THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

STUDENTS' ITEMS RESPONSE ANALYSIS REPORT FOR THE FORM TWO NATIONAL ASSESSMENT (FTNA) 2018
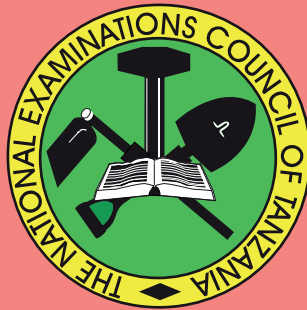
036 INFORMATION AND COMPUTER STUDIES

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List of Abbreviations

SIRA   –   Students' Item Response Analysis

FTNA   –   Form Two National Assessment

LAN   –   Local Area Network

WAN   –   Wide Area Network

MAN   –   Metropolitan Area Network

CPU   –   Central Processing Units

CC   –   Carbon Copy

FOREWORD

The National Examinations Council of Tanzania is pleased to issue the report on Students' Item Response Analysis (SIRA) in Information and Computer Studies 2018. The aim of this report is to inform teachers, parents, students, policy makers and other education stakeholders on how the students responded to the assessment items. The report will enable the stakeholders to take appropriate measures to improve the performance of the students and also to understand topics which need more emphasis in teaching and learning.

The analysis presented in this report is intended to contribute towards understanding some of the reasons behind the performance of students in the assessment. The report highlights the factors that made the students to answer the questions correctly or incorrectly. The analysis shows that students who performed well provided appropriate responses since they were able to; identify the requirement of the question, had adequate knowledge on the subject content and good mastery of English Language. The report also highlights the reasons that made some students fail to score high marks. Such factors, include failure to identify the task of the question, inability to express themselves in English Language and lack of knowledge on the concepts which were tested.

The National Examinations Council of Tanzania believes that the education stakeholders will work on the challenges the students faced while attempting the assessment questions in order to take appropriate measures to improve the performance in this subject.

The National Examinations Council of Tanzania will highly appreciate comments and suggestions from teachers, students and the public in general that can highlight any area for improvement in writing future Students' Item Response Analysis reports.

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

Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0   INTRODUCTION

This report analyses students' item response in Form Two National Assessment in Information and Computer Studies subject for the year 2018. The paper was set according to the 2005 Information and Computer Studies syllabus for Ordinary Secondary Education at form two level and 2017 format.

The assessment comprised one theory paper which consisted of three (3) sections, A, B and C. Section A consisted of three (3) objective questions which are multiple-choice items, matching items and true/false items. This section carried a total of 20 marks. Section B consisted of six (6) short answer questions which carried a total of 60 marks. Lastly, Section C had an essay question which weighed 20 marks. All questions in both sections were compulsory.

In analysing the students' performance in each question/topic, the performance is graded as good, average or poor if the percentage of students who scored 30 percent or above out of allocated marks to that question in 65 - 100, 30 - 64 and 0 - 29, respectively. In this report, the students' performance is presented in different charts/tables where by the red colour represents weak performance, yellow colour represents average performance and the green colour signifies good performance.

A total of 17,946 students set for this paper in November, 2018, of which 8,433 (47.0%) passed the assessment and 9,513 (53.0%) failed. The performance increased by 3.5 percent when compared to the 2017 performance. In 2017 performance, 20,450 students sat for assessment, of which 8,763 (43.5%) passed and 11,687 (56.5%) failed. Figure 1 shows the comparison of students' performance in 2017 and 2018.
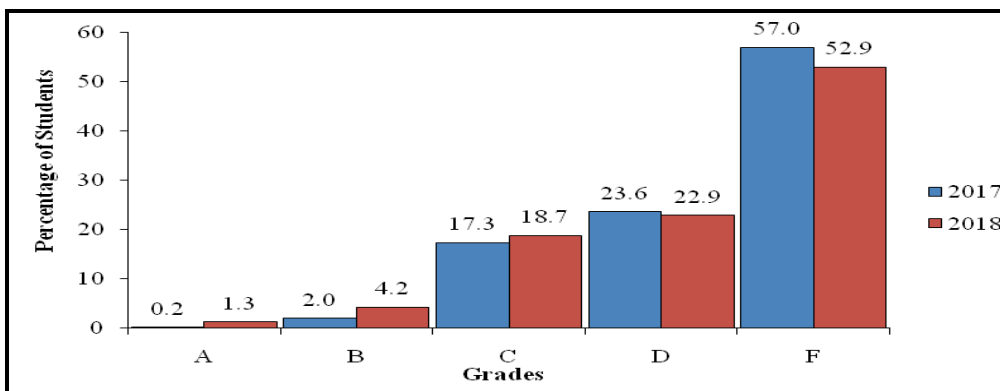
Figure 1: *A comparison of Students Pass Grades in 2017 and 2018.*

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2.0 ANALYSIS OF THE STUDENTS' PERFOMANCE IN EACH QUESTION

2.1 Question 1: Multiple Choice Items

The question consisted of ten (10) multiple choice items which were composed from seven topics of the syllabus. The topics were Information, The computer, Computer Software, Computer handling, Word processing, Spreadsheet and the Internet. The students were required to choose the correct answer from the given four alternatives (A – D).

All students 17,942 (100%) attempted this question, out of which 2,899 (16.2%) scored from 0 to 2 marks, 11,801 (65.8%) scored from 3 to 6 marks and 3,242 (18%) scored from 7 to 10 marks. Figure 2 below shows the students performance in this question.
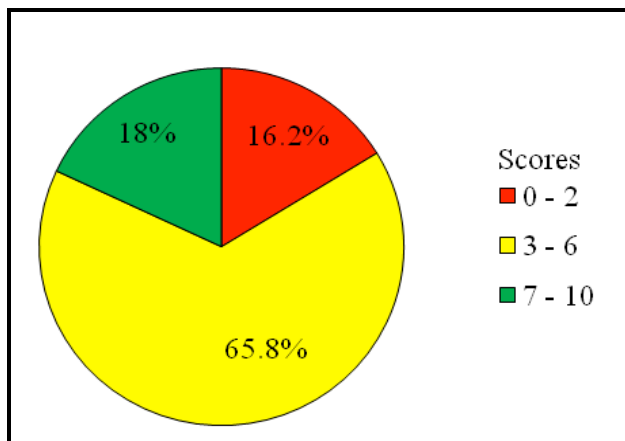
Figure 2: *The students' performance in question 1.*

The majority of the students 15,043 (83.8%) scored from 3 to 10 marks. This indicates that, many students managed to choose the correct answer in many items. However, a few students 2,899 (16.2%) performed poorly. The analysis done in the script of the students show that, some of the students faced difficulties in responding to items (i), (iv), (vi) and (ix).

Item(i) *The SI – Unit for measuring amount of information stored on the computer disk is called*
    (A) Byte   (B) Bit   (C) Hz   (D) Bps

This item tested students' knowledge on computer storage. The correct answer was A "Byte". The students who scored a zero mark chose other alternatives. Most of the students selected B "Bit", which is the smallest unit storage of the computer. The students were supposed to know that, bit is measuring amount of information but it is not a Standard International Unit (SI - Unit). Other students chose option C "Hz" (hertz) which is the unit of frequency measures of the number of cycles per second. This indicates that, the students lacked knowledge on computer storage units.

Item (iv) *What is the main functions of CTRL + F keys combination when applied in a Microsoft Word program?*
(A)   Save the current file/document
(B)   Open a find test dialog box
(C)   Find images in the document
(D)   Open the format dialog box

The item tested students' knowledge of using keyboard shortcut keys. The correct answer was B. Students who scored a zero mark chose other options which were not correct because keyboard shortcut key required for option A is CTLR+ S and keyboard shortcut key required for option D is SHIFT+F10. There is also no keyboard shortcut for option C. This indicates that, the students failed to identify different keyboard shortcut keys and their functions.

Item (vi) *Which of the following formula can be used to calculate the total value in a spreadsheet?*
(A)   = SUM(B2, B3, B4, B5)
(B)   = Total (B2:B5)
(C)   = Count (B2:B5)
(D)   = Add (B2:B5)

The correct answer was A "=SUM(B2,B3,B4,B5)". Some students' response were wrong because most of the students chose B and D. This indicates that, the students failed to identify the correct function required to calculate total values in a spreadsheet by doing direct translation of the term "total". The students who chose alternative C could not understand that, the function "=Count (B2:B5)" is required to

display number of cells that contain numbers within a particular range in the worksheet.

> Item (ix) *A temporary memory which is used to store a copied text or image is called*
> *(A)   Chip board*
> *(B)   Clipboard*
> *(C)   Buffer*
> *(D)   Register*

The correct answer was B "clipboard". The students who scored zero were wrong because most of them chose option C and D. Option C "Buffer", is the special memory that is found in input/output devices and option D "register" is a high speed memory allocated inside the CPU. The wrong selection of the students attributed to the fact that, *register* and *buffer* are common parts of the memory compared to the *clipboard*. The students who selected option A "chip board" failed to understand that, chip board is the board required to hold component in a computer and not the part of memory.

2.2   Question 2: The computer

The question was intended to measure the students' knowledge on different computer input devices. In this question, the students were required to match the functions of the computer input devices in List A with their corresponding input devices in List B by writing the letter of the correct response below the number of the corresponding item in the table provided. The question was as follows:

LIST A	LIST B
(i) A device used to capture data from an object and converting into digital format.	A. Joystick
(ii) A device that uses radio or infrared waves instead of being physically connected to the system unit.	B. Cordless mouse
	C. Printer
(iii) An input device used on portable devices	D. Scanner

such as laptops and mobile phones (iv) A device used to enter data in form of speech into the computer (v) A device that looks like lever used to control a pointer on the screen	E. Monitor F. Keypad G. Keyboard H. Microphone

All students 17,940 (100%) attempted this question. Out of which, 11,924 (66.5%) scored from 0 to 1 mark, 4,321 (24.1%) scored from 2 to 3 marks and 1695 (9.4%) scored from 4 to 5 marks. Figure 3 represents the students' performance in this question.
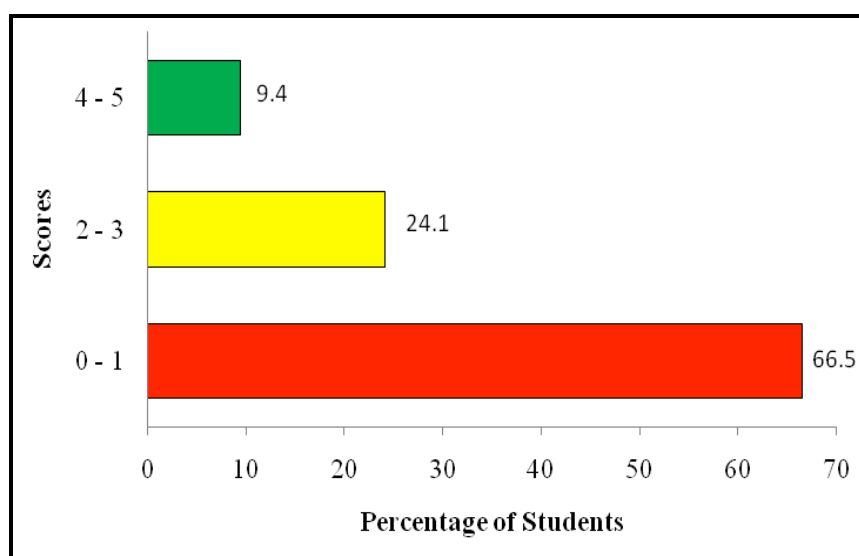
Figure 3: *The students' performance in question 2.*

Figure 3 illustrates that, 66.5 percent of the students scored from 0 to 1 mark. This shows that, majority of the students scored poorly in all items of this question. Item (i) tested ability of the students to identify a device used to capture data from an object and convert into digital form. The correct answer was D "Scanner". The students who selected option C "Printer" and E "Monitor" failed to understand that printer and monitor are output devices which cannot capture data into the computer system. Other students opted for A "Joystick" and F "Keypad". These

students seemed to have inadequate knowledge on the function of input devices.

Item (ii) required a students to identify a device that uses radio or infrared waves instead of being physically connected to the system unit. The correct answer was B "Cordless mouse". The analysis shows that, most of the students wrote D "Scanner". The students who wrote scanner failed to understand that, scanner does not need either radio or infrared waves to make connection with the system unit. Some of the students wrote A "Joystick". These students were supposed to know that, joystick is a device used to control pointer on the screen physically connected to the system unit.

Item (iii) required the students to identify an input device used on portable devices such as laptops and mobile phones. The correct answer was F "Keypad". Most of the students wrote G "Keyboard". This response was not correct because keyboard is the peripheral device that enables a user to enter data and instructions in a computer. This signifies that, students could not differentiate between input device required to enter data on portable devices(keypad) and large devices like desktop which is a keyboard.

Item (iv) required students to identify the device used to enter data in form of speech into the computer. The correct answer was H "Microphone". Majority of the students opted G "Keyboard". This response was not correct because keyboard enter data into the computer in form of text/number and not in form of speech or sound.

Item (v) tested student's ability to identify the device that looks like lever used to control as pointer on the screen. The correct answer was A "Joystick". The analysis shows that, some of students wrote B "Cordless mouse". The students failed to distinguish between Joystick and cordless mouse where, cordless mouse is the wireless mouse used to control pointer on the screen but does not looks like lever. This indicates that, the students had insufficient knowledge on input devices.

2.3 Question 3: True/False Items

The question consisted of five (5) True/False items. The students were asked to write True (for the correct statement) and False (for the wrong statement). The question composed from 3 topics of the syllabus, which are *Computer Network and Communication, The computer and Spreadsheet.*

The following items were given:
- (i)   Networking enables various computers to share resources on the same network.
- (ii) Disk driver is a hardware that reads and writes information on the disk.
- (iii) A barcodes reader is one example of an input device.
- (iv) A LAN is faster than the internet.
- (v)   In relative cell reference, formula remains the same.

The analysis show that, 17,942 (100%) students attempted this question, out of which 3,608 (20.1%) scored from 0 to 1 mark, 11,629 (64.8%) scored from 2 to 3 marks and 2,705 (15.1%) scored from 4 to 5 marks. Figure 4 shows the performance of the students in this question.
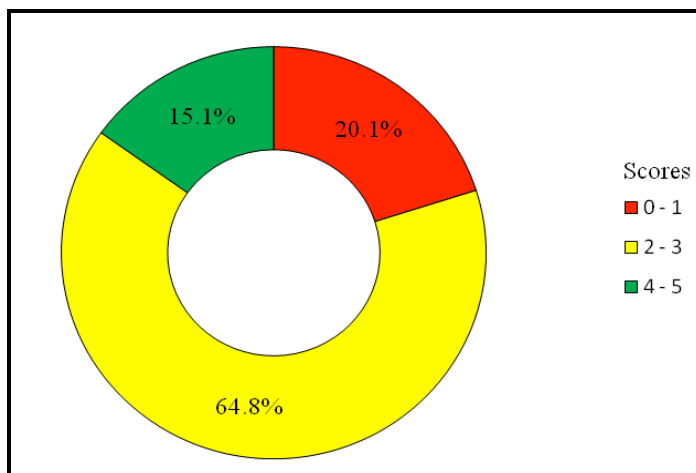
Figure 4: *The students' performance in question 3.*

The general performance in this question was good as shown in the figure above, only 20.1 percent of the students scored below 2 marks. The students who scored high marks were able to give the correct response in many items while those who failed to score high marks had problems in items (iii), (iv) and (v).

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The item (iii) tested the students' knowledge on identifying a barcodes reader as one of an input device. The correct answer was "True". However, some of the students wrote "False". This response is attributed by the fact that, the barcodes reader is not common input device in our daily life, thus students were not familiar with such example.

Item (iv) tested students' knowledge on the Network, the question required the students to compare the speed between LAN and the internet. The correct answer was "True". The students who wrote "False" did not understand that, Local Area Network (LAN) covers a very small area, making data transfer very fast compared to the internet that covers a very large area like the whole world, making data transfer slowly.

Item (v) tested the students' knowledge of relative cell reference on a spreadsheet. The correct answer was "False". The students who wrote "True" were supposed to know that, when you copy a formula that contains relative cell reference, the formula will change according to the new location. For example, if cell C1 containing a formula "=A1+B1", copied to cell C2 the reference will change to "= A2 + B2".

2.4   Question 4: Computer Generation

In this question, students were required to;
(a) Give the computer generation which produces a lot of heat.
(b) Mention the technology used during the following generation of computers:
 (i) Fourth generation.
 (ii) Second generation.
(c) Mention four early computing devices that were made by a man.
(d) Outline three main characteristics of the fifth generation computers.

The statistics show that, all 17,942 (100%) of students attempted this question, out of which 10,944 (61.1%) scored from 0 to 2.5 marks, 4,849 (27.1%) scored from 3 to 6 marks and 2,122 (11.8%) scored from 6.5 to 10 marks. Figure 5 represents the students' performance in this question.
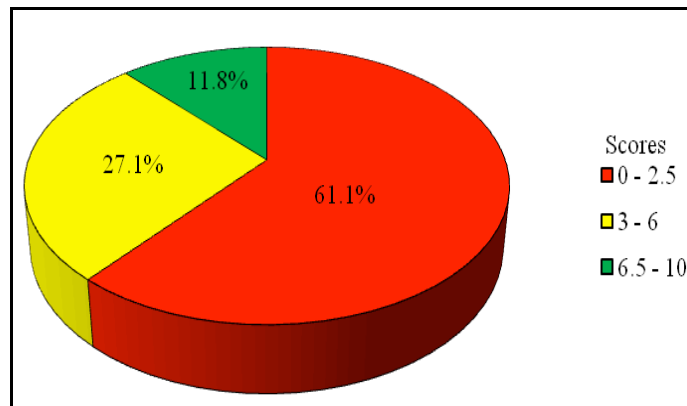
Figure 5: *The students performance in question 4.*

Majority of the students (61.1%) who scored low marks (0 to 2.5) gave the correct name of the computer generation which produces a lot of heat in part (a), but wrote incorrect answer in other parts. In part (b), some of the students failed to mention the technology used during the fourth and second generation by writing incomplete terms. For example, one student wrote *very large circuit* as fourth generation instead of Very Large Integrated Circuit. This indicates that, the students had an idea of the technology used but they could not memorized the required term. In part (c), some of the students mentioned computer parts instead of early computing devices. For example, one of the students wrote *keyboard*, *mouse*, *speaker* and *printer* instead of abacus, Napier bones, slide rule and La Pascaline machine. This shows that, the students had insufficient knowledge on early computing devices. Furthermore, some of the students failed to score any mark in part (d). A few of them mentioned only one correct characteristic but others wrote characteristic of other generations. For example, the students wrote, *it produce a lot of heat*. This shows that, the student are not familiar with fifth generation compared with other generations. Extract 4.1 shows a sample of poor responses which were provided by one of the students.

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Extract 4.1

```
4.  (a)   Give the computer generation which produces a lot of heat.
          .The first computer generation..............

    (b)   Mention the technology used during the following generation of computers.
          (i)   Fourth generation.
                High technology................................

          (ii)  Second generation.
                Low technology........................

    (c)   Mention four early computing devices that were made by a man.
          •   DVD.................................................
          •   CD..................................................
          •   Flash disk.........................................
          •   Memor Chip Memolly chip...........................

    (d)   Outline three main characteristics of the fifth generation computers.
          •   There was use small office..................
          •   There was small in shape....................
          •   There was not consum alot of heat.
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Extract 4.1 shows the response of a student who mentioned storage devices instead of early computing devices in part (c).The student also failed to outline three characteristics of fifth generation in part (d).

Further analysis shows that, 27.1 percent of the students scored average marks (3 to 6). Most of them were able to give correct computer generation which produces a lot of heat in part (a) and mentioned the technology used during fourth and second generation in part (b). A few of the students managed to outline three correct characteristics of the fifth generation computer in part (d). Others wrote one or two correct characteristics. This indicates that, the students had insufficient knowledge on characteristics of fifth generation. However, most of the students failed to mention four early computing devices by mentioning other devices. Some of them mentioned traditional devices, such as *Drums, Horns, Whistle.* This shows that, students misinterpreted the term "early" as "traditional devices" without knowing that all these devices are not associated with the computer.

Most of the students (11.8%) who scored high marks (6.5 to 10) were able to give the computer generation which produces a lot of heat in part(a). They were also able to mention correct technology used during

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fourth and second generation in part (b). Further analysis shows that in part (c), some of the students managed to write only three correct early computing devices instead of four as it is required. A few of them had an idea with some devices but failed to write the required terminology. For example, one student wrote, *Pascal's multiplication and division machine* instead of La Pascaline machine. This student confused the name and function of the device. Other students mixed generations' technology and early computing devices. For example, one student mentioned *Abacus, Napier borns* with addition of *vacuum tube* and *transistor* which are technology used during generation of computer and not early computing devices. This indicates that the students had insufficient knowledge on early computing devices. However, in part (d), the students were able to outline three main characteristics of the fifth generation but a few of them managed to write only two correct characteristics. Extract 4.2 shows the correct response from one of the students.

Extract 4.2

4. (a) Give the computer generation which produces a lot of heat.
......× The first generation......

(b) Mention the technology used during the following generation of computers.
  (i) Fourth generation.
   Very large Intergrated circuits......
  (ii) Second generation.
   Transistors.......

(c) Mention four early computing devices that were made by a man.
  • ...Abacus.......
  • ...slide ruler.......
  • ...Napier bones.......
  • ...Anan Analytical engine.......

(d) Outline three main characteristics of the fifth generation computers.
  • They produce less heat.......
 • They have high speed.......
  • They are expensive.......

Extract 4.2 shows a response from a student who had adequate knowledge on computer generation. The student provided correct answers in all parts.

2.5 Question 5: Computer Software

The question consisted of three parts (a), (b) and (c). In this question students were required to:

(a) Define operating system.
(b) Differentiate multiuser from multitasking operating systems.
(c) (i)   Explain why is it advisable to store files into a folder.
    (ii) Outline the procedures you would follow to restore deleted files to their original location.

A total of 17,942 (100%) students attempted this question, out of which13,212 (73.6%) scored from 0 to 2.5 marks, 3,307(18.5%) scored from 3 to 6 and 1,423 (7.9%) scored from 6.5 to 10. Figure 6 represents the students' performance in this question.
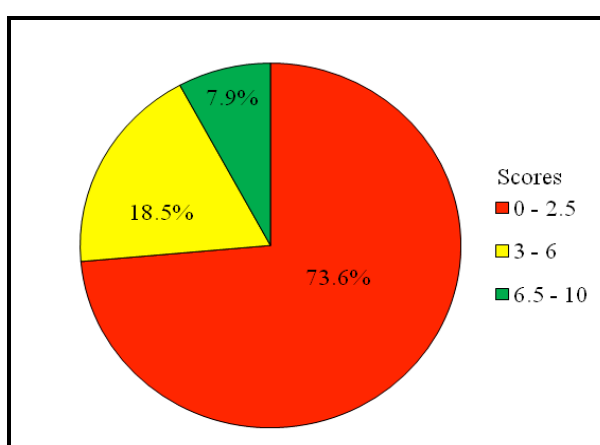
Figure 6: *The students' performance in question 5.*

The analysis show that most of the students (73.6%) who scored low marks (0 to 2.5) managed to write correct definition of the term operating system but few of them failed to write clear definition by missing some key terminologies. For example, one student defined that *operating system is the process that control hardware and software* instead of Operating system is a set of program that control and supervise overall operation of the computer. This indicates that the students had a general knowledge of operating system which led them to write unclear definition in part (a). The analysis revealed that, some of the students were able to defferentiate multiuser from multitasking operating system in part (b). Others failed to get full marks by writing description of only multiuser or multitasking. However, in part (c)(i), some of the students did not understand the requirement of the question. For example, one of the students explained the reason to store the file into the folder is to make them away from the virus. This indicates that,

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the student had no idea on file storage into a folder. Furthermore, the students failed to outline the procedures to restore deleted files to the original location in part (c)(ii). Some of them wrote procedures of undo deleted text. For example, one of the student wrote keyboard shortcut key Ctrl +z. This shows that, the student could not differentiate between the file and text in the computer system. Extract 5.1 shows a sample of poor responses which were provided by one of the students.

Extract 5.1

Extract 5.1 shows a sample of a response of a student who failed to define the term operating system in part (a) but managed to differentiate multiuser and multitasking operating system in part (b). The student also wrote features of the file instead of procedures to restore deleted file in part(c).

Most of the students (18.5%) who scored average marks (3 to 6) were able to write correct definition of the term operating system in part (a) and gave correct difference of multiuser from multitasking operating systems in part (b). However, a few of them gave correct description on only multiuser or multitasking. This led them to loose some marks. On the other hand, students did not manage to explain the reason to store file into a folder in part (c)(i). Some of them wrote the reason based on protecting data into the computer system. For example, one student

wrote, *It is advisable to store file into a folder in order to prevent data loss*. This signifies that the students did not understand the requiremnet of the question which led them to confuse between file storage and loss of data into the computer system. Furthermore, some of the students managed to outline incomplete procedures to restore deleted files to their original location which led them to loose some marks.

A few students (7.9%) who scored high marks gave the correct answer in many parts. The analysis show that, some of them had a problem in responding to part(c)(i). They concentrated on defining the terms file and folder instead of explaining the reason of storing file into a folder. Others did not show any clear understanding of the question. For example, one student wrote, *It is advisable to store files into a folder because when you store on a folder it will be simple for you to know where you stored your file.* Extract 5.2 represents a sample of a good response which was provided by one of the students.

Extract 5.2

5. (a) What is an operating system?

Is a system software that manages and controls computer hardware and software resources

(b) Differentiate multiuser from multitasking operating systems.

Multitasking operating system allows more than one task/text be to be carried out but multiuser allows more than one user to use a computer

(c) (i) Why it is advisable to store files into a folder?

a) because it is were related files can be stored and hence provide ease of access rather than storing at different places

(ii) Outline the procedures you would follow to restore deleted files to their original location.
- Open the recycle bin
- Click on the file you want to restore and a dialog box
- Click restore

Extract 5.2 shows a sample of a response of a student who managed to answer all parts correctly.

2.6 Question 6: The Internet

The question consisted of three parts (a), (b) and (c). The students were required to:

(a) (i) Define the term an electronic mail.
   (ii) Give two advantages and two disadvantages of an electronic mail.
(b) Differentiate "To" from "Carbon Copy(CC)" field as applied in electronic mail.
(c) Give three main parts of electronic mail.

A total of 17,940 (100%) students attempted this question, out of which13,870 (77.3%) scored from 0 to 2.5 marks, 3,660 (20.4%) scored from 3 to 6 and 410 (2.3%) scored from 6.5 to 10. Figure 7 represents the students' performance in this question.
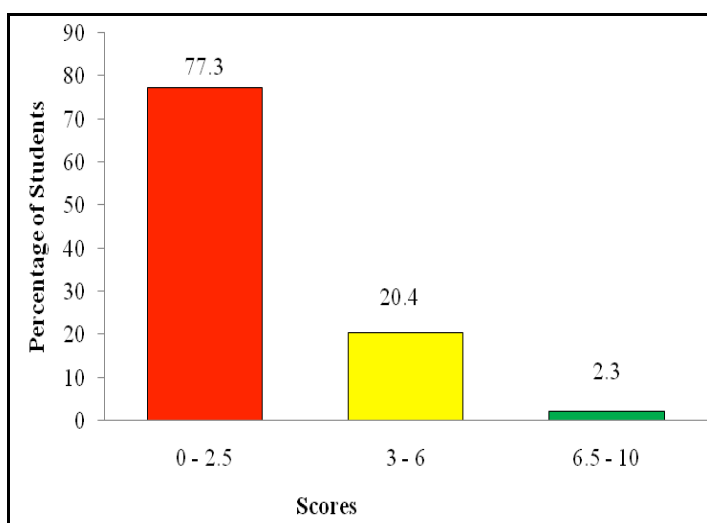
Figure 7: *The students' performance in question 6.*

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The analysis show that, the majority of the students who scored low marks (0 to 2.5) managed to define the term electronic mail and gave at least one advantage and one disadvantage of electronic mail in part (a) but failed to differentiate "To" from "Carbon copy (cc)" field as applied in electronic mail in part (b). Some of the students made direct translation of the terms. For example, one student wrote, *To is email of the receiver* instead of the field required to type the e-mail address of receiver. Others showed general understanding of the terms. For example, one student responded that, CC *is where the e-mail of the*

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second receiver is written. The student did not understand that, in a CC e-mail copied to one or more recipients, where main recipient and other recipients can see all the addresses where the message was send to. This signifies that, the students had insufficient knowledge in electronic mail. However in part (c), most of the students failed to understand the requirement of the question. The students wrote parts of electronic mail address (e-mail address) such as username, @ and domain name instead of parts of the electronic mail which are header, body/content/message and signature. This shows that the students could not differentiate between e-mail address (address to send an e-mail) and electronic mail (message). Others wrote example of search engines like *Yahoo, Google, Opera min.* Extract 6.1 shows the poor response from one of the students.

Extract 6.1

6. (a) (i) Define the term an electronic mail.
   Is the mail that is written to represent the adress of some one.

   (ii) Give two advantages and two disadvantages of electronic mail.
   Advantages
   • *It is very fast.*
   • *It is accurate and reliable.*

   Disadvantages
   • *It is costful.*
   • *It cause eye demage*

(b) Differentiate "To" from "Carbon Copy (CC)" field as applied in electronic mail.
   Carbon Copy. This are applied in electoronic mail in the Computer

(c) Give three main parts of electronic mail.
   • *Chip board electronic mail*
   • *clip board electronic mail*
   • *buffer electronic mail*

Extract 6.1 shows a sample of a response of a student who managed to give correct advantages of e-mail but failed to define the term an e-mail in part (a). However, the student failed to differentiate "To" from "CC" in part (b) and gave irrelevent parts of electronic mail in part (c).

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On the other hand, some of the students (20.4%) who scored average marks (3 to 6) were able to define the term electronic mail and gave two advantages and two disadvantages of electronic mail in part (a). However, the students failed to differentiate the term "To" from "Carbon copy (cc)" as applied in e-mail in part (b). A few of them managed to give a function of "To" but failed to give function of "Carbon copy (cc)". Others lacked key terminologies from their explanations, for example one of the students wrote *Carbon copy (cc) is the main aim of the text that is being sent to the receiver,* while Carbon copy (cc) is the field and not main aim as stated by the student. This shows that, the student had a general knowledge of e-mail address which attributed to unclear explanation of the terms. In part (c), some of them managed to write one part of the electronic mail correctly but failed to write other two parts.

A few students (2.3%) who scored high marks (6.5 to 10) gave the correct answers in many parts. However, they failed to differentiate "To" from "(cc)" in part (b). Some of the students wrote *To is where the e-mail message is written for the recipient* instead of "To is where the e-mail address of the recipient is written". This shows that, the students failed to understand that, "To" is a field part of the e-mail which is not capable to add the whole message on it. Extract 6.2 shows a sample of a good response which was provided by one of the students.

Extract 6.2

6. (a) (i) Define the term an electronic mail.

Electronic mail is an electronic message transmitted from one place to another by using a computer via intern

   (ii) Give two advantages and two disadvantages of electronic mail.

Advantages
- It is a fast way of sending mails.
- It can be conducted 24 hours of a day.

Disadvantages
- It require computer and internet skills
- It is expensive since it require a computer

(b) Differentiate "To" from "Carbon Copy (CC)" field as applied in electronic mail.

To field is the field where the receivers address of the mail is written while Carbon Copy (CC) field is the field in which the address of the receiver intended to be sent a copy of the mail is written.

(c) Give three main parts of electronic mail.
- Header
- Message body
- Signature

Extract 6.2 shows a response of a student who were able to give correct answers in all parts.
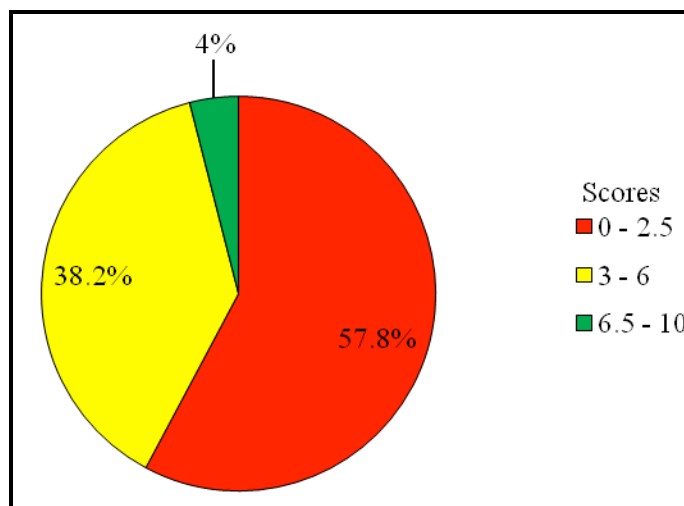
2.7 Question 7: Spreadsheet

The question had three parts (a), (b) and (c). In this question the students were required to:

(a) Mention four examples of charts which can be created in spreadsheet.

(b) Explain the importance of formatting rows and columns in excel.

(c) Read the given snapshot and answer the question that follows:
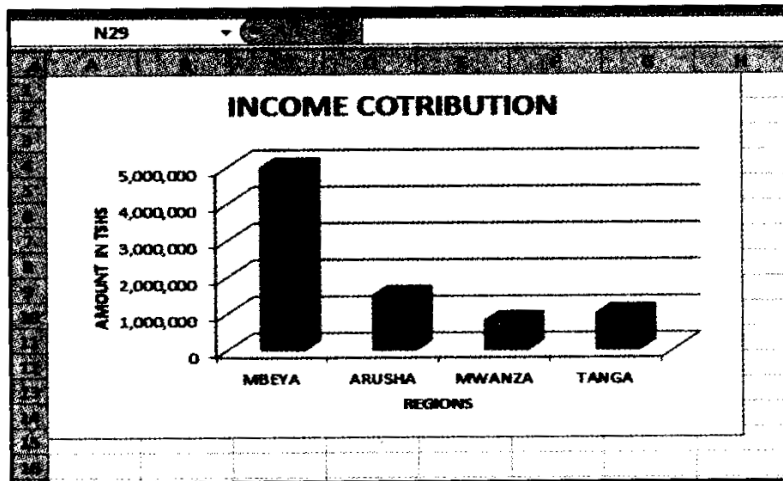
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(i) State the name of the program used to create a given chart.
(ii) Write the type of the chart given in a snapshot.
(iii) What are the names of horizontal and vertical axis?
(iv) What does a chart represent?

A total of 17,942 (100%) students attempted this question, out of which10,351 (57.8%) scored from 0 to 2.5 marks, 6,853(38.2%) scored from 3 to 6 and 723 (4%) scored from 6.5 to 10. Figure 8 represents the students' performance in this question.

Figure 8: *The students' performance in question 7.*

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The analysis shows that, majority of the students (57.8%) who scored low marks were able to mention at least one example of chart which can be created in spreadsheet in part(a). Some of the students failed to understand the requirement of the question. For example, one student wrote, *it perform calculation, it store data* and *it store information* which are application of spreadsheet instead of pie chart, bar chart, line chart, column chart and bubble chart. In part (b), the students did not manage to explain the importance of formatting rows and columns in excel. Some of them wrote importance of using excel , such as *it help to calculate data* and *it help to store data*. This indicates that, the students had insufficient knowledge on spreadsheet. Others had the point but could not organize them to meet the requirement of the question. For example, one of the students wrote, *Formatting of rows and columns in excel are help people to write well of program and started again*. This signifies that the students had an idea of spreadsheet but did not find the better way of presenting it. Some of the students managed to state the name of the program used to create the given chart, write the type of a chart given in snapshot, and write the name of horizontal and vertical axis. However, the students failed to explain what does the chart represent in part (c). This shows that the students had good understanding in practical compared to the theory in a spreadsheet. Others gave the name of the program used to create a chart as excel instead of spreadsheet. This indicates that the students did not understand that Ms-excel program is one of the examples of spreadsheet. This means a chart given can be created by other programs of spreadsheet including Lotus 1-2-3, Corel Quattro Pro, Super Calc, etc. Extract 7.1 shows a sample of a poor response provided by one of the students.
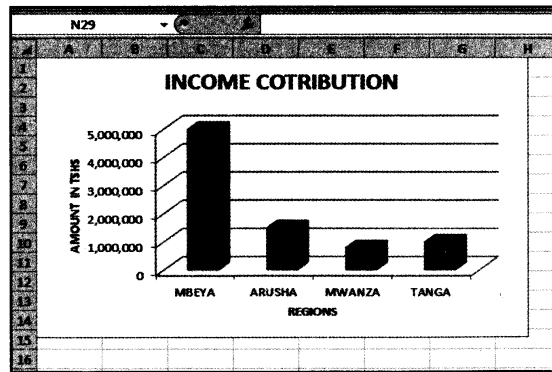
Extract 7.1

7. (a) Mention four examples of charts which can be created in spreadsheet.
    - Graphs
    - Data base
    - Worksheet
    - Cell.

    (b) Explain the importance of formatting rows and columns in excel.

    i) It help us to show the numbers and alphabet in spreadsht

    ii) It help us to read and to used understand them

    (c) Read the given snapshot and answer the question that follow:

    (i) State the name of the program used to create a chart above.

    Spreadsheet.

    (ii) Write the type of the chart given in a snapshot.

    Graphs

    (iii) What are the names of horizontal and vertical axis?

    Raw and column.

    (iv) What does a chart represent?

    Worksheet.

Extract 7.1 shows a sample of a response of a student who mentioned components of spreadsheet instead of example of charts in part (a). However, the student managed to state the name of the program used to create a given chart.

On the other hand, the students (38.2%) who performed average marks (3 to 6) were able to mention four examples of charts which can be created in a spreadsheet in part (a). They also managed to state the name of the program used to create a chart, write the type of chart and write the horizontal and vertical axis in part (c)(i) - (iii). However, they

failed to explain what does the chart represent in part (c)(iv). This failure is attributed to the fact that the students did not understand the relationship between the chart and the given caption "INCOME CONTRIBUTION". A few students interchanged the name of axes by writing amount in TShs. as Horizontal axis and Region as vertical axis. However, most of the students failed to explain the importance of formatting rows and columns in excel.

Furthermore, a few students (4%) who scored high marks (6.5 to 10) were able to answer all parts as it is required. Some of the students wrote "bar chart" instead of column chart in part (c)(ii). This shows that, the students failed to know that in a spreadsheet, charts are distinguished according to their bar orientation. Column chart, bars should be vertical oriented and in a bar chart, bars should be horizontal oriented. Others wrote importance of rows and columns in excel instead of importance of formatting rows and columns. This led them to lose some marks. Extract 7.2 shows a sample of a good response which was provided by one of the students.
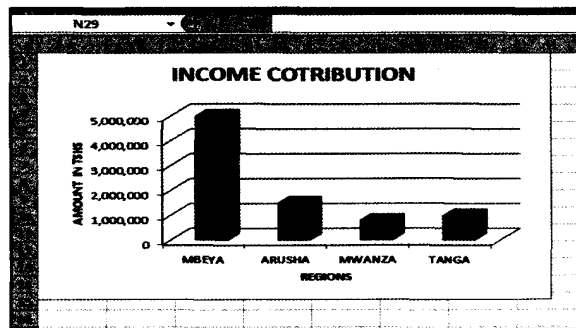
Extract 7.2

Extract 7.2 shows a response of a student who had adequate knowledge in a spreadsheet. The student was also able to answer all part correctly.

2.8 Question 8: Computer Networks and Communication

This question was constructed from the topic of computer networks and communication from syllabus which is divided in two (2) parts, (a) and (b). In part (a), the students were required to explain the meaning of network topology, and in part (b), they were required to explain three types of computer network.

A total of 17,941 (100%) students attempted this question, out of which 9,904 (55.2%) scored from 0 to 2.5 marks, 4,365(24.3%) scored from 3

to 6 and 3,672 (20.5%) scored from 6.5 to 10. Figure 9 represents the students' performance in this question.
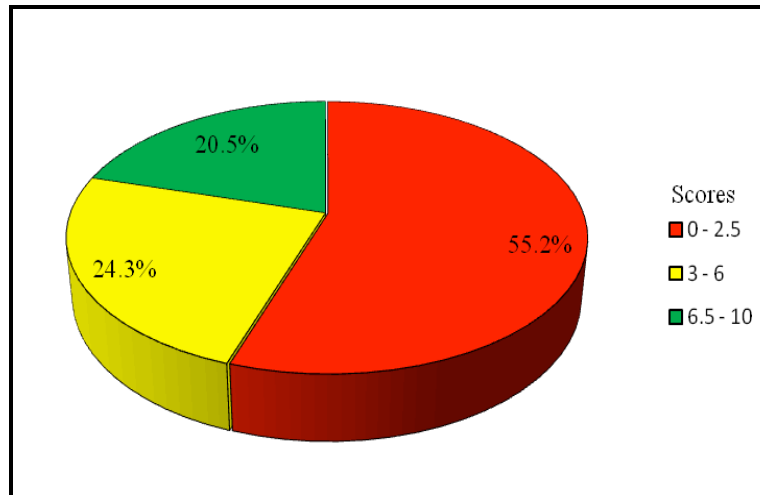
Figure 9: *The students' performance in question 8.*

Figure 9 shows that, 44.8 percent of the students scored above 3 marks, thus the general performance in this question was average. The analysis show that, most of the students (55.2%) scored low marks (0 to 2.5). In part (a), some of the students did not understand that, network topology is a map of networking and not type of networking. For example, one student defined the term network topology as a type of network that used to perform network programs. Others explained types of network topology such as bus topology, star topology ring topology, etc., instead of types of computer network in part (b). This indicates that the students confused requirement of the question in part (a) and (b). A few of them mentioned Local Area Network (LAN) and Wide Area Network (WAN) but failed to give their explanations. It was observed that, some of the students mentioned type of internet, such as Intranet and Extranet instead of types of networking. Extract 8.1 shows a sample of a poor response provided by one of the students.

Extract 8.1

8. (a) What do you understand by the term "network topology"?

Is the topology which nodes are connected and been shared network

(b) Explain three types of computer network.

(i) Super Computer, This are computer which are very fast, more powerful and expenses, This type of Computer is used is searching and make things for example nucleous and It found in developed contry like USA and JAPAN.

(ii) Miniframe computers, This are computers which are been used by scientific people fore example to find if this place their i's minelars, petrol, gas or oil, and it is less powerful than super Computers.

(iii) Min-computer, This are computers which are able to perform calculation and this computer are found in Banking and large Company and in Industry.

Extract 8.1 shows a sample of a response of a student who explained types of computer instead of types of computer network.

Further analysis shows that the students (24.3%) who performed average marks (3 to 6) were able to define the term "network topology" in part (a). In part (b), some of them managed to explain at least one type of computer network. Others explained Local Area Network (LAN), Wide Area Network (WAN) and Internet. These students failed to understand that, Internet is an example of WAN. It was observed that, some of the students mixed types of computer networking with internets. For example, one student explained about LAN, Intranet and Extranet. This signifies that the students failed to differentiate between internet and computer networking.

Moreover, most of the students (20.5%) who performed high marks (6.5 to 10) were able to define the term "network topology" in part (a), and explained three types of network in part (b). Some of the students did

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not manage to get full marks by writing types of network topology, such as mesh topology, star topology, bus topology and ring topology instead of defining the term network topology in part (a). Furthermore, some of the students managed to define the term "network topology" in part (a) but failed to explain correctly all three type of computer network in part (b). For example, one student wrote *Local Area Network (LAN) is the type of computer network where by network is shared in small towns or cities*. This indicates the students failed to understand that LAN spans a small geographical area like a building or a school and not like a town or city which are occupied by Metropolitan Area Network (MAN). Extract 8.2 shows a sample of a good response which was provided by one of the students.

Extract 8.2

8. (a) What do you understand by the term "network topology"?

Network topology is the arrangent of computers in a network or the way data flows from one point to another. There are two types of network topology. Physical topology deals with the arrangement of computers in a network and logical topology deals with the flow of data in the network

   (b) Explain three types of computer network.
   (i) Local Area Network (LAN)
       This is the type of network that takes place in a small area. Local Area Network can take place in an area for example an office or a building.

   (ii) Metropolitan Area Network (MAN)
        Metropolitan Area Network is the type of the networks that take place in a metropolitan area for example a district or a ward. Metropolitan Area network does not take a very wide area compared to Wide Area Network.

   (iii) Wide Area Network (WAN)
         Wide Area Network is the type of Network that covers a very wide area for example a country, continent or the whole world for example the Internet.

Extract 8.2 shows a sample of a response of a student who managed to attempt all parts correctly. This indicates that the student had enough knowledge on computer networking.

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2.9   Question 9: Word Processing

The question had two parts, (a) and (b). In part (a)(i), the students were supposed to write step required in deleting a paragraph in a Microsoft Word program. In part (a)(ii), the students were asked to mention five (5) names of bars found on Microsoft Word program window. In part (b)(i), the students were required to give the name of the bar in a Microsoft Word program which acts as the communication link between a user and the program. In part (b)(ii), the students were required to list two (2) examples of word processor program.

A total of 17,942 (100%) students attempted this question, out of which 9,167 (51.1%) scored from 0 to 2.5 marks, 6,846 (38.1%) scored from 3 to 6 and 1,929 (10.8%) scored from 6.5 to 10. Figure 10 represents the students' performance in this question.
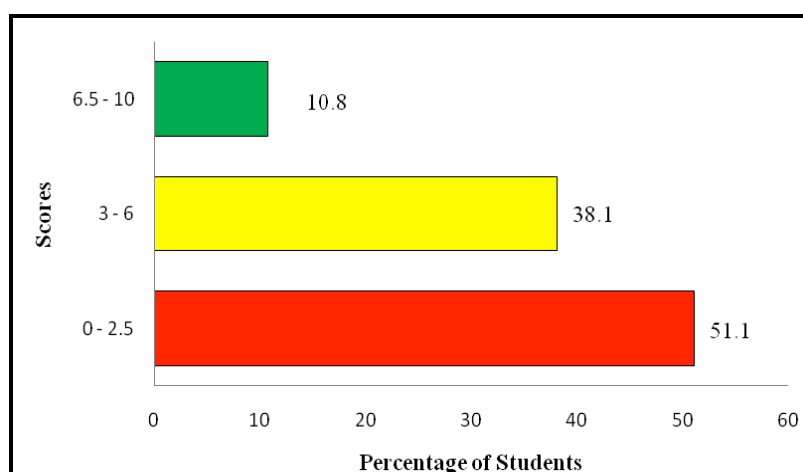
Figure 10: *The students' performance in question 9.*

Figure 10 shows that, 48.9 percent of the students scored above 3 marks. Therefore, the general performance in this question was average. The analysis shows that most of the students (51.1%) who scored low marks were able to mention at least one bar found on Microsoft Word program in part (a)(ii) but failed to attempt other parts. It was observed that some of them wrote Microsoft excel bars such as formula bar and name bar, while others concentrated on writing parts of one bar. For example, one student mentioned insert bar, formula bar and home bar. The student did not understand that, all these are parts of menu bar which is one among the bars of Microsoft Word program window. In

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part (a)(i), a few students were able to write the step of highlighting the paragraph but failed to write the next step required to delete the paragraph. This indicates that the students had inadequate knowledge on Microsoft Word program. In part (b)(ii), some of the students managed to write Microsoft Word program as example of word processing but failed to write another example. This shows that, Microsoft Word program is a common example of word processing program to students. Others wrote examples of window operating system, such as window XP, window 7, window 8, etc. This signifies that the students failed to differentiate between window operating system software and word processor application software. Extract 9.1 shows a sample of a poor response provided by one of the students.

Extract 9.1

9. (a) (i) Write steps required in deleting a paragraph in Microsoft word program.
- Rows ...
- Column ...

(ii) Mention five names of bars found on Microsoft word program window.
- Title bar ...
- Menu bar ...
- Status bar ...
- Written document ...
- Task bar ...

(b) (i) Give the name of the bar in a Microsoft word program which acts as the communication link between a user and the program.
Menu bar ...

(ii) List two examples of word processor program.
- Computer Soft ware ...
- Opporating Soft ware ...

Extract 9.1 shows a response of a student who managed to write two bars found in Microsoft Word program but failed to write other three bars in part (a)(ii). The student also wrote types of software instead of example of word processor program in part (b)(ii).

Furthermore, majority of the students (38.1%) who scored an average marks (3 to 6) wrote correct steps required to delete a paragraph in part(a)(i). The students also managed to mention menu bar, title bar and tool bar but failed to write other two bars as it is required in part (a)(ii). This indicates that the students had inadequate knowledge on Microsoft Word program. A few students wrote incorrect keyboard short cut key as a step for deleting paragraph in Microsoft Word program. For example, one student wrote, *highlight the paragraph then click Ctrl + D* to delete the paragraph. The students were supposed to know that "Ctrl + D" is a short cut key to open formatting features dialog box. In part (b)(i), most of the students failed to give the name of the bar in a Microsoft Word program which acts as the communication link between a user and the program. Some of the students wrote, "Task bar". This shows that, the students could not differentiate between window bars and Microsoft Word program bars. In part (b)(ii), some of the students were able to write at least one example of word processing program, while others wrote other application software.

On the other hand, most of the students (10.8%) who scored high marks (6.5 to 10) managed to attempt all parts correctly. Some of them failed to score full marks because they mixed Ms-word and Ms-excel bars in part (a)(ii). This shows that the students had insufficient knowledge on Ms-ward program. In part (b)(ii), a few students mentioned *lotus 1 - 2 - 3* as example of word processor program instead of "Lotus word Pro". This shows that, the students failed to differentiate between word processor programs and spreadsheet programs. Extract 9.2 shows a sample of a good response which was provided by one of the students.

Extract 9.2

9. (a) (i) Write steps required in deleting a paragraph in Microsoft word program.

- highlight the paragraph..
- Press back Space key / right click and press delete...............

(ii) Mention five names of bars found on Microsoft word program window.

- Title bar...
- Menu bar...
- Tool bar...
- Status bar...
- ruler bar..

(b) (i) Give the name of the bar in a Microsoft word program which acts as the communication link between a user and the program.

...............Status bar...

(ii) List two examples of word processor program.

- microsoft word:...
- Apple works:...

Extract 9.2 shows a response from a script of a student who got correct answers in all parts. This shows that, the students had clear understanding in a Microsoft Word program.

2.10 Question 10: The Computer

This was an essay type question which required the students to explain three advantages and three disadvantages of using computer in daily life.

A total of 17,932 (99.9%) students attempted the question, where 6010 (33.5%) scored from 0 to 5.5 marks, 6813 (38%) scored from 6 to 12.5 marks and 5109 (28.5%) scored from 13 to 20 marks. Figure 11 below shows the performance of students in this question.
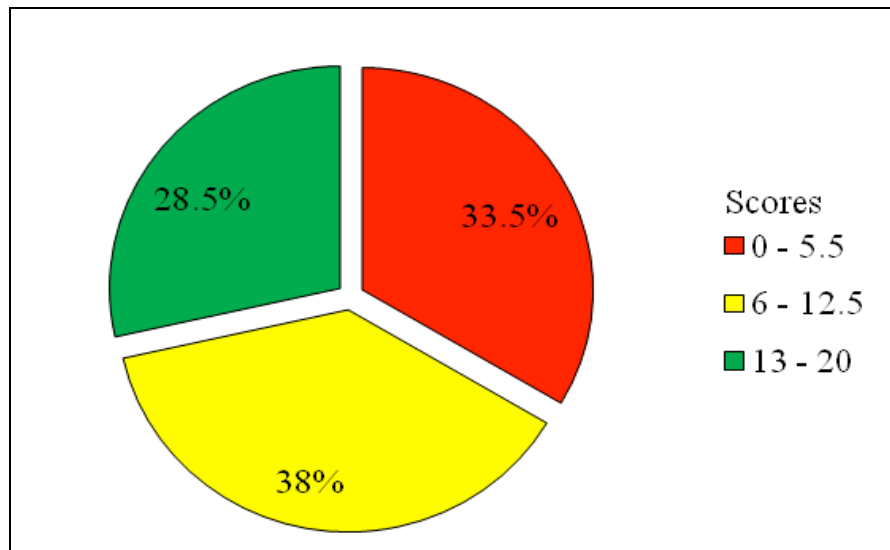
Figure 11: *The students performance in question 10.*

Figure 11 shows that, 66.5 percent of the students scored above 5.5 marks. Therefore, this question had an average performance. The majority of the students (33.5%) who scored low marks (0 to 5.5) managed to write some advantages and disadvantages of using computer but failed to give their explanations. Others were poor in English language which led them to fail in giving correct explanations. It was observed that some of the students concentrated in explaining application area of computer in schools, offices and at home instead of advantages and disadvantages of computer in daily life. Others explained functions of computer, such as input, output and processing of data. This signifies that the students did not understand the requirement of the question. Extract 10.1 shows a sample of a poor response provided by one of the students.

Extract 10.1

10   Computer — is the device that manages and store information. The Advantage of the computer in daily life
    It help to internet system program - Internet system program is the advantages of the Computer in daily life
    It help to cleating to separate user acounts. cleating to separate user acounts it is advantagt of Computer daily life because the people of all people It is live account example of acounts in acounts of children acounts of family and other
    It help to internet of radio, telephone, television. The Internet of radio telephune television It is Advantage of Computer daily of life.
    The disadvantage of the to using Computer in daily life
    It li not the internet of radio television of the p The disadvantage of the using computer in daily life. because the people it is does not money.
    It is not allwas all people to infor ormation. Information is the procced of data and used to making decision the disadvantagt of the using computer daily life.
    The generally of the disadvantages and Advantages of the using Computer daily life the following internet of radio, television, telephune so the government to support.

Extract 10.1 shows a response of a student who wrote wrong introduction of computer. The student also gave irrelevant advantages and disadvantages of computer.

On the other hand, most of the students (38%) who scored average marks (6 to 12.5) explained some advantages and disadvantages of computer in daily life correctly with incorrect introduction and conclusion. Some of the students defined the term computer as introduction. This denied them full marks in introduction because they

failed to distinguish between the content of introduction and difinition on essay writing. Others wrote correct introduction and conclusion but gave wrong explanation to some points. For example, one student explained advantage of computer as, *It is accuracy, whereby it can provide work within a short period of time*. The student failed to know that accuracy of computer does not measure the speed of the computer to do a particular work but it depends on the ability of the computer to run out of the mistakes. It was observed that some of the students concentrated on writing disadvantages of internet instead of disadvantages of computer. For example, one of the students wrote, *In ability to produce information*. The students were supposed to know that flow of information into the computer depends on reliable internet and not ability of the computer.

Moreover, most of the students (28.5%) who scored high marks (13 to 20) wrote correct introduction, conclusion, advantages and disadvantages of the computer in daily life. Some of the students failed to write conclusion, which led them to lose some marks. Others could not explain all points as it is required. This indicates that the students had insufficient knowledge on computer. Extract 10.2 shows a sample of a good response which was provided by one of the students.

Extract 10.2

10. Explain three advantages and three disadvantages of using computers in daily life.

Computer is an electronic device which used to store data, process data and generate the desired output. Computer is very important in our daily life the following are the importance of using computers.

Storage; Computers help us to store data and other files and document. Computer can store a large amount number of information unlike to human being and can never get lost.

Accuracy; Computer does it work without any mistake and it works accordingly unlike to human beings which sometimes mistakes may occur but for computer work is done effectively.

Automation; When computer works, it does it work automatically even when you have wrong somewhere example spelling, the computer will just correct it automatically without command. Also there are disadvantages of computer the following are the disadvantage,

Moral decay; Through the usage of computer in our daily life sometimes people are using internet to search things which are not good and look bad videos such as x-videos and other phonographic photos, and this can lead to moral decay especially to youths.

Laziness; Through the usage of computer, people spend their time to the computer instead of doing other this and this lead to laziness, because sometimes people are just chatting or playing game.

Lack of (com) employment; Nowadays people are not much employed because of the usage of computer this is because those works which could be done by people are now done by the computers therefore most of the offices are using computers to perform different works.

All in all computers are very important and helpfull in our society therefore we have to avoid the misuse of computer.

Extract 10.2 shows a sample of a response of a student who explained all advantages and disadvantages of computer correctly. This shows that the student had clear understanding on the uses of computer in daily life.

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3.0 PERFORMANCE OF STUDENTS IN EACH TOPIC

The Information and Computer Studies Assessment had 10 questions that were set from 9 topics. The analysis of the performance shows that multiple choice, True/False and an essay questions had good performance. The multiple choice was composed from the topics of *Information, The computer, Computer Software, Computer handling, Word processing, Spreadsheet* and *The Internet;* the True/False questions were set from the topics of *Computer Network and Communication, The computer* and *Spreadsheet*; while an essay question was set from the topic of *The computer.* The good performance in the stated topics were attributed to adequate knowledge and correct interpretation of the requirements of the questions.

On the other hand, the five (5) topics, namely *The computer, Computer generations, Computer Network and Communication, Word processing* and *Spreadsheet* that were tested in question 2, 4, 7, 8 and 9 had an average performance. However, some students performed poorly in two topics, *Computer Software* and *The Internet.* Furthermore, poor performance was attributed to insufficient knowledge and skills of the concept taught under the stated topics, wrong interpretation of the requirement of the question, poor English Language and lack of practical skills. The performance of students in different topics is summarized in the attached *Appendix.*

4.0 CONCLUSION

The analysis of the students' performance has been done on each question that was assessed in (FTNA) in 2018 in Information and Computer Studies paper. In general, the performance of the students was average since 48.8 percent of the students who sat for this assessment passed. However, there are some factors that led to students' failure to score high marks. This is attributed to insufficient knowledge and skills of the concept taught under the stated topics, wrong interpretation of the requirement of the question, poor English Language and lack of practical skills.

The analysis on individual items shows that most students experienced difficulties in questions number 5 and 6 which involved the topics of *Computer Software and The Internet.* Further analysis shows that the students scored high marks in the objective questions (question 1 and 3). The students also scored high marks in an essay question (question 10).

5.0 RECOMMENDATIONS

In order to improve the performance of future students, it is recommended that:

(a) Emphasise students to read questions carefully to understand its requirement.

(b) Students need guidance and motivation to master English language which will improve their ability to express their ideas clearly and logically.

(c) Teachers should assist students to form computer clubs, which will help them improve their practical skills. In such clubs students will have opportunities to share different ideas and experience.

(d) Teachers should organise seminars and meetings to exchange ideas and experience on computer studies. This can be done by the teachers in the same school or with different schools to share their experiences.

(e) Teachers should provide enough exercises, tests and assessments to enhance students' mastery of concepts in the classroom environment for both knowledge and skills.

(f) Students need to prepare themselves well for the Assessment so as to be able to attempt all the required questions as expected.

Summary of the Performance of Candidates – Topic wise

S/N	Topic	Number of Questions	Percentage of Students who Scored 30 % Marks or Above	Remarks
1.	Information, The computer, Computer Software, Computer handling, Word processing, Spreadsheet and the Internet.	1	83.8	Good
2.	Computer Network and Communication, The computer and Spreadsheet.	1	79.9	Good
3.	The computer.	2	50	Average
4.	Word processing,	1	48.9	Average
5.	Computer Network and Communication	1	44.8	Average
6.	Spreadsheet	1	42.2	Average
7.	Computer Generation	1	38.9	Average
8.	Computer Software	1	26.4	Weak
9.	The Internet	1	22.7	Weak