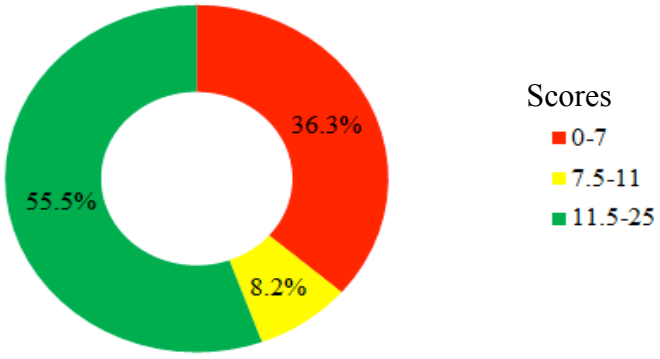
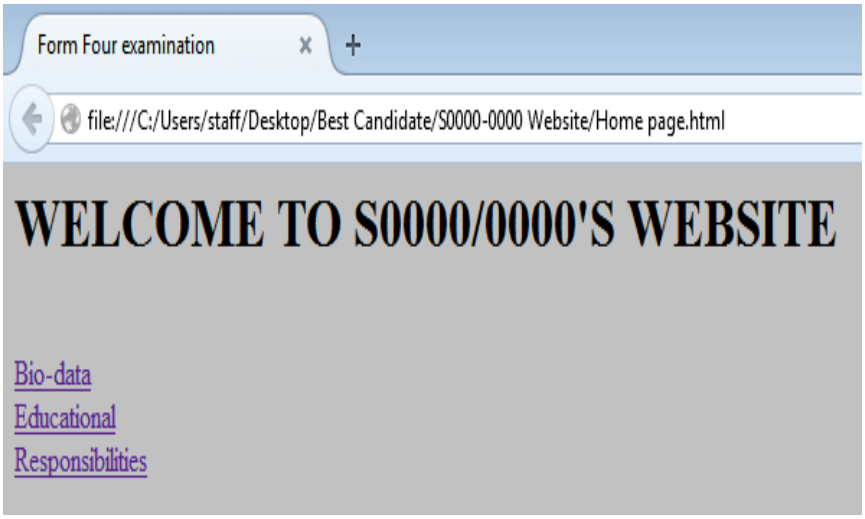
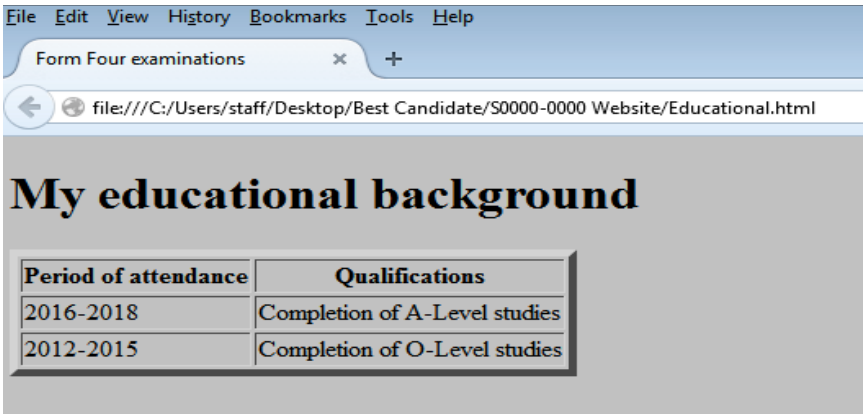


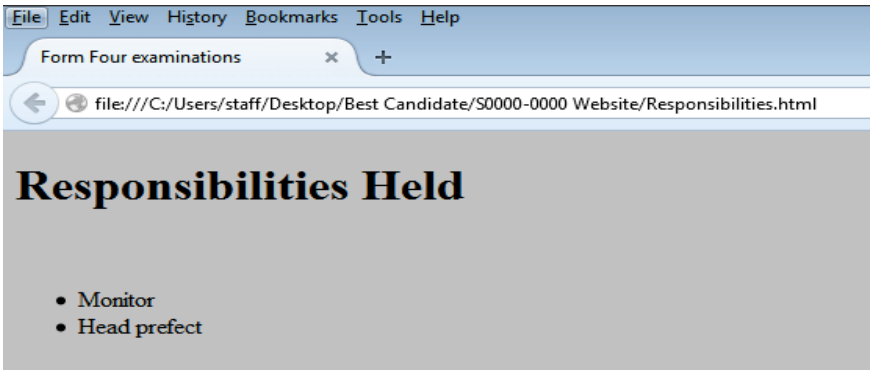
Figure 12: The candidates' performance in question 2.

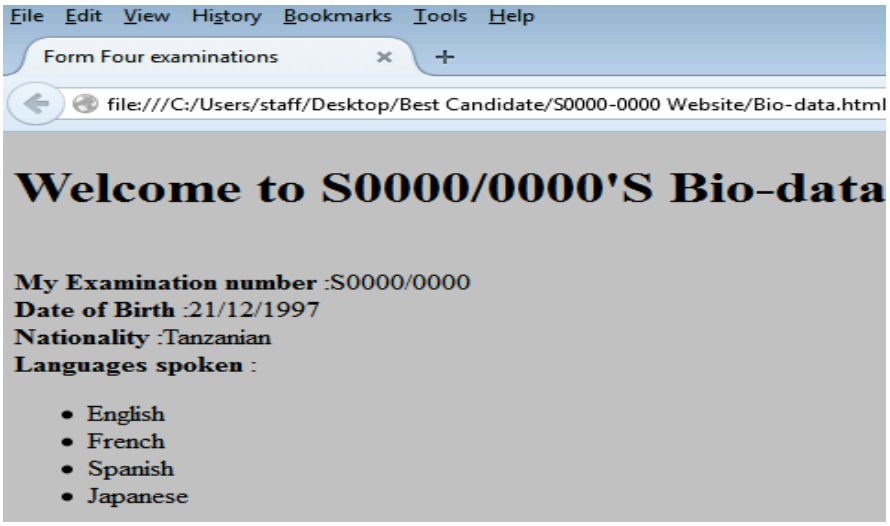
The general performance on this question was good as 55.5 percent of the candidates scored high marks. Most of them managed to write the correct HTML codes which displays the correct content for all pages and active links. However, some of the candidates faced some difficulties in creating bullet list in the responsibilities held page. Extract 3.2.1 shows a sample of good response in this question.

Extract 3.2.1







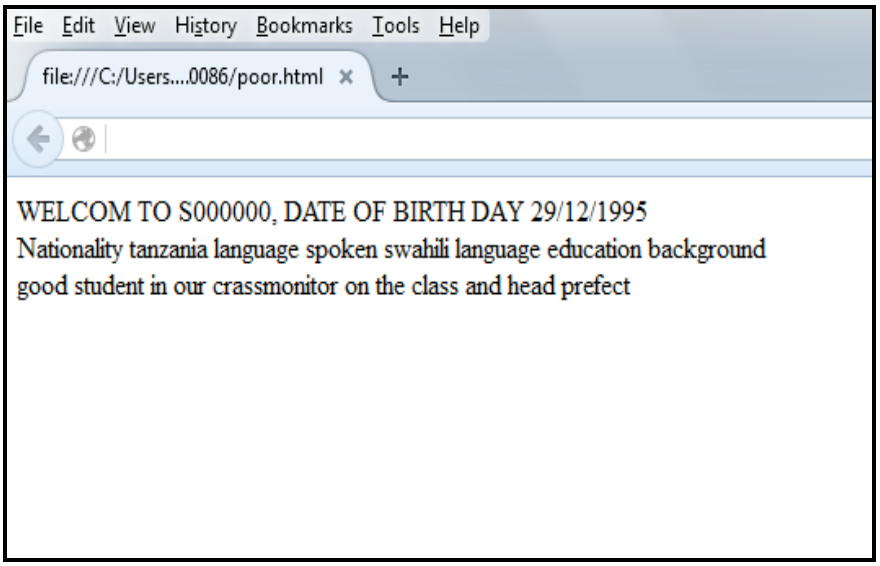


Extract 3.2.1 shows a sample of a response of a candidate who managed to create a home page with marquee effect, background color and active links (Bio-data, Educational and Responsibilities). He/she also created correctly the table in educational page and bullets in the responsibilities page.

On the other hand, majority of the candidates who scored average marks were able to create pages but failed to activate the links created in the home page. Some of the candidates wrote codes in the responsibility page which displays ordered list instead of unodered list. This might be attributed by lack of sufficient knowledge on <OL></OL> and <UL></UL> tags.

Further analysis shows that, the candidates who scored low marks created a home page which contains details of three pages. The candidates had knowledge on HTML codes but failed to understand the requirement of the question which led to score less marks. It was observed that, some of them failed to type the heading tags (h1-h6). For example, one of the candidates wrote <*head*> </*head*> as heading tags instead of <h1> </h1>. However, the candidates who scored zero mark used Microsoft Office Word, PowerPoint and Publisher to type codes instead of notepad. Extract 3.2.2 represents a sample of such poor response.

Extract 3.2.6



Extract 3.1.6 is a response of a candidate who failed to create heading with a moving marquee, links, bullets and Bio-data, Responsibility held pages. He/she typed few contents of three pages.

3.3 Question 3: Spreadsheet

Candidates were provided with a furniture shop that sells furniture to customers on credit. The credit terms request the customer to make a deposit of 25% of the furniture value. The balance after the

total deposit is paid in monthly installments over 24 months without interest.

The table below shows customers and furniture's credit values

	A	B	C	D	E	F
1	S/N	Customer Name	Furniture value	Deposit	Balance	Monthly Installments
2	1	Amour	85000			
3	2	Halima	55000			
4	3	Hussein	90000			
5	4	John	63500			
6	5	Baby	97500			
7	6	Ali	65800			
8	7	Kwangu	95900			

The questions were:

(a) Create a spreadsheet of the data above and save it as "Furniture".

(b) Make all titles bold and shade the cell background for titles in Tan colour.

(c) Format the monthly installments values to two decimal points.

(d) Use formula to calculate values for deposit, balance and monthly installments.

(e) Sort the worksheet in alphabetical order of names, save as furniture 2.

(f) Using sheet in (a) above, create a fully labelled ;

  (i) Column chart of customers names against monthly installments with the heading **monthly installments**.

  (ii) Line chart with the heading name **Balance** of customer names against customers' balances.

  (iii) Three dimensional pie charts of customer names against furniture values. Write the **customer values** as the heading of the pie chart created.

(g) Copy and paste in Microsoft office PowerPoint, the three dimensional pie chart created in part (f) (iii) above. Save as webpage presentation.

A total of 1,534 (73.3%) of the candidates attempted this question, out of which 42.6 percent scored from 0 to 7 marks; 14.8 scored from 7.5 to 11 marks and 42.6 percent scored from 11.5 to 25 Marks. Figure 13 represents the candidates perfomance in this question.

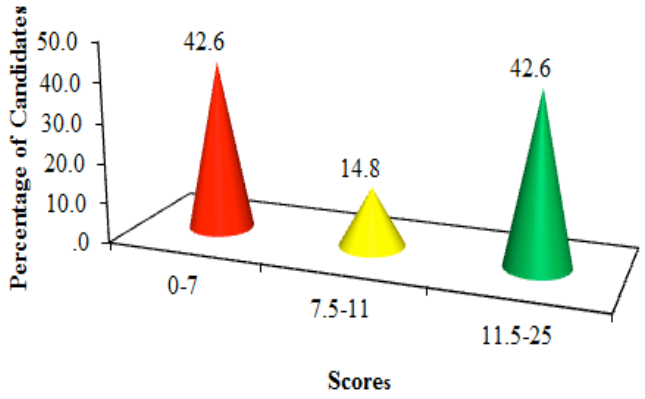
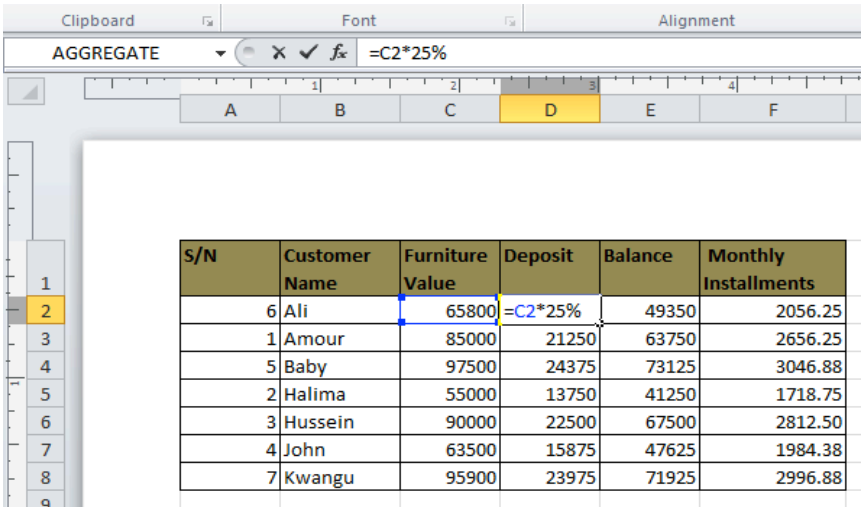


Figure 13 shows the perfomance of the candidates in question 3.

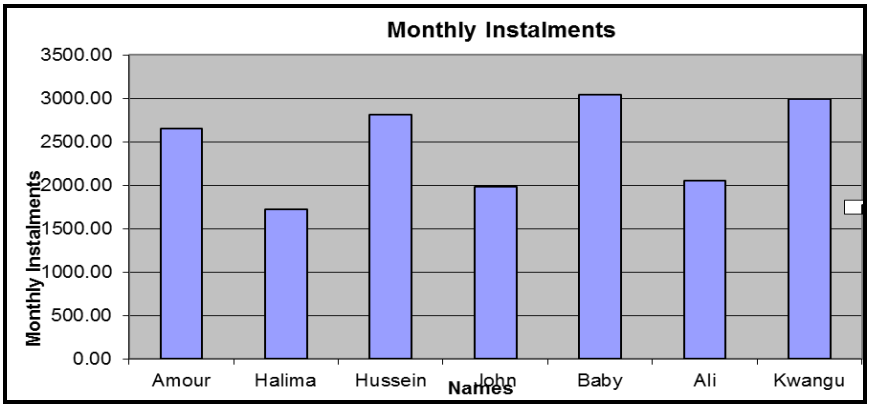
Majority (42.6%) of the candidates who scored high marks managed to give the correct formula in deposit, Balance and monthly instalments. They also managed to create the correct column, line and three dimensional pie charts. However, some of the candidates failed to score full marks because they inserted a two dimensional pie chart instead of the three dimensional pie chart. They also failed to insert data values in the chart created. The correct formula provided by candidates are Deposit=25%*C2, Balance =C2-D2 and Monthly installments=E2/24. Extract 3.3.1 shows a sample of a correct response.

Extract 3.3.1

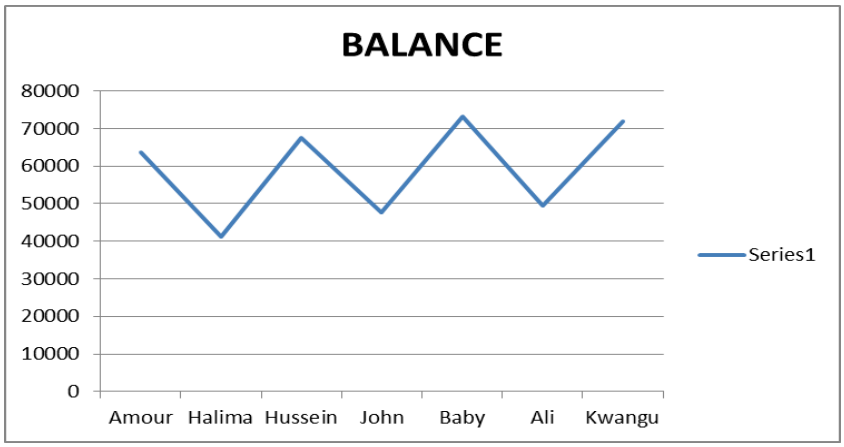


S/N	Customer Name	Furniture Value	Deposit	Balance	Monthly Installments
6	Ali	65800	=C2*25%	49350	2056.25
1	Amour	85000	21250	63750	2656.25
5	Baby	97500	24375	73125	3046.88
2	Halima	55000	13750	41250	1718.75
3	Hussein	90000	22500	67500	2812.50
4	John	63500	15875	47625	1984.38
7	Kwangu	95900	23975	71925	2996.88

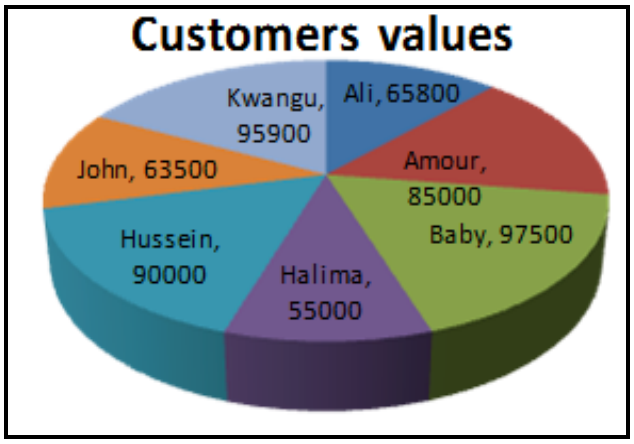
Column chart



Line chart



Three dimensional pie chart

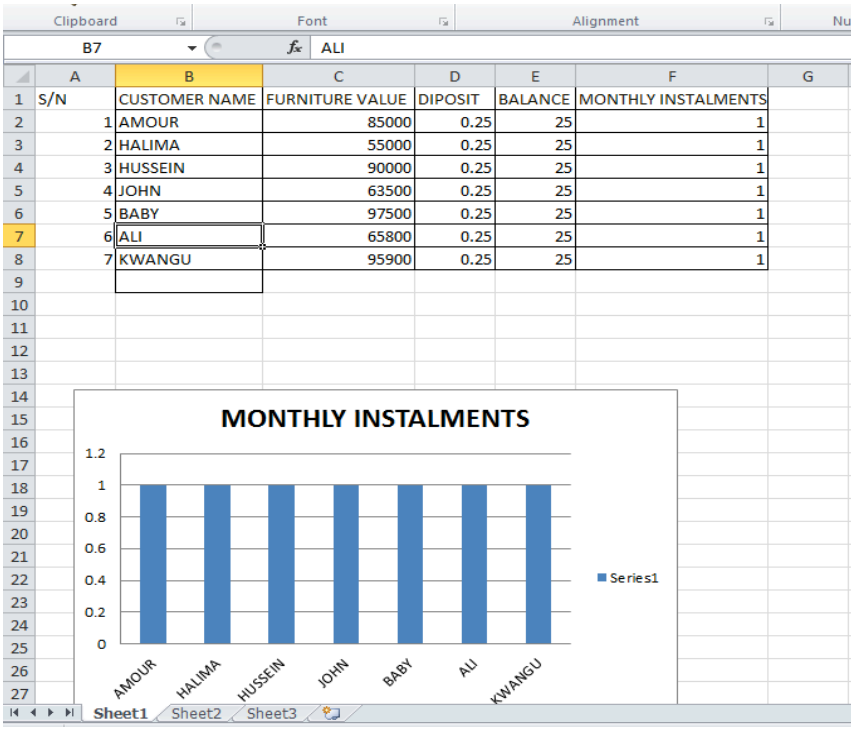


Extract 3.3.1 shows that, the candidate who managed to give the correct formula for calculating deposit, Balance and monthly installments. He/she also created the correct column, line and three dimensional pie charts.

Further analysis shows that, majority of the candidates with average performance were able to; create correctly a worksheet, bold and wrap text. Some of the candidates entered correctly the deposit and Balance formula but failed to give the correct formula for monthly installments which led to failure in creating column chart. The analysis also observed that, some of the candidates failed to set Monthly Installment column to two decimal places. Other candidates selected non – adjacent columns in creating charts that means they could not hold the CTRL key in selecting the columns which are not adjacent to each other. This caused some candidates either to choose only a single column, all columns or unwanted columns for a particular chart.

On the other hand, candidates who performed poorly were able to create a spreadsheet and save it as Furniture but gave the wrong formula for deposit, balance and monthly installments. They also inserted bar chart instead of line chart as well as failed to select the intended field. For example, one of the candidates entered the formula as ***Balance = Furniture value + Deposit*** instead of **Balance = Furniture Value – Deposit**. Some of the candidates used calculators to calculate the values instead of using formula. Other candidates had problem in shading the title background in Tan color. They used different colors such as orange ascent and some did not make the shading at all. This indicates that, the candidates lacked practical skills on Spreadsheet application. Further analysis shows that, the candidates who scored zero marks attempted the question by using different application programs such as Microsoft word, Microsoft access and HTML. Extract 3.3.5 shows a candidate who performed poorly in this question.

Extract 3.3.1



S/N	CUSTOMER NAME	FURNITURE VALUE	DIPOSIT	BALANCE	MONTHLY INSTALMENTS
1	AMOUR	85000	0.25	25	1
2	HALIMA	55000	0.25	25	1
3	HUSSEIN	90000	0.25	25	1
4	JOHN	63500	0.25	25	1
5	BABY	97500	0.25	25	1
6	ALI	65800	0.25	25	1
7	KWANGU	95900	0.25	25	1

Extract 3.3.1 shows a response of a candidate who computed manually the deposit values and drugged them in all cells. Thus, the wrong values caused the wrong output of the column chart.

4.0 PERFORMANCE OF CANDIDATES IN EACH TOPIC

The topic wise analysis shows that, the candidates performed well on the questions which come from the topics of; *Database as information system, Web development, Impact of ICT on the society and Multimedia*. The good performance on these topics is attributed to sufficient knowledge and correct interpretation of the requirements of the questions. The averagely performed topics were; *Internet and Spreadsheet* as the percentage of candidates who scored average of 30 percent or above was 35.2 percent and 35.1 percent respectively. This performance is due to insufficient knowledge on the concepts taught under these topics. The performance in the topic of; *The Computer* and *Computer networks and communication* was weak as more than 80 percent of the candidates scored low marks. The poor performance in these topics was attributed by wrong interpretation of the requirements of the questions, lack of practical skills in responding to the questions and inadequate knowledge on the concepts taught under these topics.

The analysis of the candidates' performance has been done on the questions which were performed well, those with average performance and those which were performed poorly. In 2015, a topic/question was categorized as poorly performed, average or good performed if the average number of candidates who scored 30 percent or above of the marks in a particular question/topic is 0-29, 30-44 and 45-100% respectively. However, in 2014 the performance of the candidates was regarded as poor if the number of the candidates who scored 30 percent or above in a particular question/topic was 0-29, average if the percentage lies in the intervals of 30-44 and good if the percentage ranged from 45-100%. The performance of the candidates in the topics tested is summarized in the attached *Appendix*.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The analysis of the candidates' performance has been done on each question assessed in CSEE 2015 Information and Computer Studies paper. The general performance of the candidates in this year's examination is good because the overall percentage of candidates who scored average of 30 percent or above is 51.1 percent. This indicates that most of the candidates managed to answer correctly in many questions. The good performance may be attributed by sufficient knowledge on the concepts related to the topics assessed.

The analysis on individual questions shows that, most of the candidates experienced difficulties in question number 2 (matching item), 4 and 8 which come from the topic of "The computer" and "Computer networking". Some of the candidates were unable to identify the requirements of the question number 5 in paper one. Question number 2 in paper 2 was avoided by most of the candidates as it was attempted by only 32.9 percent.

5.2 RECOMMENDATIONS

In order to improve the performance of prospective candidates it is recommended that:

(a) The government and school managers should improve ICT infrastructure especially ICT laboratories so as to improve practical skills.

(b) Teachers should provide enough exercises, tests and examinations to enhance candidates' mastery of theory and practical concepts.

(c) Candidates should read the examination questions carefully so as to be able to respond to the questions correctly.

(d) Candidates should be guided and encouraged to master English language so as to be able to express their points/ideas clearly and logically.

APPENDIX

Analysis of Candidates Performance in each Topic

S/N	Topic	CSEE 2014			CSEE 2015		
		No. of Question(s)	Percentage of Candidates who Scored Average of 30% or Above	Remarks	No. of Question(s)	Percentage of Candidates who Scored Average of 30% or Above	Remarks
1	True/False Items (Derived from 6 Topics)	1	98.4	Good	1	99.5	Good
2	Multiple Choice (Items from 10 Topics)	1	81.5	Good	1	80.5	Good
3	Database as information system	1	59.5	Good	1	68.6	Good
4	Multimedia	1	35.5	Average	1	67.8	Good
5	Impact of Information and Communication Technology (ICT) on the Society.		26	Weak	1	60.0	Good
6	Web Development	1	69.7	Good	2	51.5	Good
7	Matching Items	1	36.3	Average	1	48.7	Good
8	The Internet	2		Good	2	35.2	Average
9	Spreadsheet	1	64.7	Good	1	35.1	Average
10	Computer Networks and Communications	1	36.3	Average	1	11.5	Weak
11	The computer				1	8.3	Weak