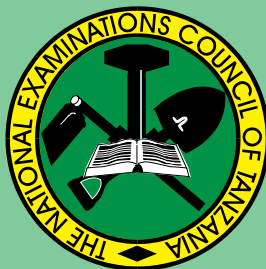


THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



**STUDENTS' ITEM RESPONSE ANALYSIS
REPORT FOR THE FORM TWO NATIONAL
ASSESSMENT (FTNA) 2015**

036 INFORMATION AND COMPUTER STUDIES

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



**STUDENTS' ITEMS RESPONSE ANALYSIS BOOKLET
ON THE FORM TWO NATIONAL ASSESSMENT
(FTNA) 2015**

036 INFORMATION AND COMPUTER STUDIES

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FOREWORD

The Information and Computer Studies Item Response Analysis Report on the Form Two National Assessment (FTNA) 2015 was written in order to provide feedback to the students, teachers, parents, policy makers and other educational stakeholders on the students' performance in this subject.

The Form Two National Assessment marks the end of two years of secondary education. It is a formative evaluation which among other things shows the effectiveness of the education system in general and education delivery system in particular. Essentially, students' response to the Assessment questions is a strong sign of what the education system has been able or unable to offer to the students in their two years of secondary education.

The analysis presented in this report is intended to contribute towards understanding of some of the reasons behind the performance of students in the Assessment. The report highlights the factors that made the 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 related to the subject. The report also highlights the reasons that made few students to perform well. Such reasons include sufficient knowledge and correct interpretation of the requirements of the questions. The feedback provided is to enable the educational administrators, school managers, teachers, and students expected to take proper measures in order to prepare well for the coming Form Four National Examinations.

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



Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report on Information and Computer Studies is based on the performance analysis of the students who sat for the Form Two National Assessment in 2015. The paper was set to assess competences acquired by the students as stipulated in the 2005 Information and Computer Studies syllabus for Ordinary Secondary Education at Form Two level.

This report is intended to provide feedback to stakeholders on the performance of students by noting students' weaknesses in responding to the questions. It is generally expected to assist in enhancing teaching-learning process and therefore improve students' performance.

The assessment comprised of one theory paper which consisted of three (3) sections: A, B and C. Section A consisted of three (3) objective questions which were: multiple choice items, matching items, and true/false items. This section carried a total of 40 marks. Section B consisted of two short answer questions which carried a total of 40 marks. Lastly, Section C had an essay question which weighed 20 marks. All questions in both sections were compulsory.

In analyzing 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 of that question is 50-100, 30-49 and 0-29 respectively. In this report, the students' 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.

The number of students, who sat for this paper in November, 2015 was 22,744. Among them, 30.50 percent passed with different grades as shown in Table 1.

Table 1: Students Pass Grades in FTNA 2015 Information and Computer Studies Assessment.

Grade	A	B+	B	C	D	E	F
No. of students	41	483	1,081	1,953	3,378	5,940	9,866
% of students	0.18	2.12	4.75	8.58	14.85	26.12	43.38

Students' performance has been analyzed by showing the question demands, what students were able to do, and the observed mistakes made by students when attempting the questions. Furthermore, the charts and extracts for both good and poor responses from the students' scripts have been attached to illustrate the cases presented.

A topic/question was categorized as poorly performed, average or good performed if the average number of students who scored 30 percent or above of the marks in a particular question/topic was 0-29, 30-49 and 50-100 percent respectively.

2.0 ANALYSIS OF THE STUDENTS' PERFORMANCE PER QUESTION

2.1 Question 1: Multiple Choice Items

The question consisted of twenty (20) multiple choice items which were composed from various topics of the syllabus. Those topics were *information, the computer, computer software, computer revolution, spreadsheet, word processor, and the Internet*. The students were required to choose the correct answers from among the given four alternatives (A - D).

A total of 22,744 (100%) students attempted this question, out of which 41.0 percent scored from 0 to 5 marks, 40.2 percent scored from 6 to 9 marks, and 18.8 percent scored from 10 to 20 marks. Figure 1 below represents the students' performance in this question.

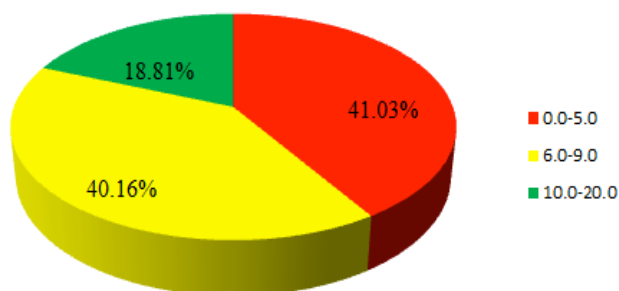


Figure 1: The students' performance percentage.

The overall performance in this question was good because 58.97 percent of the students scored from 6 marks or above. The students managed to choose the correct answers in many items. On the other

hand, 41.0 percent of the students performed poorly. The analysis carried out in the scripts of the students indicates that most of the students scored poorly in item (i), (iv), (vii), (viii), (x), (ix), (xii) and xix).

The following item was given in (i): *“A memory which is used to store programmed instructions and data permanently is called”*

- | | | |
|----------|------------|-------------------|
| <i>A</i> | <i>RAM</i> | <i>C Register</i> |
| <i>B</i> | <i>ROM</i> | <i>D Buffers</i> |

Item (i) required the students to identify the name of a memory which can store data permanently. The correct answer was “B” (ROM). Some students chose A “RAM” which is used to store data temporarily and not permanently as required. The rest of the students chose C “register” which is a memory found in the CPU and D “Buffers” which are memories found in input/output devices. This indicates that the students had poor knowledge on computer memories.

Item (iv) was as follows: *“Operating System which do not provide Graphical User Interface (GUI) is called”*

- | | | |
|----------|------------------|--------------------|
| <i>A</i> | <i>Window XP</i> | <i>C Macintosh</i> |
| <i>B</i> | <i>DOS</i> | <i>D Window 98</i> |

This item tested students’ knowledge on types of operating systems. The correct answer was B “DOS” but majority of the students chose other alternatives (window XP, Macintosh, and Window 98). These alternatives were wrong because they are examples of Operating Systems that provide Graphical User Interface. This indicates that the students lacked knowledge on the types of operating system.

Item (viii) was as follows: *“The computers which are mostly used in large businesses as network servers are known as”*

- | | | |
|----------|-----------------------|------------------------------|
| <i>A</i> | <i>Supercomputers</i> | <i>C Mainframe computers</i> |
| <i>B</i> | <i>Minicomputers</i> | <i>D Microcomputers</i> |

The item above tested the students’ knowledge on types of computer and their application areas. Students were asked to identify the computers which are mostly used in large businesses as network

servers. The correct answer was C “mainframe computers”. The other alternatives were wrong because alternatives A “supercomputers” are used for scientific research, defense and weapon analysis. B “minicomputers” are used in scientific laboratories and engineering plants, while alternative D “microcomputers” are used in training and learning institutions, communication centers, and homes. This failure indicates that the students lacked adequate knowledge on application areas and function of types of computers.

The following question was given in item (ix): *“Which of the following is an example of an absolute cell reference in a spreadsheet?”*

A 2\$B

C \$B\$1

B \$A1

D \$A\$B

This item tested the students’ knowledge on cell referencing. The students were asked to choose the correct example of an absolute cell reference in a spreadsheet. The correct answer was C “\$B\$1”. Most students selected the other alternatives which were not correct because the alternative A “2\$B” starts with a number while cell addresses start with letters (column) followed by numbers (row). The second alternative B “\$A1” was wrong because it was a mixed cell reference which consists of absolute cell reference A and relative reference 1. Alternative D “\$A\$B” was also not correct because it consists of letters only. This indicates that the students lacked the concept on types of cell referencing.

Item (x) was as follows: *“Cells A4, A7, C4, C5 and C7 contain values 4, 4, 9, 2 and 3 respectively. Then in cell D a formula, =C5*(A4+A7)-(C4/C7) is entered. What will be the value for cell D?”*

A 10

B 12

C 11

D 13

The correct answer was D but most students chose any of the rest alternatives. This might be attributed by insufficient knowledge on mathematical skills.

Item (xii) required the students to choose the correct answers of the question “Which one of the following is **not** a word processor?” The correct answer was B “Word wrap”. Most students selected other options which were A “Word star”, C “Word perfect” and D “Word pro”. The students who scored zero in this item failed to realize that the alternatives given in A, C and D were examples of word processor except B which was a feature of word processor.

The given item (xix) was as follows: *The following are examples of browser **except***

- A Google chrome
- B Mozilla Firefox
- C Internet explore
- D Yahoo

The correct answer was D “Yahoo”. The students who scored zero chose the wrong alternatives which were examples of web browser except D which was an example of search engine. This indicates that the students failed to extract the search engine from web browser.

2.2 Question 2: Matching Items

The question was intended to measure the candidate’s ability to distinguish functions of different communication devices. In this question, the students were required to match the functions of network devices in **List A** with their corresponding communication devices in **List B** by writing the letter of the correct option beside the item number in the table provided. The question was as follows:

List A	List B
(i) A device which create a physical link between the computer and the transmission media.	A Wireless antennae B Switch
(ii) A device which converts a signal from digital to analog form for the purpose of transmission.	C Gateway D Router

List A	List B
(iii) A device that connects networks that have a common architecture.	E Repeater F Bridge G Hub
(iv) A device that selectively determines the appropriate network segment for which a message is meant for delivery through address filtering.	H Modem I Access point J Network Interface Card
(v) A device that receives a signal from one segment of network cleans it to remove any distortion before sending that signal to another computer.	K Coaxial cable L Data bus M Universal serial bus
(vi) A device which interconnects different networks and directs the transfer of data packets from source to destination.	
(vii) A device can be configured to provide access to wide area networks or the Internet.	
(viii) A device which forwards a packet directly to the address node without broadcasting.	
(ix) A device which detects signals in the surrounding.	
(x) A device which is most common in wireless network.	

A total of 22,744 (100%) students attempted this question, out of which 91.8 percent scored from 0 to 2 marks, 7.8 percent scored from 3 to 5 marks and 0.4 percent scored from 6 to 10 marks. Figure 2 represents the students' performance in this question.

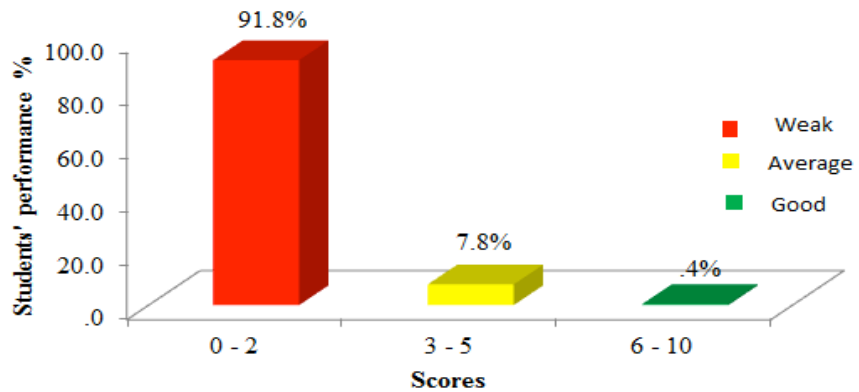


Figure 2: The students' percentage against scores.

The analysis on the students' responses shows that majority of the students responded correctly in parts (ii) and (ix) only. The answer provided in part (ii) was *Modem* and (ix) *Wireless antennae*. The students' responses might be attributed to the fact that modem and wireless antennae are frequently used in daily life compared to other network devices such as *Router*, *Repeater*, *Hub* and *Bridge*. However, 42.6 percent of the students scored zero in all parts. These students lacked knowledge of computer network devices which led them to guess the answers. The items which most students scored poorly include; (i), (iii), (iv), (v) (vii), (viii) and (x).

In item (i), the students were required to identify “A device which create physical link between the computer and the transmission media”. The correct answer was J “Network Interface Card” but most students wrote K “coaxial cable” which is used by telephone companies from their central office to the telephone poles near the users. It is also widely installed for use in business and corporation Ethernet and other types of local area networks. The students might be attracted by this option because coaxial cable is used to create a physical link in LANs.

Item (iii) required the students to write the letter of the correct term given to “A device that connect networks that have a common architecture”. The correct answer was G “Hub” but the students opted for wrong options: B “Switch”, C “Gateway”, D “Router”, E “Repeater” and F “Bridge”. This indicates that the students had an idea on communication devices but failed to identify the specific function for each device.

Item (iv) required the students to write the letter of the correct term given to A device that selectively determines the appropriate network segment for which a message is meant for delivery through address filtering”. The correct answer was F “Bridge” but the students chose wrong alternatives. Those who chose wrong response failed to understand that *Bridges* propose to forward the data after inspecting into the MAC address of the devices connected to every segment. The forwarding of the data is dependent on the acknowledgement of the fact that the destination address resides on some other interface.

Item (v) required the students to write the letter of the correct term given to “A device that receives a signal from one segment of network cleans it to remove any distortion before sending that signal to another computer”. The correct answer was E “Repeater” but the students chose F “Bridge”. The students were supposed to understand that both bridge and repeater receive a signal from one segment of network to another but play different roles. For example, when two LANs are connected using a repeater, all the traffic on one LAN are simply copied to the second LAN while the bridge only passes traffic from one LAN to another LAN if the traffic is addressed to a machine on the second LAN.

Item (vii) demanded the students’ ability to write a letter of a correct term given to “A device which can be configured to provide access to wide area networks or Internet”. The correct answer was C “Gateway” but majority of the students chose wrong alternatives. They failed to realize that when network device (Hub, Switch, Router, Repeater and Bridge) are configured to provide access to wide area networks or Internet, they are called Gateway. They probably thought that *gateway* is a different device from other network devices.

Item (viii) required the students to identify the letter of a device which forwards a packet directly to the address node without broadcasting. The correct answer was B “Switch” but many students chose G “Hub”. The students’ answer was not correct because hub works by sending the data to all the ports on the device whereas a switch transfers it only to that port which is connected to the destination device.

Item (x) required the students to identify the letter of the correct term given to “A device which is most common in wireless network”. The

correct answer was I “Access point”. Most students wrote A “Wireless antennae”. These might have been attracted by the term “wireless” which appeared in the stem of the question.

Generally, students performed poorly in this question because they had insufficient knowledge on computer network devices.

2.3 Question 3: True/False Items

The question consisted of ten (10) True/False items composed from the topics of: *The computer, word processing, computer software, information, and spreadsheets*. The students were required to write T for the correct statements/items and F if the statement was not correct.

The following items were given:

- (i) Laser printers and ink jet printers are examples of non-impact printers.
- (ii) Touch screens and monitors are output devices.
- (iii) Most word processors have ability to create and import tables, text, and graphics from other programs.
- (iv) A worm does not attach itself to program but itself-replicates hence jam computer storage and memory.
- (v) Primary and secondary sources are not the main classes of source of information.
- (vi) The recommended fire extinguishers are liquid type.
- (vii) Antiglare can avoid eye strain caused by over bright cathode ray tube monitors.
- (viii) Worksheet, database and graphs are the main components of spreadsheets.
- (ix) Portrait and landscape are types of page layout.
- (x) The majority of menu shortcut keys are activated by using control key.

All 22,744 students attempted this question, out of which 1.5 percent scored from 0 to 2 marks, 33.7 percent scored from 3 to 5 marks, and 64.8 percent scored from 6 to 10 marks. Figure 3 shows the performance of the students in this question.

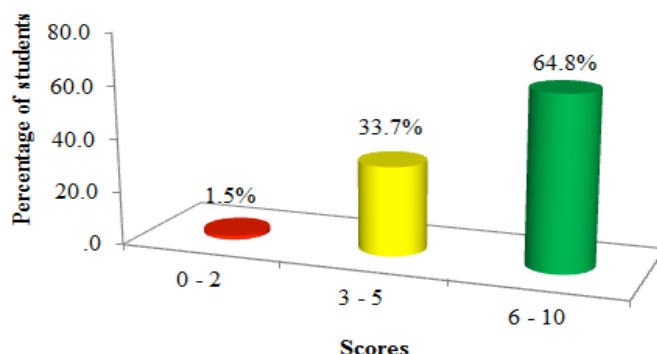


Figure 3: The Students' Percentage against Scores.

The general performance in this question was good. The students who scored high marks were able to give the correct responses in many items while those who scored low marks managed to give few correct responses. Item (i), (ii), (iv), (v), (vi) and (ix) seemed to be difficult to many students as they scored 0 mark.

In item (i), the students were required to write T or F for the statement "Laser printers and ink jet printers are examples of non-impact printers". The correct answer was T but majority of the students wrote F. This response was not correct because Laser and inkjet printers use spraying mechanism, all printers that use spray technology are termed as non-impact printers.

Item (ii), tested the students' knowledge on input/output devices. The students were required to write T or F for the statement "Touch screens and monitors are output devices". The correct answer was F but most of the students wrote T. The candidates' response was wrong because *Touch screen* let the user to touch the screen using finger or a stylus in order to write or select an item. Therefore, it is regarded as an input device but monitors display information in form of text, pictures and video.

Item (iv) required the students to either agree or disagree with the statement "A worm does not attach itself to program but itself-replicates hence jam computer storage and memory". The correct answer was T but the students wrote F. The students' response was wrong because worms are computer programs that are able to copy themselves from machine to machine through computer networks. Other malicious programs such as virus and Trojan horses do not replicate.

Item (v) required the students to either agree or disagree with the statement “Primary and Secondary sources are **not** main classes of source of information”. The correct answer was F but most of the students wrote T. These students lacked knowledge on the types of sources of information which are primary and secondary.

Item (vi) required the students to write T or F for the statement “The recommended fire extinguishers are liquid type”. The correct answer was F but the students wrote T. The recommended fire extinguishers are powder type and not liquid because liquid can accelerate fire. This might be attributed to insufficient knowledge on the content taught under the topic Computer Laboratory which led them to think that liquid such as water can be recommended as fire extinguishers.

Lastly, item (ix) required the students to write T or F for the statement “Portrait and landscape are types of page layout”. The correct answer was F because page layout includes margins, orientation, size, columns, and page breaks. Portrait and landscape are types of page orientation and not layout. The students failed to distinguish between layout and orientation which led them to write T.

2.4 Question 4: Word Processing

The question had two parts; (a) and (b). In part (a) the students were required to complete the given sentences using one item from the following Box.

Menu bar, tool bar, Ctrl+F4, Ctrl+ S, Ctrl+ X, status bar, Ctrl+ V

The sentences are:

- (i)act as communication link between the user and the program.
- (ii)help a user to close the current document.
- (iii)help a user to save changes made to the document.
- (iv)help a user to paste the document.

Part (b) (i) required the students to define the term word processor and in part (b)(ii) give four advantages of electronic word processor over manual typewriter.

The analysis shows that the question was attempted by all (100 %) of the students, out of which 69 percent scored from 0 to 4.0 marks, 13.7 percent scored from 5 to 6 marks and 17.3 percent scored from 7 to 14 out of 14 marks. These data indicate that the performance of the students in this question was average and is shown in Figure 4.

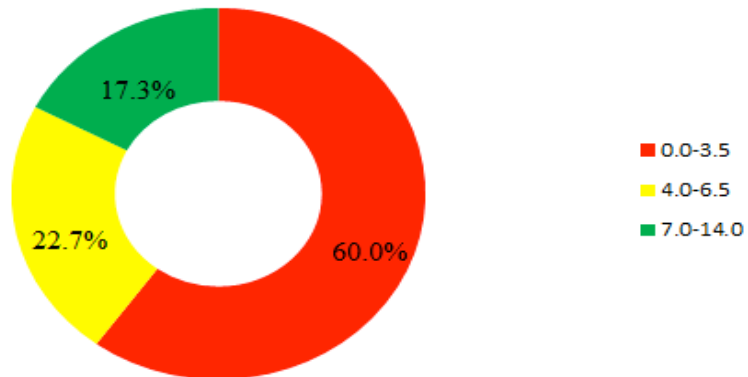


Figure 4: The performance of students' in question 4.

The students (69%) who scored low marks (0 to 4) were able to give only few correct keyboard shortcuts (Ctrl+ S) in part (a)(iii) and (Ctrl+ V) in (iv). They also failed to give the concrete definition of 'word processor' as well as the advantages of the word processor. The analysis on the students responses shows that the students failed to distinguish between the functions of menu bar and status bar in part (a)(i) as they wrote that *menu bar* acts as communication link between the user and the program instead of status bar. Status bar provides a user with page number and total number of words available in the working document but menu bar provides the user with a group of commands, which are used to create and manipulate a document. Part (a)(ii) required the students to write the keyboard shortcuts which help the user to close the current document. The correct answer was Ctrl+F4 but most of the students wrote *Ctrl+ X*. The students' response was wrong because *Ctrl+ X* is used to remove (cut) text or paragraph in a document and not closing the current document.

The students were also unable to give the definition and advantages of the word processor in part (b). Most of them wrote the word processor as a device which is used to type and edit a document instead of application of software/program which is used to create, save, edit, format and print documents. Few students had an idea on the advantages but failed to compare them with a manual typewriter. For example, some of the students wrote the following answers:

Example 1

4. (b) (i) *Electronic word processor is defined as storing of information in electronic device.*
- (ii) Advantages of electronic word processor over manual typewriters are
It is very fast, Data can be integrate, It allows the use of formula, It can be changed, and it can be transferred.

Example 2

4. (b) (i) *Word processor is a type of word processor which uses electronic data processing will typing*
- (ii) Advantages of electronic word processor over manual typewriters are:
It help in type writing, it help as to copy things which are in word processor and it help to maximize the standard of typing

Example 3

4. (b) (i) *Word processor is an application software that is used to analyze numerical data.*
- (ii) Advantages of electronic word processor over manual typewriters are:
It analyze numerical data, it calculates numerical data Gives feedback on the analysis and it supports numerical data.

Such responses signify that the students had insufficient knowledge of word processing. Similar response is shown by Extract 4.1.

Extract 4.1

4. (a) Complete each of the following sentences using one item from the given list.

Menu bar, tool bar, Ctrl+F4, Ctrl+S, Ctrl+ X, status bar, Ctrl + V

- (i) Ctrl + F4 act as communication link between the user and the program.
(ii) status bar help a user to close the current document.
(iii) Tool bar help a user to save changes made to the document.
(iv) Menu bar help a user to paste the document.

- (b) (i) Define the term electronic word processor.

Is the program which enables the communication of the
Computer and Computer user.

- (ii) Give four advantages of electronic word processor over manual typewriters.

It help to share idea
It help to communicate with other people
It help to control the computer devices
It help to accept data devices

Extract 4.1 shows a response from a script of a students who wrote features of MS word instead of keyboard shortcuts in part (a) (ii), (iii) and (iv). Also he/she wrote advantages of Internet in part (b) contrary to the question demand.

Despite these weaknesses, 13.7 percent of the students scored average marks (5 to 6). These students were able to give the correct shortcuts in part (a) that it helps a user to close the current document (Ctrl+F4), save changes made to the document (Ctrl+ S), and that paste the document (Ctrl+ V). But majority of them failed to write the correct feature that acts as a communication link between the user and the program. Some students wrote *menu bar* and some wrote *tool bar* instead of *status bar*. It was also observed that the students were able to give the correct definition of *word processor* but failed to give its correct advantages of the word processor as compared to the manual typewriter.

Few students (17.3%) who scored high marks were able to give the correct responses in both parts (a) and (b). They managed to give the correct features and shortcuts as well as *definition of the word processor* and its advantages but failed to score full marks because most of them did not compare with manual typewriter. The

following is a part of responses of a candidate who correctly gave advantages of electronic word processor over manual typewriter.

- *A document can be stored for future use unlike in typewriting where the same document may require retyping if required in future.*
- *Typing using a word processor is easier and more efficient due to automated features such as word wrap and autocompleate which are not accessible in typewriter.*

Extract 4.2 represents a sample of such good responses from one of the candidates.

Extract 4.2

4. (a) Complete each of the following sentences using one item from the given list.

Menu bar, tool bar, Ctrl+F4, Ctrl+S, Ctrl+ X, status bar, Ctrl + V

- (i) Status bar act as communication link between the user and the program.
- (ii) Ctrl + F4 help a user to close the current document.
- (iii) Ctrl + S help a user to save changes made to the document.
- (iv) Ctrl + V help a user to paste the document

- (b) (i) Define the term electronic word processor.

Electronic word processor is a software which is capable of creating, editing, formatting, storing and printing text based on documents

- (ii) Give four advantages of electronic word processor over manual typewriters.

① Electronic word processor has special features like spell checker and Thesaurus

WHILE a manual typewriter does not have.

② You can edit your work in a word processor. WHILE in a manual typewriter, you will have to start all over again.

③ You can easily correct mistakes in a word processor. WHILE in a manual typewriter you cannot.

④ You can save your work in a word processor WHILE in a manual typewriter you can not.

Extract 4.2 shows a sample answer from a candidate who presented the correct answers but failed to score full marks because the second advantage given in part (b) (ii) is not correct.

2.5 Question 5: The Computer and Spreadsheet

The question consisted of two parts; (a) and (b). In part (a)(i) the students were required to mention three functional elements of CPU and part (a)(ii) explain the functions of each element mentioned in (a)(i). Part (b) required the students to read the given snapshot and then answer the questions asked.

The following snapshot was provided:

	A	B	C	D	E	F	G	H	I	J
1	PAYROLL									
2										
3	Employee Code	Dept	Normal hours	Rate per hour	Gross	LPF	Tax	Total Deduction	Net	
4	T120	Sales	30	3500	105000	2100	10500	12600	92400	
5	T121	Admin	40	5000	200000	4000	20000	24000	176000	
6	T122	Sales	38	3500	133000	2660	13300	15960	117040	
7	T123	Finance	40	4000	168000	3360	16800	20160	147840	
8	T124	Admin	40	4000	168000	3360	16800	20160	147840	
9										
10	Total Gross				774000					
11	Average Nett								136224	
12										
13										

The questions asked were;

- Give the name of the program used to create the snapshot above.
- Write the font face and size used to type the details in the given snapshot.
- Give the reference name of the active cell.
- What format was done for the cells in row 3?
- The Net comes from subtracting total deduction from the Gross. Write down the formula required to calculate the Net.
- Write down the function required to calculate the average for all the Net.
- Write the function required to calculate the total gross.
- Write the function required to calculate the highest net pay.

The analysis shows that the question was attempted by 22,744 (100%) students, out of which 35.8 percent scored zero mark, 45.3 percent scored from 0.5 to 7 marks, 10.9 percent scored from 8 to 13 marks and 8.0 percent scored from 14 to 26 marks. The performance of students in this question is shown in the figure 5.

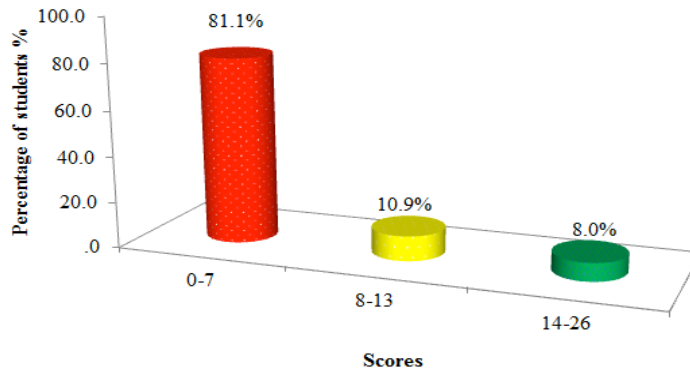


Figure 5: The Students' Percentage against Scores.

The general performance in this question was poor as figure 5 shows. Majority (81.1%) of the students who scored low marks managed to mention the functional elements of CPU in part (a) but failed to explain their functions. They also managed to give the name of the program (Spreadsheet) which was used to create the snapshot in part (b) but failed to give the reference name of the active cell and formula required to calculate Net, average for all Net, total gross and highest Net pay. It was observed that the students had knowledge on writing the formula and functions but lacked clear understanding on reference of the cells which led to wrong formula. For example, in part (b) (v) the students wrote `=SUM(E4:E8)` as the formula requires to calculate Net instead of `=E4-H4`. They wrote a function to calculate the total gross as `=SUM(A4:A8)` instead of `=SUM(E4:E8)` and `=MAX(A4:I8)` as the function requires to calculate the highest Net pay instead of `=MAX(I4:I8)`.

Some students (35.8%) also failed to score any mark because they did not understand the requirement of the question. They wrote components of computer such as *keyboard*, *monitor* and *system unit* instead if *ALU*, *Control unit*, and *memory unit* or *registers*. They also wrote the heading *Payroll* as the active cell instead of G12 as well as *Microsoft word* as the program used to create a snapshot instead of *spreadsheet*. Moreover, they could not write any function or formula

in the required parts. Extract 5.1 represents a sample of poor responses which was provided by one of the students.

Extract 5.1

5. (a) The Central Processing Unit (CPU) is the most important component of the computer.

(i) Mention three functional elements of CPU.

- Is the brain of computer which tell computer what to do
- It help w. user to find and shift document
- It helps in search data

(ii) Explain the function of each element mentioned in (i) above.

Ctrl+F4 - Used to link the communication between user and program
Status bar - to close the current document
Tool bar - helps user to make changes made to the document
Ctrl + X - To paste the document

(b) Read the following snapshot and answer the question that follow:

	A	B	C	D	E	F	G	H	I	J
1	PAYROLL									
2										
3	Employee Code	Dept	Normal hours	Rate per hour	Gross	LPF	Tax	Total deduction	Net	
4	T120	Sales	30	3500	105000	2100	10500	12600	92400	
5	T121	Admin	40	5000	200000	4000	20000	24000	176000	
6	T122	Sales	38	3500	133000	2660	13300	15960	117040	
7	T123	Finance	40	4200	168000	3360	16800	20160	147840	
8	T124	Admin	40	4200	168000	3360	16800	20160	147840	
9										
10	Total Gross				774000					
11	Average Nett								136224	
12										
13										

(i) Give the name of the program used to create the snapshot above.

Spreadsheet

(ii) Write the font face and size used to type the details in given snapshot.

Spreadsheet

(iii) Give the reference name of the active cell.

Workbook

5. (iv) What format was done for the cells in row 3?

Worksheet

(v) The Net came from subtracting **Total deduction** from the **Gross**. Write down the formula required to calculate the net.

=SUM(B8:I8) - Gross(B8:I8)

(vi) Write down the function required to calculate the average for all the net.

=AVERAGE(B8:I8)

(vii) Write the function required to calculate the total gross.

=TOTAL Gross(B8:I8)

(viii) Write the function required to calculate the highest net pay.

=MAX(B8:I8)

Extract 5.1 is a sample of poor response from a student who gave the function of CPU in part (a) instead of mentioning the functional elements. He/she also failed to provide correct formula due to inadequate knowledge in cell referencing.

The students who scored average marks (8 to 13) were able to mention three functional elements of CPU and explained its functions in part (a) but failed to score full marks because they did not provide exhaustive explanations. The analysis shows that the students managed to give the name of the program used to create the snapshot (Spreadsheet), write the font face and size which was used to type the details in the given snapshot (Calibri 12), give the reference name of the active cell (G12), and write the function required to calculate the total gross (=SUM(E4:E8)). The problem was observed on writing the format done in row 3, a formula which was required to calculate Net, and function required to calculate the highest Net pay.

Only 8 percent of the candidates scored high marks. These students mentioned and explained the functional elements of CPU correctly. They also gave the correct functions and formula in part (b). The following are some of good responses which were provided by the students:

(a) (i) *Three functional elements of CPU are Arithmetic and Logic Unit, Control unit and Main unit.*

(ii) *Functions of elements of CPU*

Arithmetic and Logic Unit: *Is a unit of central processing unit where all arithmetic and logical operations are carried out.*

Control unit: Control unit coordinates all processing activities in the CPU as well as input, storage and output.

Memory unit/ Registers these are memories used to hold the results of the last processing step of the ALU they also holds an instruction just before it is interpreted into a form that CPU can understand.

- (b) (i) Microsoft Excel.
(ii) Font face is Calibri and font size is 12.
(iii) G12
(iv) Wrap text
(v) E4-H4
(vi) =AVERAGE(I4:I8)
(vii) =SUM(E4:E8)
(viii) =MAX(I4:I8)

However, some of the candidates failed to score full marks due to poor knowledge of formatting features. Extract 5.2 represents a sample of good responses.

Extract 5.2

5. (a) The Central Processing Unit (CPU) is the most important component of the computer.

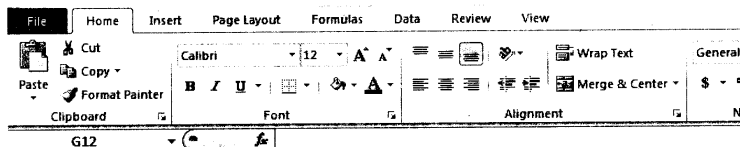
- (i) Mention three functional elements of CPU.

1) Arithmetic Logic Unit
2) Control unit
3) Main memory

- (ii) Explain the function of each element mentioned in (i) above.

1) Arithmetic Logic unit is used to perform calculations.
2) Control unit is used to control all the programs
3) Main memory is used to store data

- (b) Read the following snapshot and answer the question that follow:



Form Two Examination 2014.xlsx

	A	B	C	D	E	F	G	H	I	J
1	PAYROLL									
2										
3	Employee Code	Dept	Normal hours	Rate per hour	Gross	LPF	Tax	Total deduction	Net	
4	T120	Sales	30	3500	105000	2100	10500	12600	92400	
5	T121	Admin	40	5000	200000	4000	20000	24000	176000	
6	T122	Sales	38	3500	133000	2660	13300	15960	117040	
7	T123	Finance	40	4200	168000	3360	16800	20160	147840	
8	T124	Admin	40	4200	168000	3360	16800	20160	147840	

5. (i) Give the name of the program used to create the snapshot above.
 Spread sheet
- (ii) Write the font face and size used to type the details in given snapshot
 font size is 12, font face is Calibri
- (iii) Give the reference name of the active cell.
 G10
- (iv) What format was done for the cells in row 3?
 Bold
- (v) The Net came from subtracting **Total deduction** from the **Gross**. Write down the formula required to calculate the net.
 =SUM(H4-E4)
- (vi) Write down the function required to calculate the average for all the net.
 =AVERAGE(I4:I8)
- (vii) Write the function required to calculate the total gross.
 =SUM(E4:E8)
- (viii) Write the function required to calculate the highest net pay.
 =MAX(I4:I8)

Extract 5.2 shows responses from a script of a candidate who managed to give the correct functional elements of CPU as well as its functions but failed to score full marks because main *memory* is not a functional element of CPU. Also the formula in (v) is not correct.

2.6 Question 6: Internet

This was an essay type question which required the students to describe two advantages and three limitations of using E-mail as a means of communication.

All students (100%) attempted this question, out of which 65.6 percent scored from 0 to 5.5 marks, 21.4 percent got from 6 to 9.5 marks and 13.0 percent scored from 10 to 20 marks. Figure 6 represents the performance in this question.

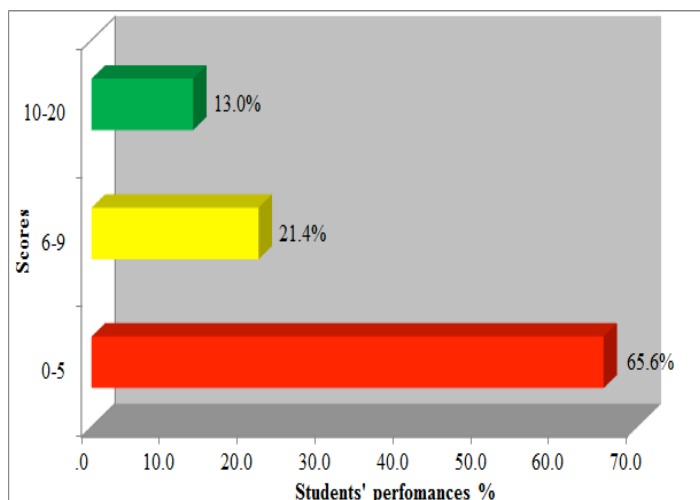


Figure 6: The Students' Performance Scores.

The students who scored low marks 0 to 5.5 cited only communication (sending and receiving mails) as an advantage of E-mail but failed to understand the meaning of the term limitations. Some students interpreted limitations as rules of using e-mail. They explained the advantages and limitations of Internet, computer networking, and communication. Responses such as *people should avoid the use of abusive language, E-mail can cause health problem, E-mail destroy our moral, wastage of time (chatting), and watching dirty sites* were provided by some of the students. This shows that the students had poor English proficiency which led to wrong interpretation of the question as well as partial explanations. Extract 6.1 is a sample of a poor response from one of the candidates who scored low marks.

Extract 6.1

6.	<p>Describe two advantages and three limitations of using E-mail as means of communication.</p> <p>E-mail is the one which is used to communication ant transportation network system. The following is the advantage of E-mail as means of a communication such as:- It help to gate new technology because the communication are used from the Computer are very importance of gate the communication of another continent or country for the Computer networks. It help to gate the Employer communication and transport network because the communication are move from one place to another are got the technology of communication from an country to another country. It help to get Employment for the Computer networks because the communication and technology are move from the country was are gate the employment to used the another computer networks. Conclusion:- All people to study the Computer networks but to save the technology and communication from the computer and study the advantages of networks example E-mail. The communication is the one which is very form got the technology for the country and not move that the computer is the electronic which which are find the work faste to got the answer from the question of the document are written from the computer but computer is the find the work faste.</p>
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Extract 6.1 shows a response from a student who had an idea of e-mail as a means of communication but failed to organize the idea. This indicates that the student had limited knowledge on the E-mail which, led to a failure in providing detailed elaborations.

On the other hand, students who scored average marks 6 to 10 were able to provide advantages and one correct limitation of e-mail but failed to give detailed explanations. They also provided poor introduction and conclusion. For example, one student wrote in introduction that “*E-mail (electronic mail) is a device used to send information*”, while others wrote *e-mail is the process of sending information*” instead of “Electronic mail (also known as email or e-mail) is among the most commonly used services on the Internet, allowing people to send messages to one or more recipients”. This indicates that the students had insufficient knowledge on the services offered on the Internet. This limited knowledge led some of the students to give disadvantages of Internet instead of electronic mail.

Further, the analysis shows that the students who performed well were able to give satisfactory advantages and limitations of e-mail. This shows that the students had adequate knowledge on the Internet. However, most of them were not able to score full marks because they could not provide exhaustive explanations on the limitations of e-mail. Among the advantages provided by the students were: *It enables us to send and receive messages easily and it is fast in sending and receiving messages*. Some of the limitations given were: *E-mail needs computer knowledge; it can spread computer virus and needs Internet connections to access an e-mail*.

Extract 6.2 shows a sample of a good response provided by one of the candidates.

Extract 6.2

6.	<p>Describe two advantages and three limitations of using E-mail as means of communication.</p> <p>E-mail is the message transmitted electronically over the internet. The message is send and recieved by a person through internet. People communicate through e-mail around the world.</p> <p>The following are some advantages of using E-mail as means of communication in our daily life.</p> <p>It is reliable method. People can send text, graphics or pictures through the email. This makes people to have multiple choice on what to send to their friends.</p> <p>It is easiest and fastest method. Sending data either picture or short message it takes short time to reach to the receipient. Also it is easy method to use because no much steps taken to send message.</p>
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Extract 6.2 cont.

	<p>Inspite of having many advantages of using E-mail but also it have some limitations. The following are the limitations or disadvantages of E-mail</p> <p>It requires high knowledge. Using Email requires high knowledge which is not common to all people of the society some people have low capacity of thinking and using computers. It can be traced as this method is inflexibility.</p> <p>It is expensive. It cost so high to access the internet and communicate with other method. E-mail requires large amount of money so as person can access internet without problem.</p> <p>It only take place in access of internet. This makes people to use email only when the internet is accessed. It can not take place over the normal network until internet. So once no access to internet no using E-mail method</p> <p>Finally, E-mail has become very popular and common method of communication now day around the world. This makes people to communicate easily and accurately because of it accuracy, speed and easy procedures. But also on other hand not all people can manage to use E-mail because it is expensive.</p>
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Extract 6.2 shows a response of a students who correctly explained the advantages and limitations of e-mail. However the candidate failed to score full marks because he/she could not give exhaustive explanations.

3.0 PERFORMANCE OF STUDENTS IN EACH TOPIC

The analysis shows that the topics which were well performed are: *Information, The computer, Computer software and computer revolution*. The good performance on these topics could be attributed to sufficient knowledge and correct interpretation of the requirements of the questions. The averagely performed topics were: *Word processing* and *Internet* as the performance of the students was 34.4 percent and 40 percent respectively. This performance may be due to insufficient knowledge of the concepts taught under these topics. The poorly performed topics were: *spreadsheet* and *computer networks and communication* as more than 80 percent of the students scored low marks. The poor performance in this topic could be attributed to a number of reasons including wrong interpretation of the requirements of the questions, lack of practical skills in responding to the question and poor ability in organizing the ideas. The performance of students in different topics is summarized in the attached *Appendix*.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 CONCLUSION

The analysis of the students' performance has been done on each question assessed in FTNA 2015 Computer Studies paper. In general, the performance of the students was average because many students failed to score high marks. The students' average performance may be attributed to the insufficient knowledge of the concepts related to the topics assessed, wrong interpretation of the requirements of the question and inadequate proficiencies in English language. The analysis on individual items shows that most students experienced difficulties in questions number 2 and 6 which involved computer networking and Internet respectively. The further analysis shows that the students scored high marks in questions 1 and 3.

4.2 RECOMMENDATIONS

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

- (a) The government and school managers should improve ICT infrastructure in schools. There should be ICT laboratories in order to improve practical skills.
- (b) Teachers should form strategies to ensure that students master the required skills and do regular practices.
- (c) Teachers should provide enough exercise, tests and assessments to enhance students' mastery of concepts in the classroom environment for both knowledge and skills.
- (d) Students should prepare themselves well for the assessment so as to be able to attempt all the required questions as expected.
- (e) Students should read the assessment questions carefully so as to be able to respond to the needed tasks in each question including all the sub-parts, if any.
- (f) Students should be guided and encouraged to master English language so as to be able to express their points/ideas clearly and logically.

APPENDIX

Summary of Performance of the Students – Topic wise

S/n	Topic	No. of Questions	Percentage of Students who Scored 30% Marks or Above	Remarks
1	The computer, Word processing, Computer software, Information and Spreadsheets.	1	98.5	Good
2	Information, The computer, Computer software, Computer revolution, Spreadsheet, Word processing and Internet	1	59	Good
3	The Computer and Word Processing	1	40	Average
4	Internet	1	34.4	Average
5	The computer and Spreadsheet	1	18.9	Weak
6	Computer networks and communication	1	8.2	Weak

