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

STUDENTS' ITEM RESPONSE ANALYSIS REPORT ON THE FORM TWO NATIONAL ASSESSMENT (FTNA) 2021

INFORMATION AND COMPUTER STUDIES

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036 INFORMATION AND COMPUTER STUDIES

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List of Abbreviations

SIRA	–	Students' Item Response Analysis
FTNA	–	Form Two National Assessment
RAM	–	Random Access Memory
ROM	–	Read Only Memory
UPS	–	Uninterruptable Power Supply
CPU	–	Central Processing Unit
PC	–	Personal Computer

FOREWORD

The National Examinations Council of Tanzania is pleased to issue the report on Students' Item Response Analysis (SIRA) in Information and Computer Studies for the Form Two National Assessment (FTNA), 2021. The aim of this report is to inform teachers, parents, students, policy makers and other education stakeholders on how students responded to the assessment items.

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 showed that students who performed well provided appropriate responses since they were able to identify the requirements of the questions, had sufficient knowledge of the subject content and had a good command of the English language. The report also highlights the reasons that made some students fail to score high marks. Such factors include failure to identify the requirements of the question, inability to express themselves in English and lack of knowledge on the concepts tested.

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

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

Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report analyses students' item responses in Form Two National Assessment in Information and Computer Studies subject for the year 2021. The paper was set according to the 2005 Information and Computer Studies Syllabus for Ordinary Secondary Education at form two level and the 2017 format.

The examination paper had three sections, A, B and C. Section A consisted of three objective questions which were multiple-choice items, matching items and true/false items. This section carried a total of 20 marks. Section B consisted of six short answer questions which carried a total of 60 marks and section C had an essay question which weighed 20 marks. All questions in all sections were compulsory.

This report provides feedback to our stakeholders on students' performance; showing both students' strengths and weaknesses. The students' performance in each question/topic has been categorized using the ranges of 0 to 29 (weak performance), 30 to 64 (average performance) and 65 to 100 (good performance). In this report, the students' performances are presented in different colours: whereby the red colour stands for weak performance, the yellow colour for average performance and the green colour for good performance.

A total of 11,901 students sat for this paper in November, 2021, of which 7,288 (61.24%) passed the assessment and 4,613 (38.76%) failed. In the 2020 performance, 14,016 students sat for the assessment, of which 5,559 (39.66%) passed and 8,456 (60.34%) failed. The performance increased by 21.58 percent when compared to the 2020 performance. Figure 1 shows the comparison between students' performance in 2020 and 2021.

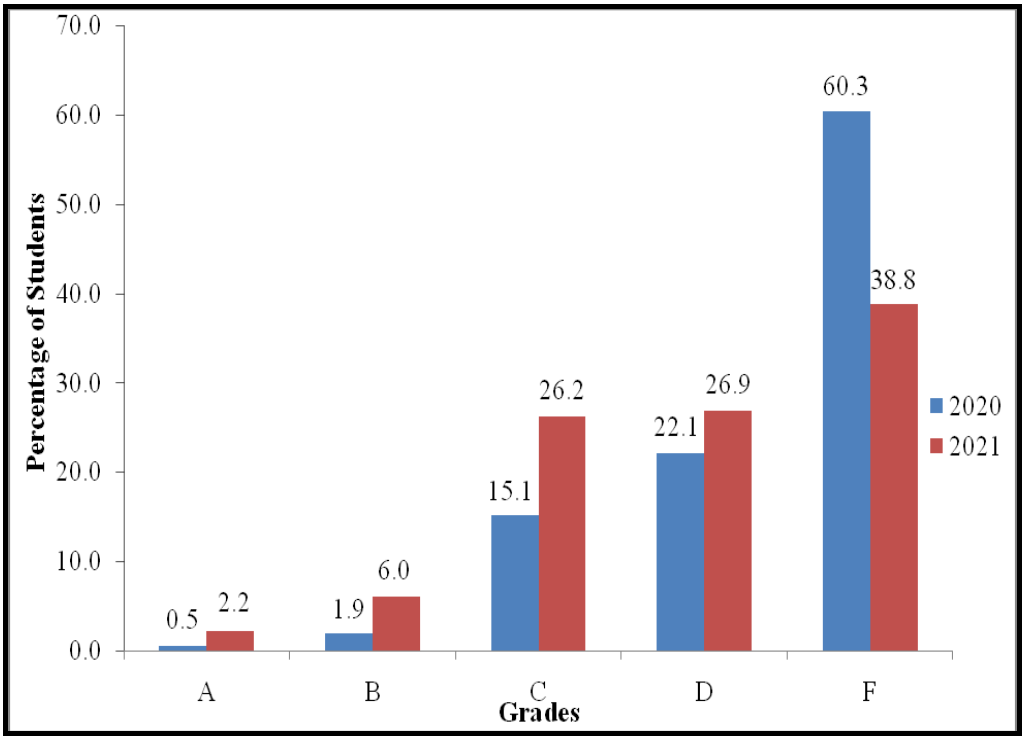


Figure 1: *A comparison between students pass grades in 2020 and 2021.*

2.0 ANALYSIS OF STUDENTS' PERFORMANCE 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 Handling, Word Processing, Spreadsheet, Computer Networks and Communications* and *The Internet*. The students were required to choose the correct answer from the given four alternatives (A – D).

A total of 11,901 (100%) students attempted this question, out of which 1,523 (12.8%) scored from 0 to 2 marks, 6,561 (55.1%) scored from 3 to 6 marks and 3,817 (32.1%) scored from 7 to 10 marks out of 10 marks allocated. Generally, the performance of this question was good since 87.2 per cent of students' scored from 3 to 10 marks. Figure 2 shows the summary of students' performance in this question.

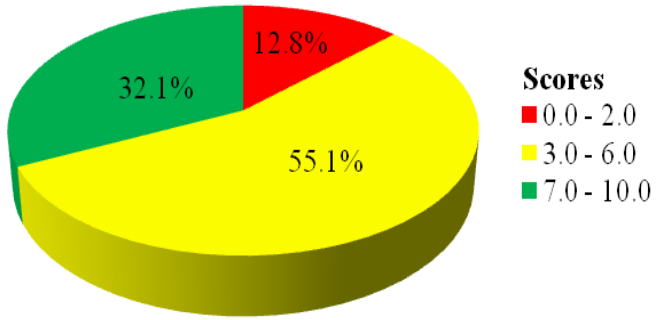


Figure 2: *The Students' Performance in Question 1.*

The following is the analysis of students' responses in each item of this question:

Item (i): *What is the name of the process of bolding and underlining paragraphs typed in the Microsoft word?*

A Editing *B Formatting*
C Emphasizing *D Decorating*

This item tested the students' knowledge of formatting paragraphs in Microsoft word document. The correct answer was B, *Formatting*. The students who opted for the correct answer demonstrated adequate knowledge of the uses of Microsoft word document. The analysis showed that most of the students selected alternative A, *Editing* which was wrong. These students failed to understand that editing involves correcting mistakes in a document. Moreover, other students opted for C, *Emphasizing* and D, *Decorating*. These failed to understand that emphasizing a text can involve bolding and decorating is the effect of formatting a document.

Item (ii): *Which icon pastes the document when a user clicks it?*

A  *B* 

C  *D* 

This item tested students' knowledge of using icons allowed in a standard tool bar. The correct answer was A,  . The students who

scored zero failed to identify the correct icon used to paste a document. They chose other icons which are not related with pasting the document. For instance some students opted for B,  as they did not know that this icon is used for saving documents. Others opted C  which is the printer icon. Moreover, some students opted for D  , which is wrong because it represents the folder icon. This shows that the students lacked practical skills on the uses of standard tool bar icons.

Item (iii) was as follows: *Mr. John who is a teacher had a problem of assigning the position for each student in a class. Which software would you suggest to be used by a teacher?*

A Microsoft publisher *B Microsoft access*

C Microsoft word *D Microsoft excel*

The item tested the students' knowledge of functions of different application software. The correct answer was D, *Microsoft excel.* The students who opted for other alternatives failed to understand the functions of the given application software. The students who chose wrong answer A, *Microsoft publisher* did not know that this software is used to bring together text and images to make professional publications such as looking flyers, brochures, handouts and newsletters. The students who opted for B, *Microsoft access* did not know that this is an information management tool that helps users to store information for reference, reporting and analysis. Others who opted for C, *Microsoft word* did not know that this software is used for creating text documents such as books reports and letters.

Item (iv): *Which of the following is an example of absolute cell reference?*

A B6 B $B6

C B6 D B$6

This item tested students' knowledge of cell referencing. The correct answer was C, *B*6. The students who scored zero in this item chose other options which were not correct. Some students chose A, *B6* which

is known as cell address or cell reference. Others chose B, *$B6* and D, *B$6* which represent a mixed cell reference.

Item (v): *Why Central Processing Unit (CPU) is regarded as the brain of the computer?*

A It saves all current data.
B It controls all input/output devices.
C It takes all decisions and processing activities.
D It controls the execution of application programs.

This item tested students' knowledge of the function of Central Processing Unit (CPU). The correct answer was C, *It takes all decisions and processing activities*. Students who scored zero chose other alternatives which were not correct. The students who chose A, *It saves all current data*, failed to differentiate between the functions of Random Access Memory (RAM) and CPU. Other students who chose B, *It controls all input/output devices* and D, *It controls the execution of application programs*, failed to understand that these are functions of Operating System and not CPU.

Item (vi): *What is the function of router on the network?*

A Provide access to the internet
B Interconnects different networks
C Converts signal from digital to analog form
D Divide a busy network into segments

The item tested the students' knowledge of computer network devices and their functions. The correct answer was B, *Interconnects different networks*. The analysis showed that most of the students selected A, *Provide access to the internet* and C, *Converts signal from digital to analog form*. These students failed to differentiate the function of modem from router on the network. Others who chose D, failed to understand that the function of dividing a network into segments is done by a bridge and not a router.

Item (vii): *Which program will you use to seek specific information on the internet?*

A Search engine *B Browser*
C Google chrome *D Internet explorer*

This item tested students' knowledge of searching information on the internet. The correct answer was A, *Search engine*. The students who scored zero marks failed to identify the program required to search information on the internet. The students who selected B, *Browser* failed to understand that browser is a program required to display a webpage. The students were also unable to differentiate search engine from browser. They were supposed to know that search engines are used to search particular information on a website while browsers are used to access the internet. Others who selected C and D failed to understand that Google chrome and Internet explorer are examples of web browsers which are used to display the web page.

Item (viii): *What is the disadvantage on students who get uncontrolled internet access?*

A Obtain large amount of educational information
B Obtain incorrect and misleading information
C Waste time on reading news paper
D Increase ability to understand subjects

This item tested students' knowledge on the negative impact of the internet on their daily life. The correct option was B, "Obtain incorrect and misleading information". Students who chose other options were wrong and thus scored zero. The students failed to understand the impact of uncontrolled internet access to students.

Item (ix): *What does the term data represent?*

A Processed information *B Processed facts and figures*
C Unprocessed facts and figures *D Meaningful information*

This item tested students' knowledge of data and information. The correct response was C, *Unprocessed facts and figures*. Students who chose other options were wrong and consequently scored zero. Other students selected B, *Processed facts and figures*. These were also not correct because processed facts and figures are refered to as information. Yet other students selected D which is wrong because it refers to processed data.

Item (x): *Why is it advised to set a strong password in the computer?*

A To restrict unauthorized user. *B To minimize computer virus.*

C To reduce unauthorized program. *D To prevent computer damage.*

This item tested students' knowledge of data security in a computer. The correct answer was A, *to restrict unauthorized user*. Students who selected other options scored zero because they failed to understand the importance of a password in a computer. The students who selected B, *to minimize computer virus* failed to understand that you cannot minimize computer virus by setting password, instead you can reduce or avoid it by restricting communication with affected devices. Others selected C, *to reduce unauthorized program*. These students failed to understand that, you can only avoid or reduce unauthorized program by avoiding downloading programs from unknown sources. The students who selected D, *to prevent computer damage* were also wrong because physical damage cannot be protected by password.

2.2 Question 2: Computer Networking and Communication

This question tested student's knowledge of Computer Network topology. In this question, the students were required to match the features of LAN in List A with their corresponding type of network in List B by writing the letter of the correct response below the corresponding item number in the table provided. The question was as follows:

List A		List B
(i)	All devices are connected to one another in the shape of a closed loop.	A Bus topology B Ring topology
(ii)	All devices are connected to a central cable called backbone.	C Mesh topology D Star topology
(iii)	Every device is connected to all other devices.	E Physical topology F Internet topology
(iv)	Each network device has a dedicated point to point link to the central hub.	G Tree topology H Logical topology
(v)	Groups of star-configured networks are connected to a linear bus backbone.	

A total of 11,901 (100%) students attempted this question. Out of which, 6,027 (50.6%) scored from 0 to 1 mark, 3,884 (32.6%) scored from 2 to 3 marks and 1,990 (16.8%) scored from 4 to 5 marks out of 5 marks allocated. These scores indicate that the students' performance was average as 49.4 per cent scored above 1 mark. Figure 3 summarizes the students' performance in this question.

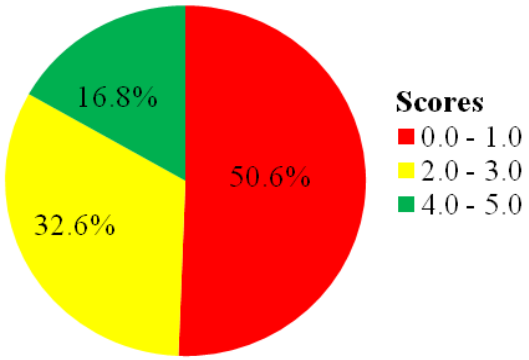


Figure 3: *The Students' Performance in Question 2.*

The following is the analysis of students' responses to each item of this question:

Item (i) tested the ability of the students to identify a network topology in which *all devices are connected to one another in the shape of a closed loop*. The correct answer was B, *Ring topology*. Most of the students gave a correct response to this item. This indicates that they had enough knowledge of ring topology. Some students scored zero by selecting option C, *Mesh topology*. This shows that the students misinterpreted the term "closed loop" as "every device is connected to all other devices" which is the characteristics of mesh. This implies that these students failed to understand the meaning of closed loop.

Item (ii) tested the ability of the students to identify the type of network in which *all devices are connected to a central cable called backbone*. The correct response was A, *Bus topology*. A significant number of students attempted correctly this item. However, some of the students selected option G, *Tree topology*. This indicates that these students mixed up the backbone which connects all computers in the bus topology with the backbone which connects the group of stars to form a tree topology.

Item (iii) tested the ability of the students to identify a type of network in which *every device is connected to all other devices*. The correct response was C *Mesh topology*. Most of the students managed to answer correctly this item as they identified correctly the features of mesh topology. Mesh topology has point to point connections between every node in the network. The connected nodes can be computers, switches, hubs, or any other devices.

Item (iv) tested the ability of the students to identify the type of network where *each network device has a dedicated point to point link to the central hub*. The correct response was D, *Star topology*. Majority of the students answered correctly this item, which indicates that they have sufficient knowledge of star topology. Some of the students failed to differentiate the term "central hub" from "central cable". This led them to wrongly select option A, *Bus topology*. Star topology allows each network component to be connected physically to a central node such as a router, hub or switch.

Item (v) tested the ability of the students to identify a type of network where *groups of star-configured networks are connected to a linear bus backbone*. The correct answer was G, *Tree topology*. Most of the students who got it wrong chose D, *Star topology*. These students were convinced by the statement "star-configured networks" from the question. Others chose A, *Bus topology* simply because the explanation includes the term "linear bus backbone". These students were supposed to understand that tree topology combines characteristics of linear bus and star topologies.

2.3 Question 3: True/False Items

This question consisted of five (5) True/False items. The students were required to write True (for the correct statement) and False (for an incorrect statement). The question was composed from 4 topics of the syllabus, which are *The Computer*, *Computer Evolution*, *Computer Handling* and *Spreadsheet*. The following items were given:

(i) Desktop and laptop computer are examples of microcomputer.

(ii) A computer system is a collection of four components: hardware, software, Netware and liveware.
(iii) Uninterruptible Power Supply (UPS) helps to protect computer from being damaged by power instability.
(iv) Mainframe computer is the most powerful computer designed to process huge amount of information at a very high speed.
(v) The error #### is displayed in a cell of a worksheet when an incorrect or invalid numeric value has been entered.

The analysis shows that 11,901 (100%) students attempted this question, out of which 629 (5.3%) scored from 0 to 1 mark, 5,986 (50.3%) scored from 2 to 3 marks and 5,286 (44.4%) scored from 4 to 5 marks out of 5 marks allocated. The general performance on this question was good because 94.7 per cent scored above 1 mark. The students who scored high marks were able to give the correct response in many items. Figure 4 shows the performance of the students in this question.

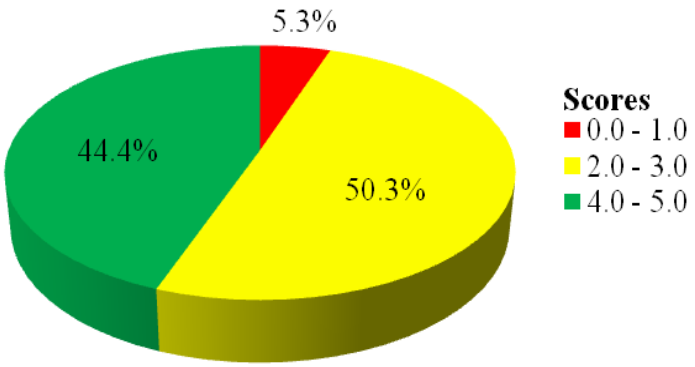


Figure 4: *The Students' Performance in Question 3.*

The following is the analysis of students' responses for each item.

Item (i) tested the students' knowledge of identifying whether *desktop and laptop computers are examples of microcomputers*. The correct answer was "True". Microcomputers, also known as Personal Computers (PC), are the smallest in size, cheapest and slowest compared to supercomputers, mainframe computers and minicomputers. However, some of the students wrote "False". This response is attributed to the fact that microcomputer is not a common term in their daily life, thus students failed to relate it with desktop and laptop.

Item (ii) tested students' knowledge of identifying components of computer system. The question required the students to state whether *computer system includes hardware, software, netware and liveware*. The correct answer was "False". The students who opted for a correct answer had sufficient knowledge of components of the computer system. The students who wrote "True" failed to recall that Netware is not among the components of computer system, but it is a computer network operating system.

Item (iii) tested the students' knowledge of the uses of Uninterruptable Power Supply (UPS). The question required the students to indicate whether the *UPS is used to protect computer from being damaged by power instability*. The correct answer was "True". UPS protects computer from different power disturbances such as power loss, power instability, power surge and power overload. The students who wrote "False" did not have sufficient knowledge of the uses of UPS.

Item (iv) tested the students' knowledge of identifying types of computer and their characteristics. The question required the students to state whether *mainframe computer is the most powerful computer designed to process huge amount of information at a very high speed*. The correct answer was "False" because Mainframe computers are mostly used in large business as network servers. On the other hand, students who wrote "True" were not correct because a powerful computer designed to process huge amount of information at a very high speed is the supercomputer and not mainframe computer.

Item (v) tested students' knowledge of different types of errors displayed in a worksheet. The question required the student to tell whether the message provided by *an error #### is incorrect or invalid numeric value has been entered*. The correct answer was "False" because the error message "#NUM!" appears due to use of invalid numeric value. The students who wrote "True" were supposed to know that the error '####' only appears when the data to be placed in cells is exceeding the width range of the cell to accommodate many numbers or values.

2.4 Question 4: The Computer

In this question, students were required to give five reasons to support the observation that most of the organisations in the society opt to use computers in their daily activities.

A total of 11,901 (100%) students attempted this question, out of which 4,660 (39.2%) scored from 0 to 2.5 marks, 4,837 (40.6%) scored from 3 to 6 and 2,404 (20.2%) scored from 6.5 to 10 out of 10 marks allocated. The general performance of students in this question was average because 60.8 per cent of the students scored above 2.5 marks. Figure 5 presents the students' performance in this question.

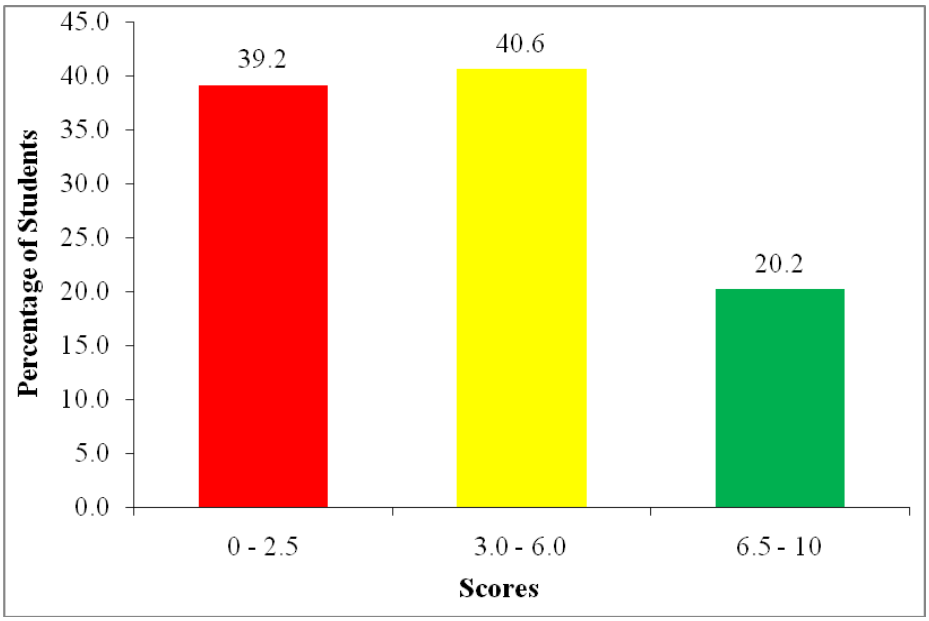
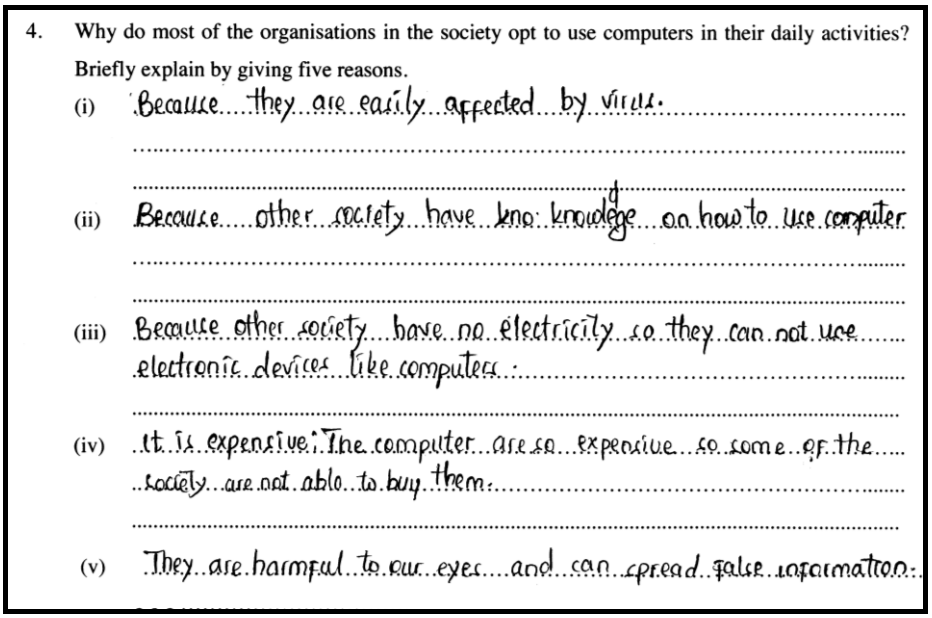


Figure 5: *The Students' Performance in Question 4.*

The analysis of the students' responses showed that most of the students (39.2%) who scored low marks failed to understand the requirement of the question. Some of them mentioned the area where computers are used. For example, one of the students wrote *it used in the government, it used at school to make examination, used to decision making*. Others listed negative impacts of the computer to the society. For example, one student wrote *Moral delay where by the people may copy out the way other nations life style, lead to infection of eyes, make individual to not feel sleepy hence it become a problem to them, lead to theft* and

computers are expensive hence most of people cannot afford the cost. However, few students gave one correct reason for organizations to use computer but proceeded to mention other reasons which were incorrect. Extract 4.1 shows a sample of incorrect responses from one of the students who attempted this question.


4. Why do most of the organisations in the society opt to use computers in their daily activities? Briefly explain by giving five reasons.

(i) Because they are easily affected by virus.

(ii) Because other society have kno: knoudge on how to use computer

(iii) Because other society have no electricity so they can not use electronic devices like computers.

(iv) It is expensive; The computer are so expensive so some of the society are not able to buy them.

(v) They are harmful to our eyes and can spread false information.

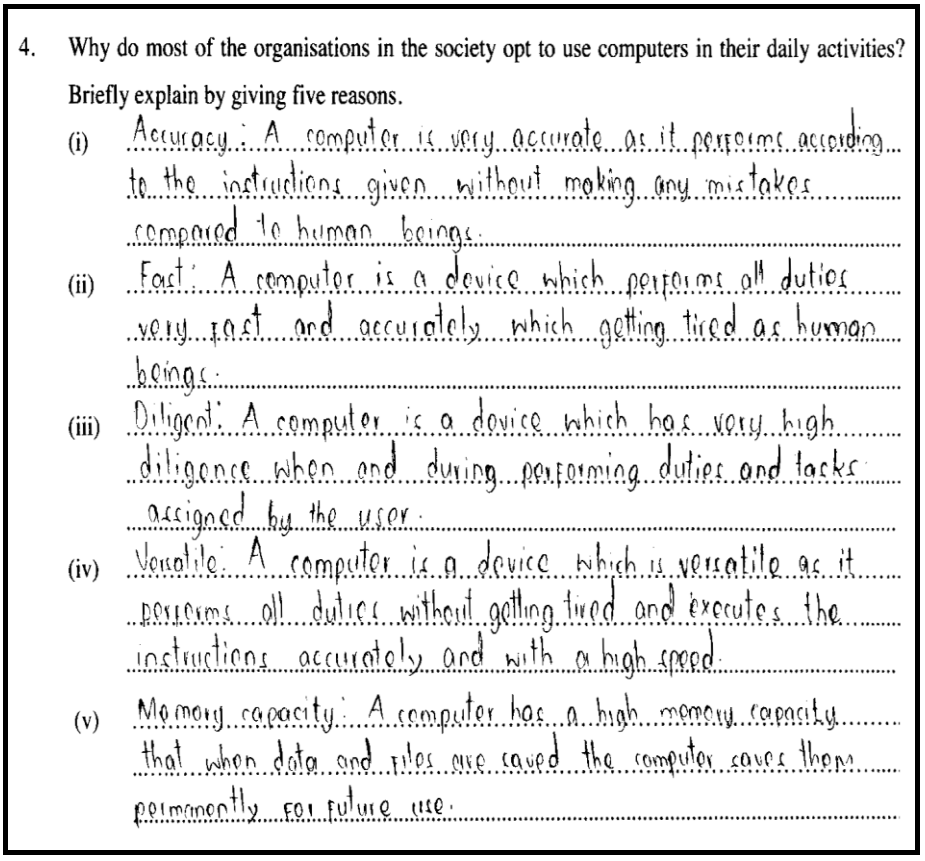
Extract 4.1: A sample of incorrect answer in question 4

Extract 4.1 shows the response of one of the students who wrote negative effect of using computers and the effects of virus.

On the other hand, some of the students (40.6%) who scored average marks were able to give at least two reasons for using computers, and managed to explain them correctly. Some of them gave correct explanations without writing the key term of the explained reason. This indicates that the students had partial understanding of the reasons for using computers in daily activities. Others repeated the same reasons, which resulted into loss of marks. For example, one student wrote, *it is fast* and repeated it by writing *it takes short time*.

Furthermore, most of the students (20.2%) who scored high marks managed to give at least three correct reasons with their explanation. Some of the students gave five reasons but failed to provide clear explanations which led them to lose some marks. For example, one

student wrote *computers simplify work*, which is true but this is the general purpose of computers. The student was supposed to explain how computers simplify work, with examples. Other students mixed up the importance of using internet and the importance of using computers in daily activities and consequently lost some marks. Extract 4.2 shows the correct response from one of the students.



4. Why do most of the organisations in the society opt to use computers in their daily activities? Briefly explain by giving five reasons.

(i) Accuracy: A computer is very accurate as it performs according to the instructions given without making any mistakes compared to human beings.

(ii) Fast: A computer is a device which performs all duties very fast and accurately which getting tired as human beings.

(iii) Diligent: A computer is a device which has very high diligence when and during performing duties and tasks assigned by the user.

(iv) Versatile: A computer is a device which is versatile as it performs all duties without getting tired and executes the instructions accurately and with a high speed.

(v) Memory capacity: A computer has a high memory capacity that when data and files are saved the computer saves them permanently for future use.

Extract 4.2: A sample of correct answer in question 4

In extract 4.2, the student managed to give correct reasons for organizations to use computer in daily activities.

2.5 Question 5: Computer Software

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

(a) Explain briefly the multi-user operating system by giving two examples.

(b) Give four resources managed by operating system.

(c) Explain why does operating system considered as the main program in the computer?

A total of 11,901 (100%) students attempted this question, out of which 5,756 (48.4%) scored from 0 to 2.5 marks, 4,967 (41.7%) scored from 3 to 6 and 1,178 (9.9%) scored from 6.5 to 10 out of 10 marks allocated. Figure 6 presents the students' performance in this question.

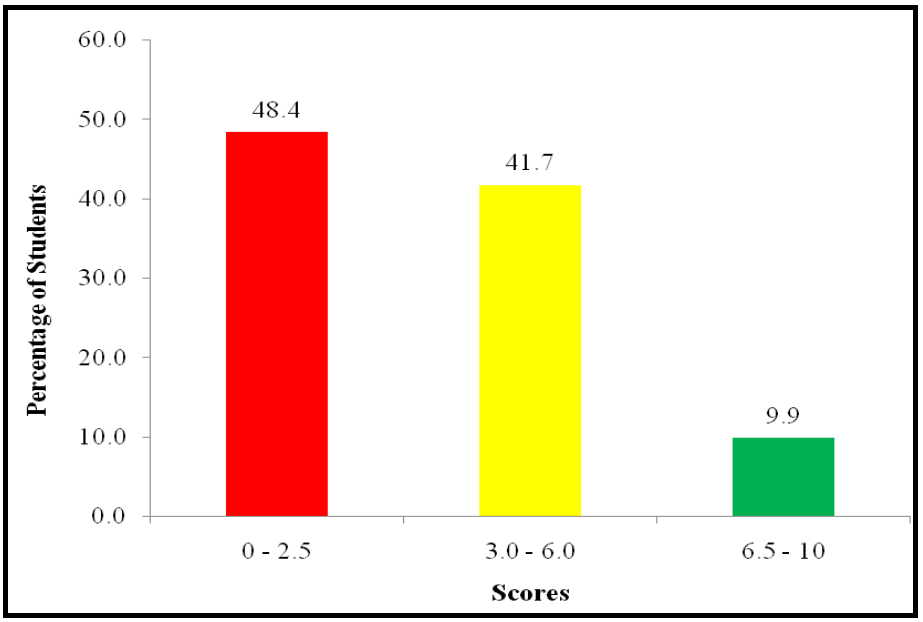
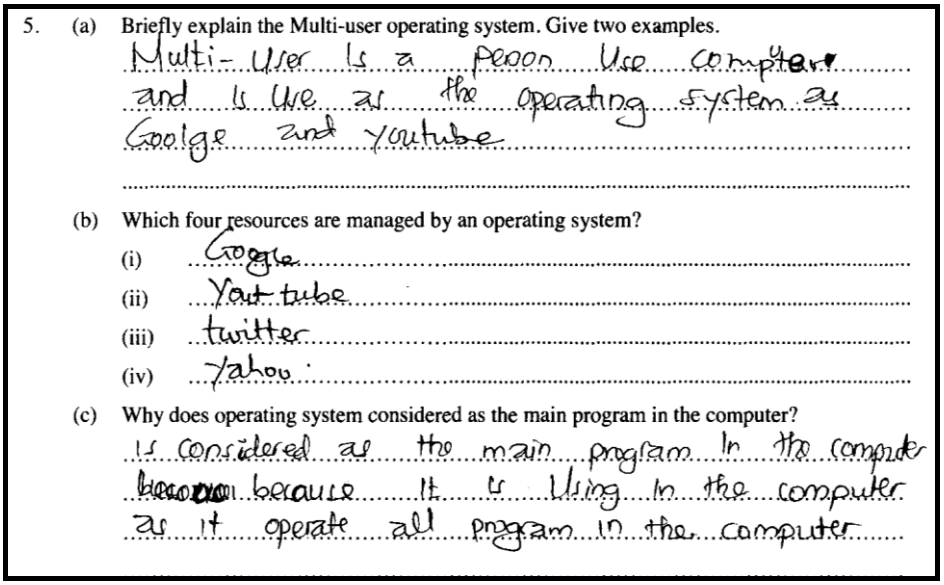


Figure 6: *The Students' Performance in Question 5.*

The general performance in this question was average because 51.6 per cent of the students scored above 2.5 marks. The analysis showed that 48.4 per cent of the students who scored low marks failed to explain the meaning of multi-user operating system in part (a). Some of them explained multi-user operating system as a physical component, not software. For example, one student wrote *Multi-user operating system is a device used for many people*. Others mentioned application program as an example of multi-user operating system. For example, one student wrote *Microsoft word* and *Microsoft access* instead of UNIX, Free BSD, Solaries, Windows NT/2000 and Linux etc. This suggests that the students had insufficient knowledge of operating system and its types. Moreover, few students mixed up the term “multi-user” with “multi-task” by giving explanation of multi-task instead of multi-user. Most of the students did not understand requirements of the

questions in part (b). These students mentioned natural resources such as water, air and sun-light instead of resources managed by operating system which include processor, memory, input/output devices etc. However, in part (c) most of the students managed to give the correct reason why operating system is considered as the main program. For example, one student wrote *operating system manage all other program in the computer*. Extract 5.1 shows a sample of weak responses from one of the students.


5. (a) Briefly explain the Multi-user operating system. Give two examples.

Multi-User is a peoon Use computer and is Use as the operating system as Goolge and youtube

(b) Which four resources are managed by an operating system?

(i) Google

(ii) Yout tube

(iii) twitter

(iv) Yahoo

(c) Why does operating system considered as the main program in the computer?

is considered as the main program in the compute because because it is Using in the computer as it operate all program in the computer

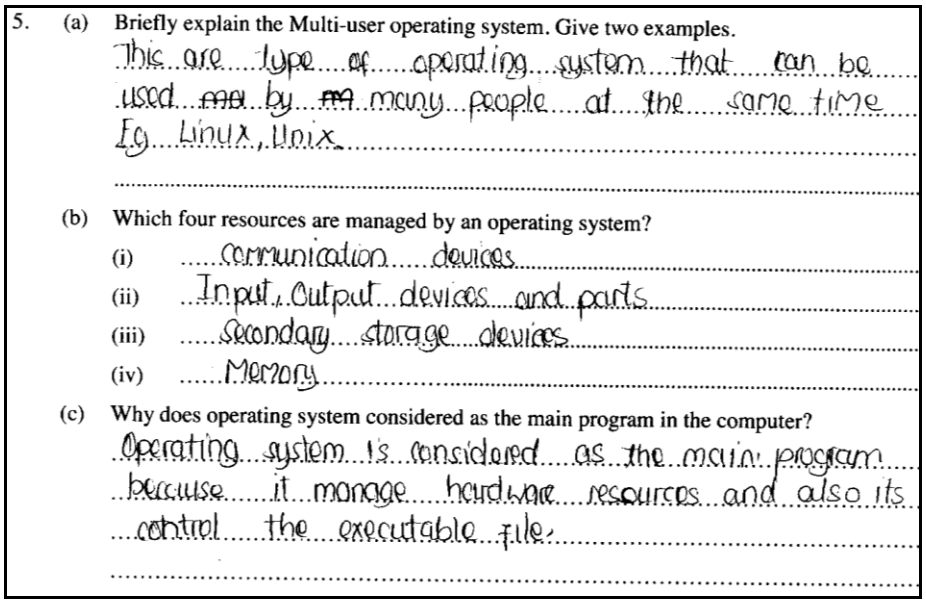
Extract 5.1: A sample of incorrect responses in question 5

The response of a student provided in Extract 5.1 shows that the student failed to answer correctly part (a) and (b). In part (a), the student explained multi-user as a computer user instead of explaining the term as an operating system. The student also wrote types of browser and social media in part (b).

Further analysis shows that 41.7 per cent of the students scored average marks. Majority of them explained correctly the concept of multi-user operating system in part (a). However, they wrote application program as an example of multi-user operating system instead of giving examples of the multi-user operating systems. Some of the students managed to explain the term "multi-user" but failed to include key terminologies in their explanations. For example, one of the students wrote, *Multi-user is the type of software which can be used by many*

users instead of an operating system that allows more than one user to interactively use a computer. This indicates that, the students had insufficient knowledge of the term "multi-user". In part (b), the students were able to mention at least two resources managed by operating system such as memory, input/output devices, communication devices and secondary storage devices. However, other students mentioned functions of operating system instead of resources. This shows that the students did not understand the requirement of the question. In part (c), most of the students gave the correct reason of considering the operating system as main program in the computer. Some of them gave incomplete explanations which led them to lose some marks.

On the other hand, few students (9.9%) who scored high marks answered correctly parts (a), (b) and (c). The analysis showed that some of the students failed to correctly identify all resources managed by an operating system. This led them to lose some marks. Extract 5.2 presents a sample of the correct response from one of the students.


5. (a) Briefly explain the Multi-user operating system. Give two examples.
This are type of operating system that can be used ~~me~~ by ~~m~~ many people at the same time
Eg Linux, Unix

(b) Which four resources are managed by an operating system?
(i) communication devices
(ii) Input, Output devices and ports
(iii) Secondary storage devices
(iv) Memory

(c) Why does operating system considered as the main program in the computer?
Operating system is considered as the main program because it manage hardware resources and also its control the executable file.

Extract 5.2: A sample of correct answer in question 5

The responses of a student provided in extract 5.2 shows that the student managed to answer correctly parts (a), (b) and (c)

2.6 Question 6: The Internet

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

(a) Write three steps required to search information on the internet.
(b) Differentiate e-learning from e-commerce.
(c) Give five disadvantages of e-learning.

A total of 11,901 (100%) students attempted this question, out of which 5,763 (48.4%) scored from 0 to 2.5 marks, 4,762 (40.0%) scored from 3 to 6 and 1,376 (11.6%) scored from 6.5 to 10 out of 10 marks allocated. Figure 7 represents the students' performance on this question.

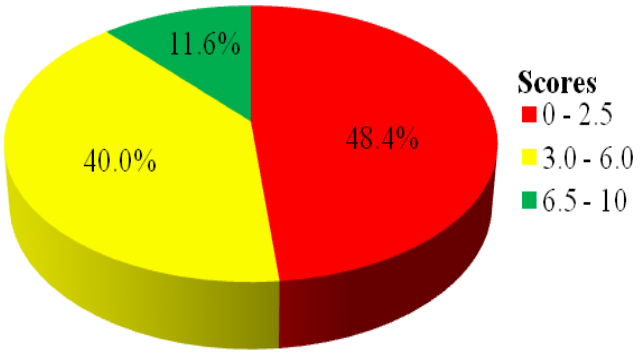


Figure 7: *The Students' Performance in Question 6.*

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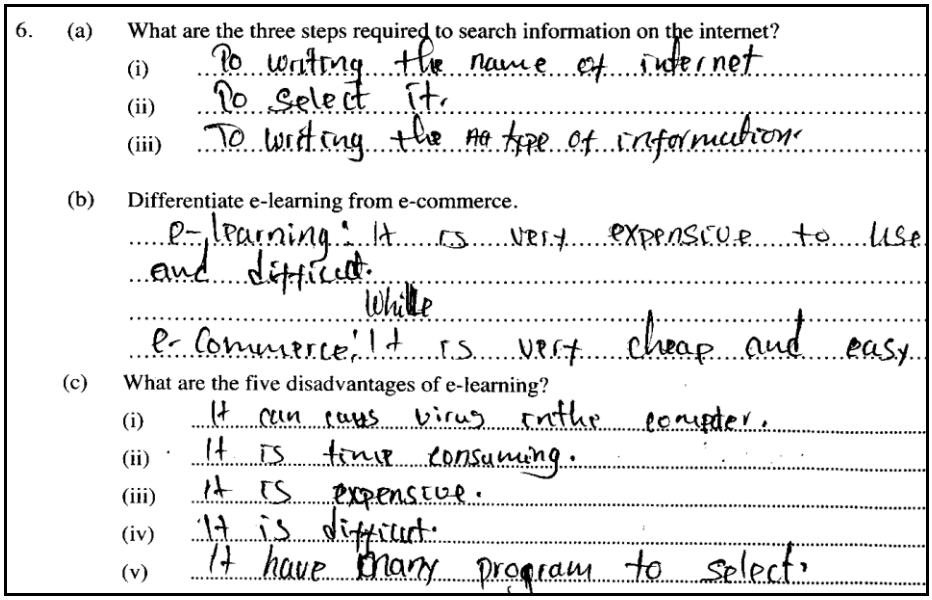
The general performance on this question was average because 51.6 per cent of the students scored above 2.5 marks. The analysis showed that 48.4 per cent of the students who scored low marks managed to give some of the steps required to search information on the internet in part (a) but they failed to arrange them in appropriate order. Some of the students failed to write the first step but managed to write other two steps. It was noted that others wrote the steps of starting the computer instead of searching information. Moreover, some of the students mentioned social media as one of the steps for searching information on the internet. For example, one student wrote *Google, YouTube* and *Facebook*. This shows that the students did not understand the requirement of the question. Moreover, in part (b), most of the students explained either e-learning or e-commerce but not both. Some students explained the term "commerce" instead of "e-commerce". Others explained e-learning and e-commerce as a program. For example, one student wrote *e-learning is the program that used to give information*

while e-commerce is the program that used to share information from one place to another place. This implies that the students could not tell the difference between these two terms. In part (c), most of the students managed to give at least one correct disadvantage with other incorrect disadvantages of e-learning. For example, one of the students wrote *moral delay, led to laziness of students, led to low thinking capacity, led to sparm education* and *led to slow down of culture*. Extract 6.1 shows an incorrect response from one of the students.


6. (a) What are the three steps required to search information on the internet?
(i) To writing the name of internet
(ii) To select it.
(iii) To writing the no type of information.
(b) Differentiate e-learning from e-commerce.
E-learning: It is very expensive to use and difficult.
While
E-Commerce: It is very cheap and easy
(c) What are the five disadvantages of e-learning?
(i) It can cause virus on the computer.
(ii) It is time consuming.
(iii) It is expensive.
(iv) It is difficult.
(v) It have many program to select.

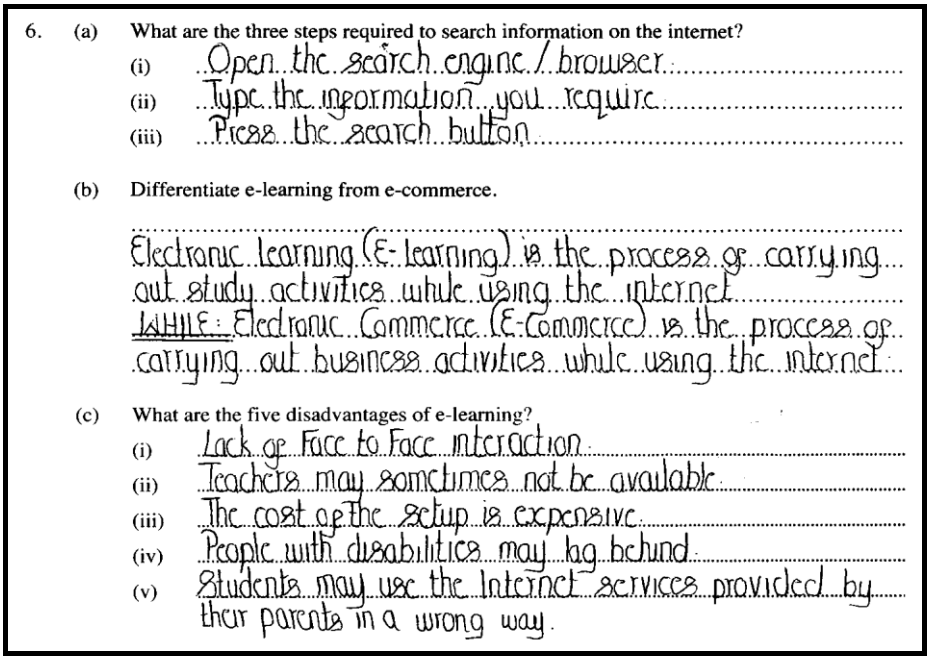
Extract 6.1: A sample of incorrect responses in question 6

In extract 6.1, the student failed to give correct steps for searching information on the internet in part (a). In part (b), the student differentiated e-learning and e-commerce based on cost, which is wrong. However, in part (c), the students gave some correct disadvantages of e-learning but failed to write them in detail.

On the other hand, most of the students (40.0%) who scored average marks listed correctly at least two steps of searching information on the internet in part (a). However, some of the students failed to give steps in a chronological order, instead they listed them randomly. Other students listed correctly the first two steps but failed to write correctly the last step. In part (b), some of the students managed to differentiate e-learning from e-commerce. However, some of them could not relate e-learning and e-commerce with the internet in their explanations. For

example, one student wrote *e-learning is the learning through computer*. The student failed to recall that there is no e-learning without internet. E-learning is possible not only through computer but any electronic device such as mobile phones. In part (c), most of the students managed to write at least three disadvantages of e-learning. Some of them wrote disadvantages of computer instead of e-learning. This shows that the students did not understand the requirements of the question.

Further analysis shows that 11.6 per cent who scored high marks gave the correct answer parts (a) and (b). The students managed to write the steps required to search information on the internet in part (a) and managed to differentiate e-learning from e-commerce in part (b). For example, one student wrote steps as *select suitable search engine, type what you want to search* and *click search*. In part (c), the students wrote correctly at least three disadvantage of e-learning. Moreover, some of the students included disadvantages of internet instead of e-learning. This shows that, the students could not differentiate between internet and e-learning. This led them to lose some marks. Extract 6.2 shows a sample of a correct response from one of the students.



6. (a) What are the three steps required to search information on the internet?

(i) Open the search engine / browser

(ii) Type the information you require

(iii) Press the search button

(b) Differentiate e-learning from e-commerce.

Electronic learning (E-learning) is the process of carrying out study activities while using the internet

WHILE: Electronic Commerce (E-Commerce) is the process of carrying out business activities while using the internet

(c) What are the five disadvantages of e-learning?

(i) Lack of Face to Face interaction

(ii) Teachers may sometimes not be available

(iii) The cost of the setup is expensive

(iv) People with disabilities may lag behind

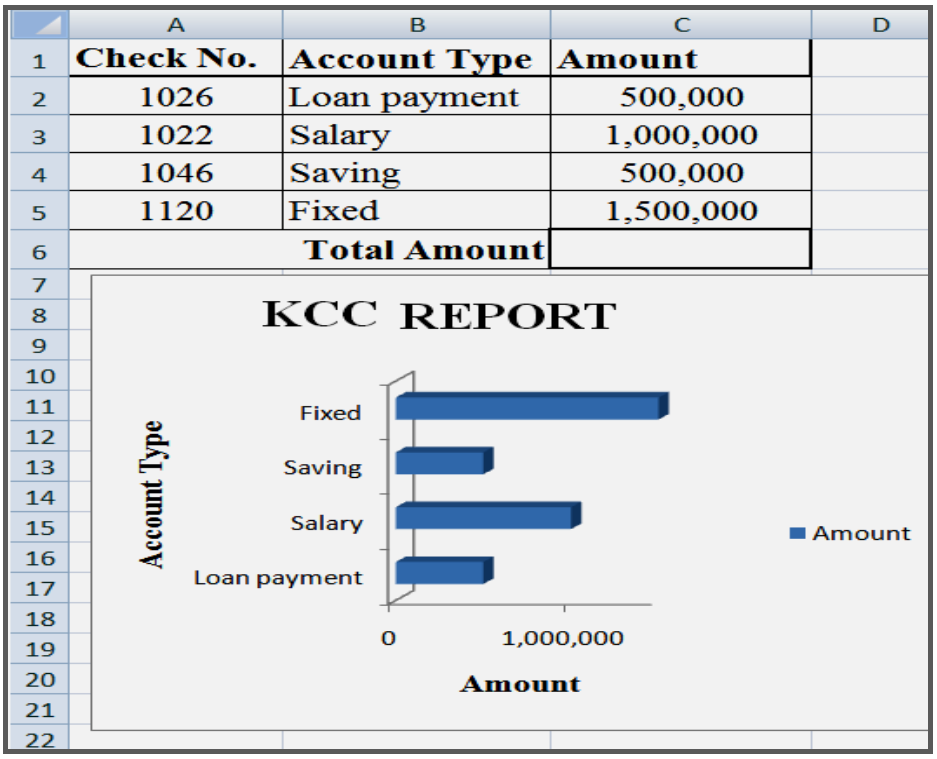
(v) Students may use the Internet services provided by their parents in a wrong way.

Extract 6.2: A sample of correct answer in question 6

In extract 6.2, the student managed to give correct steps for searching information in part(a). In part (b), students differentiated correctly e-learning from e-commerce. The student also gave correct disadvantages of e-learning in part (c).

2.7 Question 7: Spreadsheet

The question had five parts: (a), (b), (c), (d) and (e). In this question the students were required to read the following worksheet and answer the questions that follow:



(a) Which steps would you follow to create the new worksheet?
(b) What is the cell reference of saving account?
(c) Which function can you use in cell C6 to compute the total amount?
(d) Why the company decided to use the chart to represent the data on a worksheet?
(e) Which type of the chart is presented in a worksheet?

A total of 11,901 (100%) students attempted this question, out of which 7,293 (61.3%) scored from 0 to 2.5 marks, 3,498 (29.4%) scored from 3

to 6 and 1,110 (9.3%) scored from 6.5 to 10 out of 10 marks allocated. Figure 8 illustrates the students' performance in this question.

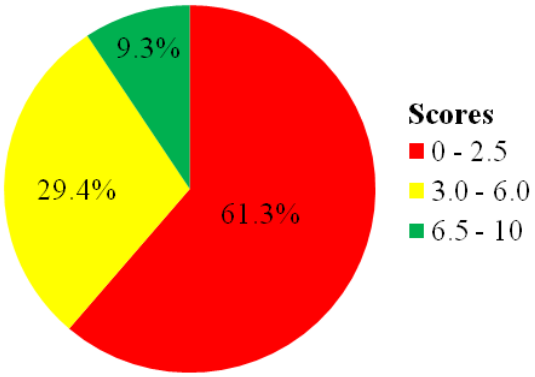
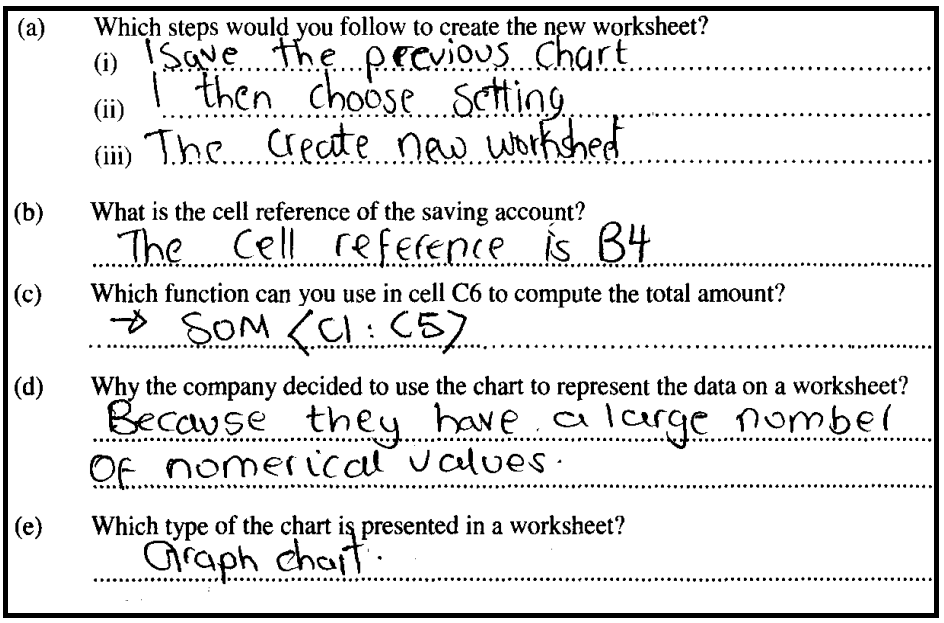


Figure 8: *The Students' Performance in Question 7.*

The general performance of the students in this question was average because 38.7 per cent of the students scored above 2.5 marks. The analysis showed that majority of the student (61.3%) who scored low marks failed to write the steps to be followed to create a new worksheet in part (a). Most of these students did not understand the requirement of the question. Some students wrote the procedures of deleting the content on the given worksheet instead of steps required to create a new worksheet. Others wrote steps to open a Microsoft word document instead of Microsoft excel spreadsheet. This shows that the students lacked practical skills of using spreadsheet.

In part (b), majority of the students were able to give the correct cell reference of the saving account. It was observed that some of the students wrote types of cell reference such as relative, mixed or absolute cell reference instead of giving the cell as B4. Further analysis showed that a number of students managed to write the function used to compute the total amounts displayed from the worksheet in part (c). Others wrote the range of cells such as “C2:C5” without giving the function name “=SUM()”. In part (d), most of the students wrote general uses of the chart in the worksheet instead of being specific to the data given from the worksheet. In part (e), most of the students wrote the name of the given chart as a Graph chart instead of a Bar chart. This shows that the students lacked knowledge of types of charts used in a spreadsheet. Extract 7.1 shows a sample of weak responses provided by one of the students.



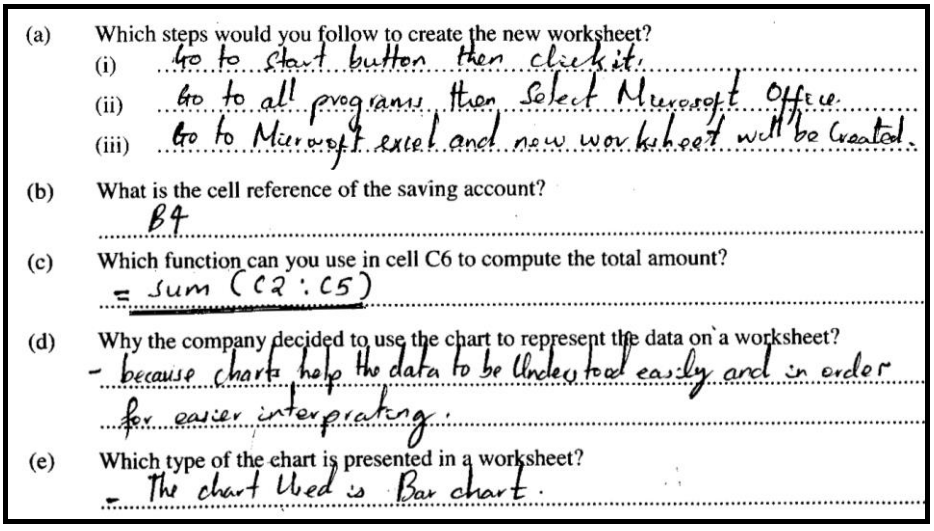
Extract 7.1: A sample of incorrect answer in question 7

Extract 7.1 shows the response from one student who failed to write the steps to be followed when creating a new worksheet in part (a). The student also failed to write the function to compute the total amount in part (c). He/she also, failed to give reason for the company to decide to use a chart in part (d). Moreover, the student failed to identify the type of chart in part (e). However, the student managed to answer correctly part (b).

Further analysis showed that 29.4 per cent of the students who scored average marks managed to mention steps required to start a Microsoft excel program in part (a). Some of the students wrote correctly two steps for creating a new worksheet. In part (b), most of the students managed to write the cell reference of the saving accounts. It was observed that some students wrote the reference cell of saving amount instead of reference cell of saving account. For example, one of the students wrote C4 instead of B4. These students had knowledge of cell reference but did not identify the required cell. In part (c), some of the students wrote the correct function required to compute the total amount in cell C6 but they did not include the equal sign (=). In part (d), a few students gave correct reasons for the company to use chart on representing data on a worksheet. Others explained partially how charts are used in a worksheet. For example, one student wrote *the chart make*

the worksheet to be attractive and very better instead of writing the charts enable a user to present complex data elements from a worksheet in a simple and easy to understand format. This led them to lose some marks. Moreover, most of the students wrote correctly the name of the chart presented in a worksheet in part (e).

Furthermore, 9.3 per cent of the students who scored high marks wrote correct steps required to create a new worksheet in part (a). They also identified correctly the cell reference of the saving account from the given worksheet in part (b). The students managed to write the correct function required to compute the total amount in part (c). Some of the students wrote a formula to compute the total account instead of function. This suggests that the students mixed up the term function with formula. These students were supposed to understand that function is a predefine calculation in the spreadsheet application while formula is an equation designed by a user in Excel. Others wrote the correct function but applied a comma (,) instead of colon (:) to separate ranges between cells C2 and C5. For example, one of the students wrote the function as *=SUM(C2,C5)* instead of "=SUM(C2:C5)", which led them to lose some marks. Moreover, most of the students who scored high marks responded correctly to part (d) the reason for the company to use the chart to represent the data on the worksheet, and part (e), identify the type of chart represented in a worksheet. Extract 7.2 shows a sample of correct response from one of the students.


(a) Which steps would you follow to create the new worksheet?
(i) Go to start button then click it.
(ii) Go to all programs then select Microsoft Office.
(iii) Go to Microsoft excel and new worksheet will be created.

(b) What is the cell reference of the saving account?
B4

(c) Which function can you use in cell C6 to compute the total amount?
= sum (C2 : C5)

(d) Why the company decided to use the chart to represent the data on a worksheet?
- because charts help the data to be Understood easily and in order for easier interpreting.

(e) Which type of the chart is presented in a worksheet?
- The chart Used is Bar chart.

Extract 7.2: A sample of correct answer in question 7

Extract 7.2 shows a response of a student who answered correctly parts (a) managed to list the steps to create a new worksheet, (b) identify the cell reference of the saving account, (c) write the function to compute the total amount, (d) give reason for the company to use the chart and (e) identify the type of chart. This shows that the student had sufficient knowledge of a spreadsheet.

2.8 Question 8: Word Processing

This question had four parts: (a), (b), (c) and (d). In this question, the students were required to write steps required to perform the following tasks using Microsoft word:

(a) Change text from lower to upper case.
(b) Align the paragraph to the centre
(c) Hanging indentation
(d) Setting line spacing to double.

A total of 11,901 (100%) students attempted this question, out of which 10,581 (88.9%) scored from 0 to 2.5 marks, 1,072 (9.0%) scored from 3 to 6 and 248 (2.1%) scored from 6.5 to 10 out of 10 marks allocated. The general performance on this question was weak because 88.9 per cent of the students scored below 3.0 marks. Figure 9 presents the students' performance on this question.

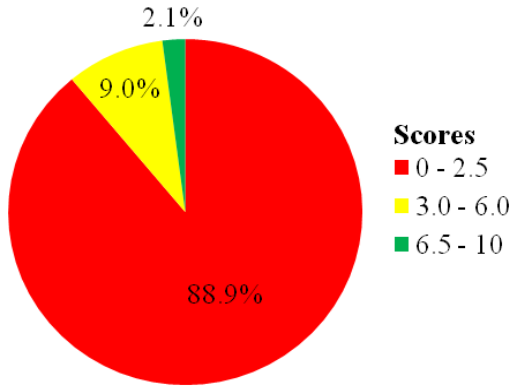
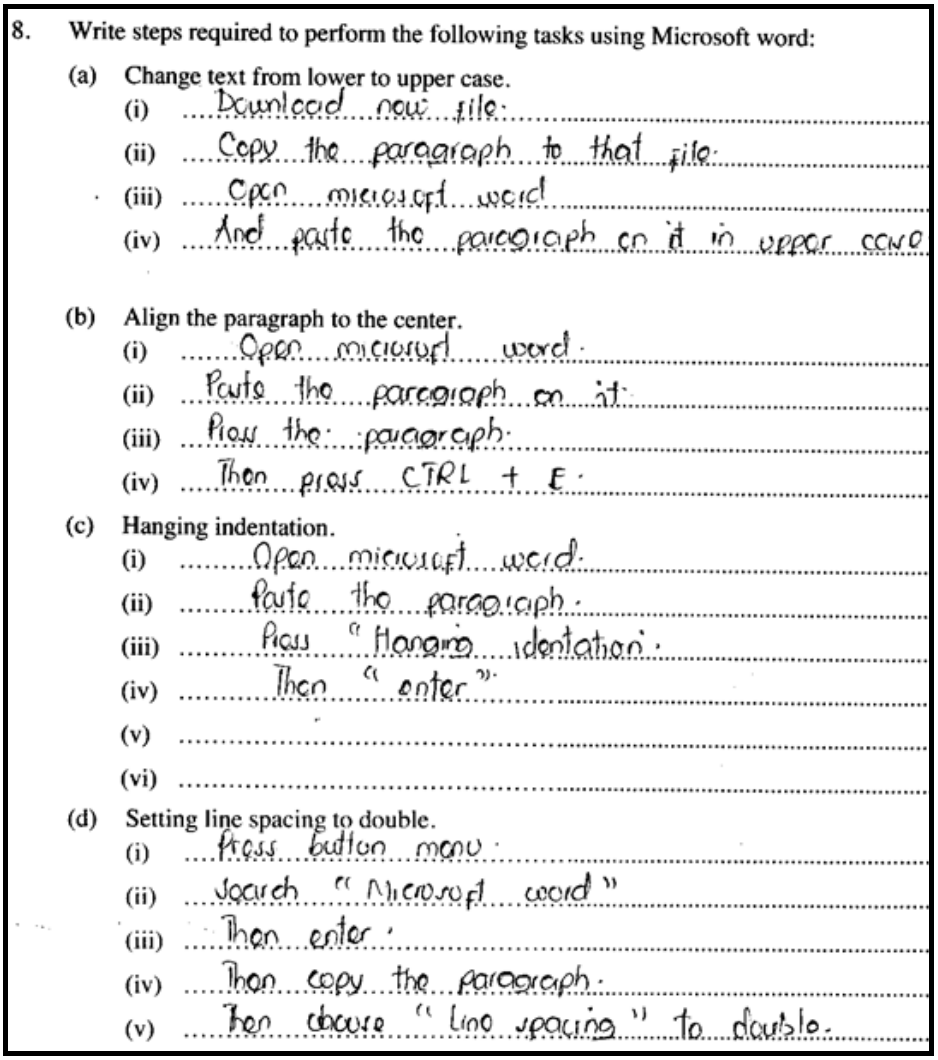


Figure 9: *The Students' Performance in Question 8.*

The analysis showed that most of the students (88.9%) who scored low marks failed to list all steps required to change text from lower to upper case in part (a). Most of the students managed to write correctly the first step but failed to proceed with other steps. For example, one of the

students wrote the first step as *highlight the text which you want to change* while for other steps he/she wrote *select insert, select the cases and click the upper case*. Moreover, some of the students mixed up the terms lower case with subscript, and uppercase with superscript. A subscript or superscript is a character (number or letter) that is set slightly below or above the normal line of type respectively. Others wrote procedures for typing a text in capital letters such as pressing caps lock. The analysis showed that some of them wrote contrary to the question's demand. For example, one student wrote *go direct to the system, write name of user, write the program consider* and *save or inter on that system*. This shows that the students lacked practical skills on changing text to upper case. In part (b), the students wrote correctly the first step required to align the paragraph to the center that is highlighting paragraph, but wrote other steps incorrectly. Some of them managed to write correctly the first and the last step but failed to write other steps. Others wrote irrelevant shortcut keys as the steps to align paragraph to the centre. For example, one student wrote *Ctrl + Shift + C* instead of *Ctrl + E*. In part (c), most of the students did not understand the requirement of the question which was to write the step for hanging indentation. They wrote unorganized steps. For example, one of the students wrote *click start button, click all program, click menu, click file, click F5* and *press*. Moreover, other students wrote short cut used to italicise words "Ctrl+I" for hanging indentation. This shows that the student misinterpreted the letter "I" for indentation instead of italic.

Furthermore, majority of the students wrote correctly the first step and the last step but failed to write other steps in part (d). Some of them skipped steps (ii), (iii) and (iv) as required by the question for setting line spacing to double, but were able to wrote the first and last steps. Yet others wrote irrelevant steps. Other students translated the term line spacing as horizontal lines drawn within the paragraph. For example, one student wrote *Highlight the text→Click insert→Insert line→Write text→Insert line→Click Ok*. This shows that the students lacked practical skills of setting line spacing in Microsoft word. Extract 8.1 represents a sample of the incorrect responses provided by one of the students.


8. Write steps required to perform the following tasks using Microsoft word:

(a) Change text from lower to upper case.
(i) Download now file.
(ii) Copy the paragraph to that file.
(iii) Open microsoft word
(iv) And paste the paragraph on it in upper case

(b) Align the paragraph to the center.
(i) Open microsoft word.
(ii) Paste the paragraph on it.
(iii) Plow the paragraph.
(iv) Then press CTRL + E.

(c) Hanging indentation.
(i) Open microsoft word.
(ii) Paste the paragraph.
(iii) Press "Hanging identation".
(iv) Then "enter".
(v)
(vi)

(d) Setting line spacing to double.
(i) Press button menu.
(ii) Search "Microsoft word"
(iii) Then enter.
(iv) Then copy the paragraph.
(v) Then choose "Line spacing" to double.

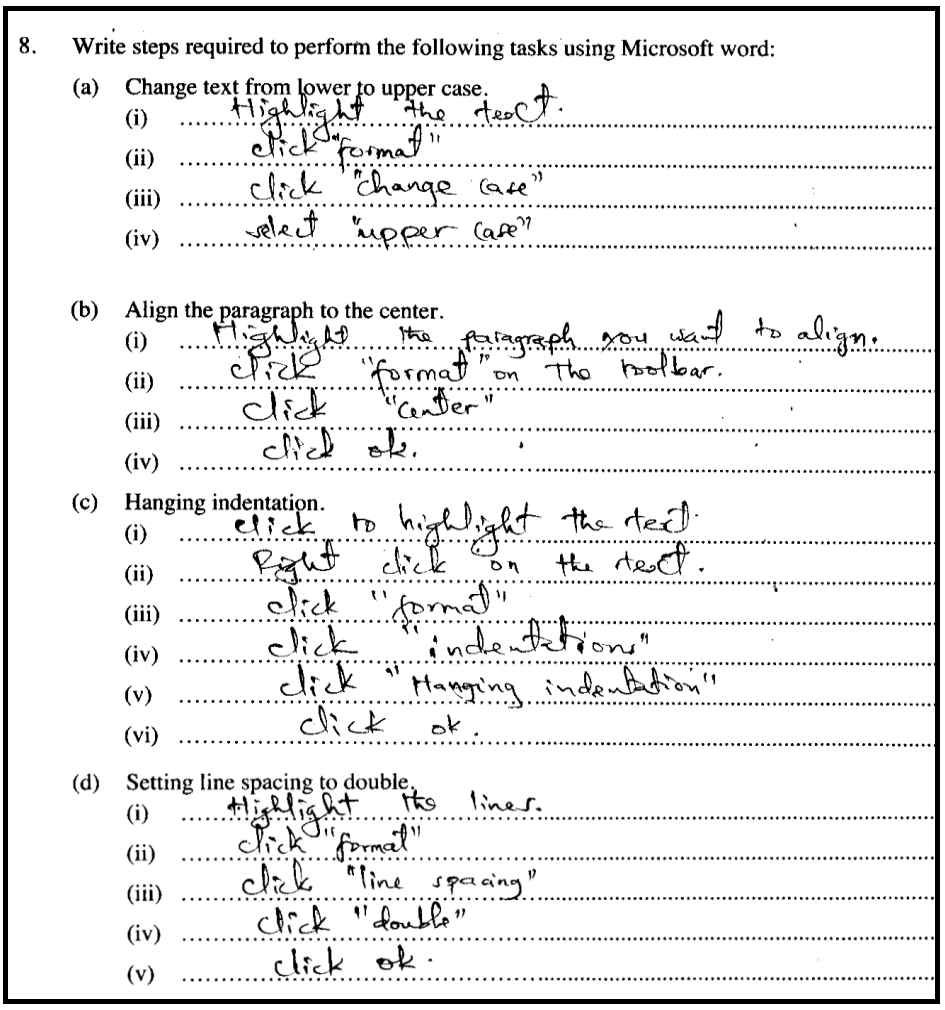
Extract 8.1: A sample of incorrect answer in question 8

In extract 8.1, the student wrote steps to paste a paragraph to a word document instead of changing text to upper case in part (a). However, the student wrote correct steps for aligning a paragraph to the centre in part (b). Furthermore, the student wrote irrelevant steps in part (c) and (d).

On the other hand, the students (9.0%) who performed average marks wrote correctly at least three steps required to change text from lower to upper case in part (a). However, some of them wrote the last step incorrectly as "press OK" or "click OK" step instead of "Click on upper case". This shows that the students had a general understanding of

using computer but lacked specific knowledge of formatting a document. Additionally, the students were able to write at least three steps for aligning the paragraph to the center in part (b). In part(c), the students wrote correctly the first step for hanging indentation but wrote other steps incorrectly. Moreover, the students were able to write at least three steps for setting line spacing to double space in part (d). It was observed that some of the students wrote the steps but failed to use key terminology required in a computer. For example, one of the students wrote *press cursor at left then scroll rightward* instead of "Highlight the text" as the first step. This shows that the students lacked understanding of appropriate terminology used in formatting documents.

Further analysis showed that a few students (2.1%) who performed well managed to write the steps required to change text from lower to upper case in part (a). However, it was observed that some of the students wrote insert bar instead of home or menu bar to find "change case" icon. Others wrote left and right click button as the procedures for finding "change case" icon instead of clicking on home button on the menu/ribbon. This led them to lose some marks. In part (b), a number of students wrote correctly the steps required to align the paragraph to the center. Moreover, in part (c) few students wrote correctly all the steps required for hanging indentation. Some of the students managed to write at least four correct steps in this part. Furthermore, in part (d), the students were able wrote steps for setting line spacing to double space and a small number of students wrote wrong shortcut keys as the step to create space. For example, one of the students wrote *Ctrl+S* to create line spacing while Ctrl+S use for saving documents. This implies that students lacked practical skills for formatting word document. Extract 8.2 shows a sample of a correct response provided by one of the students.


8. Write steps required to perform the following tasks using Microsoft word:

(a) Change text from lower to upper case.
(i) Highlight the text.
(ii) click "format"
(iii) click "change case"
(iv) select "upper case"

(b) Align the paragraph to the center.
(i) Highlight the paragraph you want to align.
(ii) click "format" on the toolbar.
(iii) click "center"
(iv) click ok.

(c) Hanging indentation.
(i) click to highlight the text
(ii) Right click on the text.
(iii) click "format"
(iv) click "indentations"
(v) click "Hanging indentation"
(vi) click ok.

(d) Setting line spacing to double.
(i) Highlight the lines.
(ii) click "format"
(iii) click "line spacing"
(iv) click "double"
(v) click ok.

Extract 8.2: A sample of correct answer in question 8

Extract 8.2 shows the response of a student who listed correct steps required to change the text from lower to upper case in part (a), align the paragraph to the center in part (b), hanging indentation in part(c) and set line spacing to double in part (d) using Microsoft word documents.

2.9 Question 9: Computer Handling

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

(a) Explain the importance of insulated cables in a computer room.
(b) Give two ways required to prevent dust in a computer room.
(c) State three signs which indicate that a computer is affected by virus.

(d) Suggest three methods which can be used to prevent data loss in a computer system.

A total of 11,901 (100%) students attempted this question, out of which 3,982 (33.5%) scored from 0 to 2.5 marks, 4,558 (38.3%) scored from 3 to 6 and 3,361 (28.2%) scored from 6.5 to 10 out of 10 marks allocated. The performance in this question was generally good because 66.5 per cent of the students scored above 2.5 marks. Figure 10 presents the students' performance in this question.

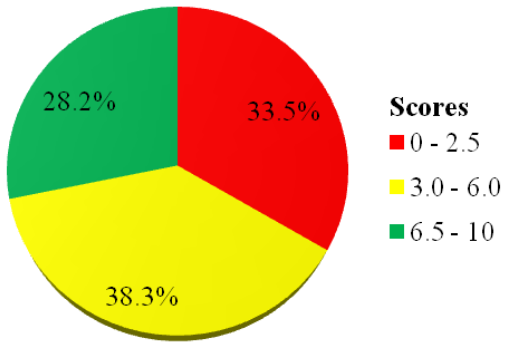
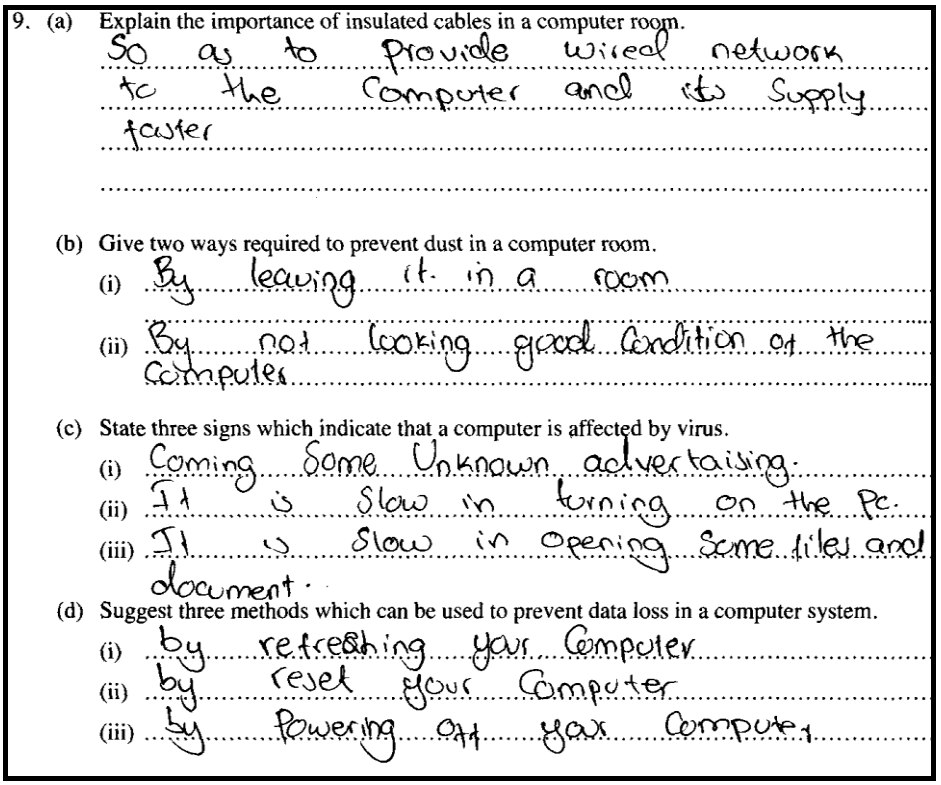


Figure 10: *The Students' Performance in Question 9.*

The analysis showed that most of the students (33.5%) who scored low marks explained the importance of data cables required to connect computers instead of insulated cable in part (a). Some students lacked knowledge of using insulated cables which led them to give wrong answers. For example, one of the students wrote *used supply electricity within the computer* instead of being used to avoid electric shock and short circuit. Another student wrote *should be on the same place so that if a wire is cuted you can see and fixed it*. This shows that the students were not familiar with the term insulated cable. In part (b), the students were required to mention two ways to prevent dust in a computer room. A number of students gave only one method required to prevent dust in a computer room. Others wrote computer laboratory rules instead of ways required to prevent dust in a computer room. For example, one student wrote *you not allowed entering with food or drinks* and *you not allowed to through any equipment in the lab*. This suggests that the students did not understand the requirements of the question. Furthermore, majority of the students stated correctly at least one sign which indicate that computer is affected by virus in part (c). Some of

the students wrote causes of computer virus instead of signs indicated by computer virus. For example, one student wrote *sharing of password* and *downloading games*. Other student wrote *to put a flush which have virus* and *to put the CPU on the right place*. In part (d), a few students mentioned only one way to prevent data loss and failed to mention other ways. Some wrote examples of antivirus such as *Mc-Afee*, *Kaspersky* and *Avira* as three different methods to prevent data loss instead of generalizing them as one point. This shows that the students had insufficient knowledge on preventing data loss. Others wrote methods of formatting data in an office document such as editing and deleting instead of methods to prevent data loss. Extract 9.1 shows a sample of incorrect responses provided by one of the students.


9. (a) Explain the importance of insulated cables in a computer room.
So as to provide wired network to the Computer and its supply faster

(b) Give two ways required to prevent dust in a computer room.
(i) By leaving it in a room
(ii) By not looking good Condition of the Computer

(c) State three signs which indicate that a computer is affected by virus.
(i) Coming Some Unknown advertising.
(ii) It is Slow in turning on the Pc.
(iii) It is Slow in opening Some files and document.

(d) Suggest three methods which can be used to prevent data loss in a computer system.
(i) by refreshing your Computer
(ii) by reset your Computer
(iii) by Powering off your Computer

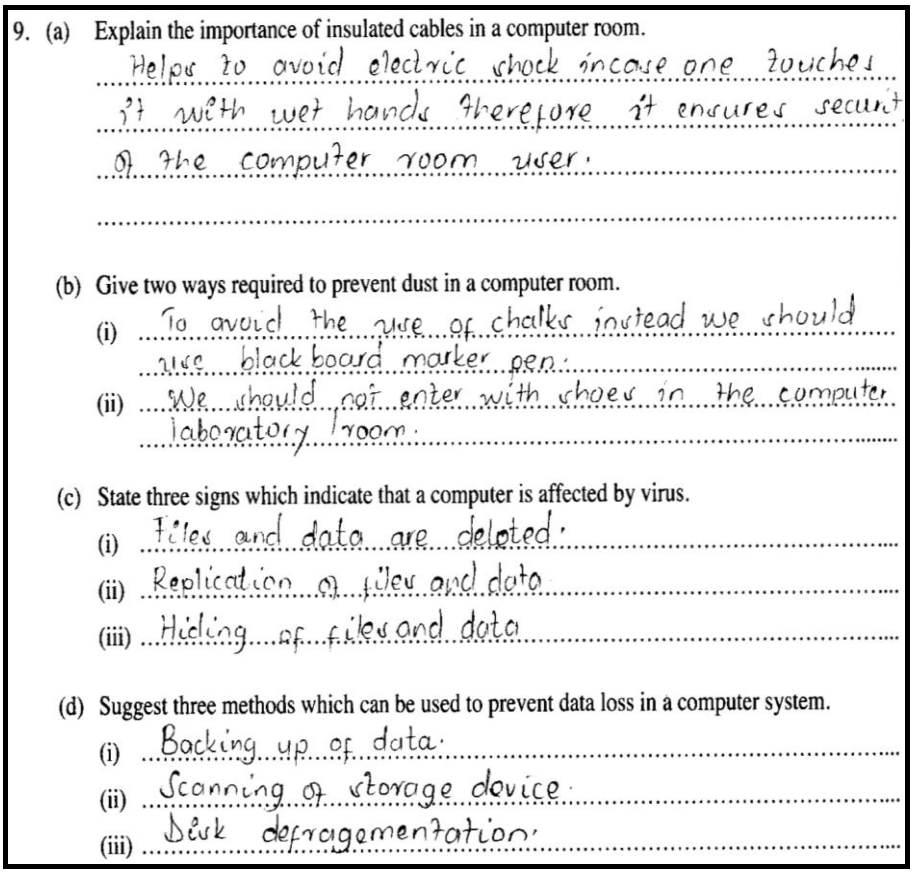
Extract 9.1: A sample of incorrect answer in question 9

Extract 9.1 shows the response of a student who failed to give correct importance of insulated cable in part(a). In part (b), the student wrote incorrect ways of dust preventation. In part (c), the student gave two points correctly with the same meaning. Moreover, in part (d), the

student listed methods to refresh computer instead of preventaion of data loss.

On the other hand, most of the students (38.3%) who scored average marks managed to explain the importance of insulated cables in a computer room in part (a). However, they failed to explain them in detail. Some of the students explained the importance of insulated cable as to rescue users from death and damage of computer components, but failed to explain how these happen. This led them to lose some marks. In part (b), most of the students wrote correctly at least one way to prevent dust in a computer room. In part (c), the students managed to state at least two signs which indicate that a computer is affected by virus. Some of them repeated the same signs which led them to lose some marks. For example, one student wrote *some of the files refuse to be open*, and then repeated by writing *some files are affected and cannot be open easily*. Moreover, in part (d), the students suggested only one method used to prevent data loss in a computer system. Most of them mentioned *uses of password* while others wrote *using data backup*. This shows that the students had insufficient knowledge of the methods to prevent data loss. Some of the students mentioned the devices used to facilitate data back-up such as CD, USB and DVD. This suggests that the students did not understand the question's demands.

Moreover, 28.2 per cent of the students who scored high marks were able to attempt all parts according to the question's demands. Some of the students wrote irrelevant explanation on the uses of insulated cable in part (a). This led them to lose some marks. Others did not show any clear understanding of the term insulated cable. For example, one student wrote *the main importance is to make insulation easy during installation of cable in a computer room*. In part (b), most of the students gave one correct way to prevent computer from dust, but wrote the second point incorrectly. For example, one student wrote *people should not enter with dirty clothes inside the computer room*. Furthermore, most of the students answered correctly parts (c) by stating signs which indicate that a computer is affected by virus, and in part (d) they were able to suggest methods which can be used to prevent data loss in a computer system. Extract 9.2 shows a sample of a correct response from one of the students.


9. (a) Explain the importance of insulated cables in a computer room.

Helps to avoid electric shock incase one touches it with wet hands therefore it ensures securit of the computer room user.

(b) Give two ways required to prevent dust in a computer room.

(i) To avoid the use of chalks instead we should use black board marker pen.

(ii) We should not enter with shoes in the computer laboratory room.

(c) State three signs which indicate that a computer is affected by virus.

(i) Files and data are deleted.

(ii) Replication of files and data

(iii) Hiding of files and data

(d) Suggest three methods which can be used to prevent data loss in a computer system.

(i) Backing up of data.

(ii) Scanning of storage device.

(iii) Disk defragementation.

Extract 9.2: A sample of correct answer in question 9

Extract 9.2 shows the response from one of the students who explained correctly the importance of insulated cables in a computer room in part (a). Also, the student managed to list correct ways in part (b) and correct signs in part (c). However, the student gave only two correct methods to prevent data loss in part (d).

2.10 Question 10: The Computer

This was an essay question which required the students to describe four types of computers according to the physical size, processing power and application areas.

A total of 11,901 (100%) students attempted the question, of which 4,203 (35.3%) scored from 0 to 5.5 marks, 4,448 (37.4%) scored from 6 to 12.5 marks and 3,250 (27.3%) scored from 13 to 20 marks out of 20 marks allocated. The general performance in this question was average

because 64.7 per cent of the students scored above 5.5 marks. Figure 11 shows the performance of students in this question.

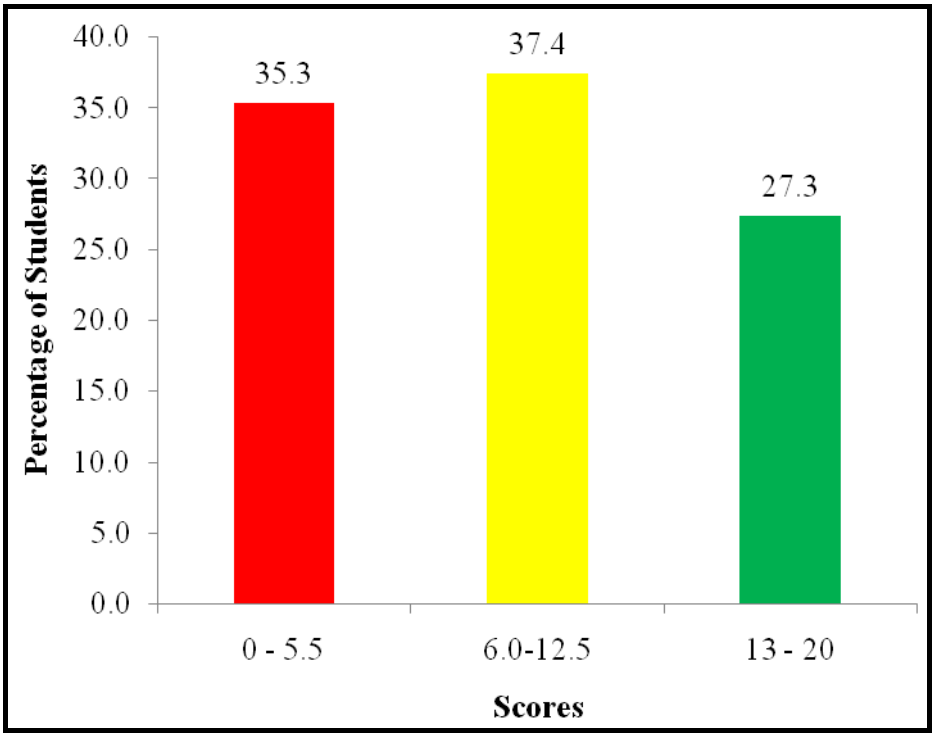
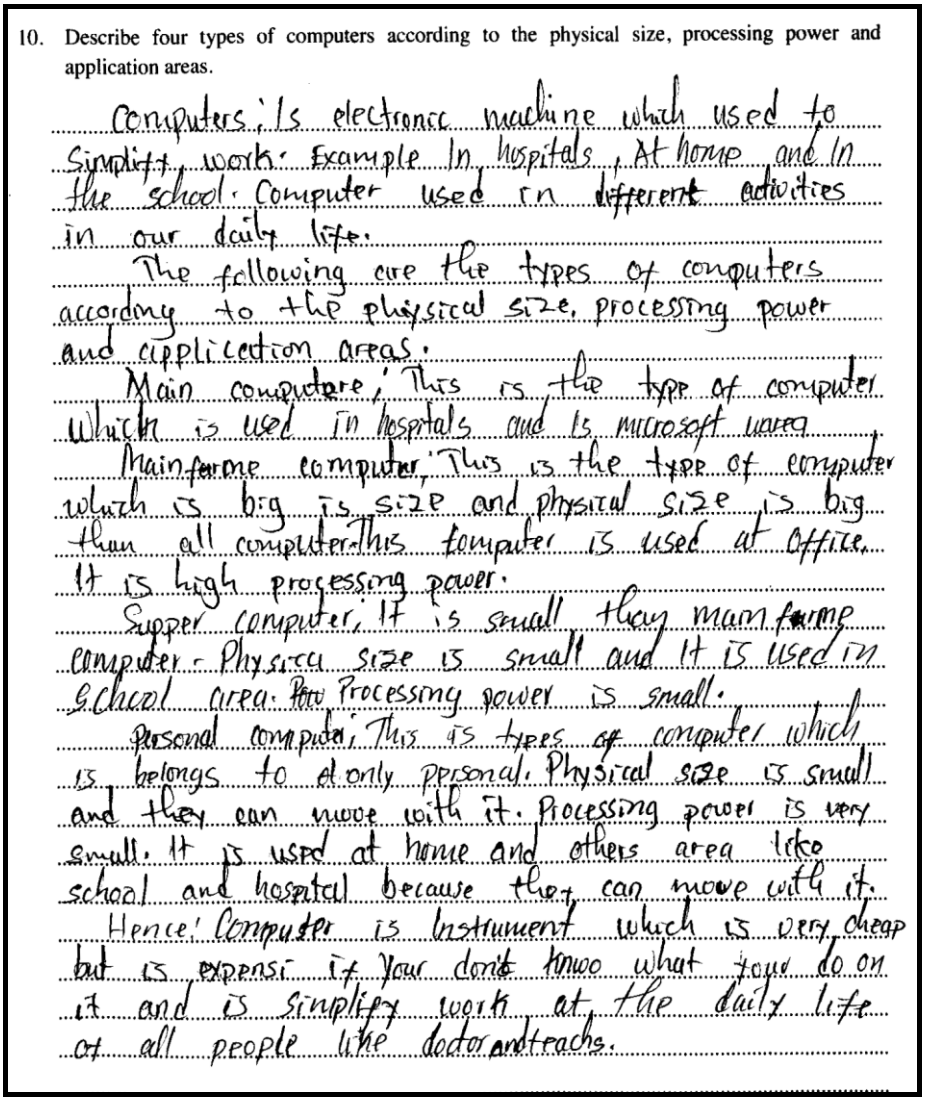


Figure 11: *The Students' Performance in Question 10.*

The analysis shows that 35.3 per cent of the students who scored low marks managed to mention one to three types of computers but failed to describe their physical size, processing power and application areas. Some of the students explained categories of microcomputer instead of types of computer. For example, one student wrote l*aptop, desktop, PDAs, mobile phone* and *smart phones*. This indicates that the students did not understand the requirements of the question. Others defined a computer in the introduction but failed to explain correctly types of computer. Further analysis shows that some of the students described one correct type of computer according to physical size, processing power and application areas. Moreover, these students described other three types of computer according to functionality which is not the requirement of the question. For example, one student wrote *Analog computer, Digital computer* and *Hybrid computer* instead of Supercomputer, Mainframe computer, Minicomputer and Microcomputer. Most of the students were poor in English which led

them to give unclear explanations. Extract 10.1 shows the sample of an incorrect answer.



10. Describe four types of computers according to the physical size, processing power and application areas.

Computers; Is electronic machine which used to Simplify work. Example In hospitals, At home and In the school. Computer used in different activities in our daily life.

The following are the types of computers according to the physical size, processing power and application areas.

Main computers; This is the type of computer which is used in hospitals and is microsoft word.

Mainframe computer; This is the type of computer which is big in size and physical size is big than all computer. This computer is used at Office. It is high processing power.

Supper computer, It is small than mainframe computer. Physical size is small and it is used in School area. Processing power is small.

Personal computer; This is types of computer which is belongs to a only personal. Physical size is small and they can move with it. Processing power is very small. It is used at home and others area like school and hospital because they can move with it.

Hence; Computer is instrument which is very cheap but is expensive if your don't know what your do on it and is simplify work at the daily life of all people like doctor and teachs.

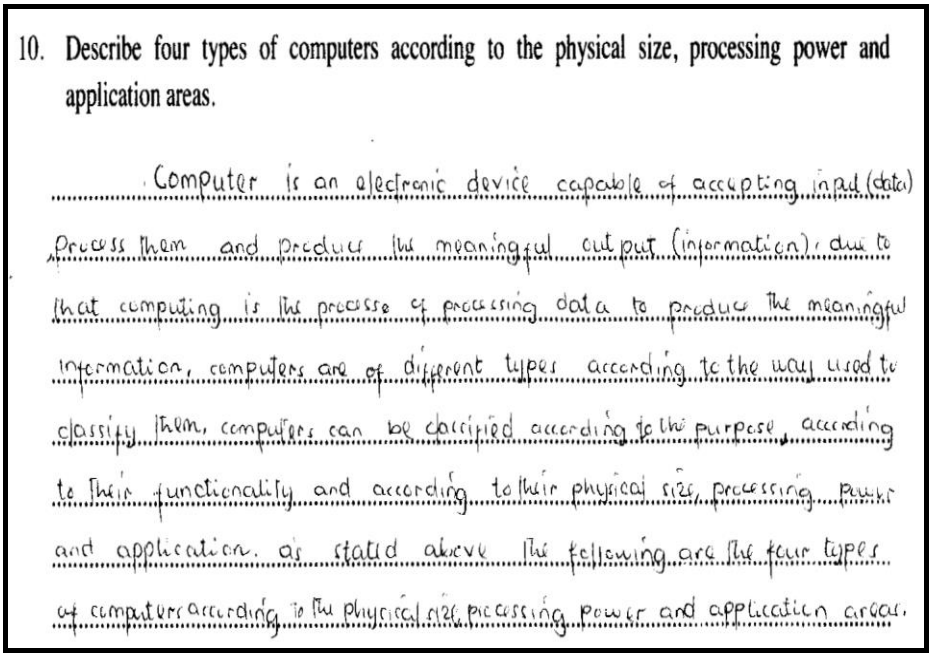
Extract 10.1: A sample of incorrect answer in question 10

Extract 10.1 shows the response of a student who described correctly two types of computer and proceeded with wrong types. Also, the students gave a wrong explanation for every type of computer, with a wrong introduction and conclusion.

On the other hand, most of the students (37.4%) who scored average marks managed to mention all types of computer but failed to explain them. Some of the students explained correctly only one or two types of

computer with correct introduction and conclusion. Others failed to write introduction and conclusion. This led them to lose some marks. It was observed that, some students interchanged characteristics of computers. For example, one student wrote *Mainframe computer is the most powerful computer*. The student was supposed to know that the most powerful computer is a supercomputer and not mainframe computer. Moreover, some of the students wrote computer generation technologies as characteristics to distinguish between one type of computer and another in the explanation. For example, one student wrote, *supercomputer uses vacuum tubes technology*. This shows that the student did not understand the requirement of the questions.

Furthermore, most of the students (27.3%) who scored high marks wrote correct introduction and conclusion. They also managed to explain types of computers according to their physical size, processing power and application areas. Some of the students failed to write correctly either introduction or conclusion. Others gave inadequate explanations of some points. This led them to lose some marks. Extract 10.2 presents one of the correct responses provided by a student.

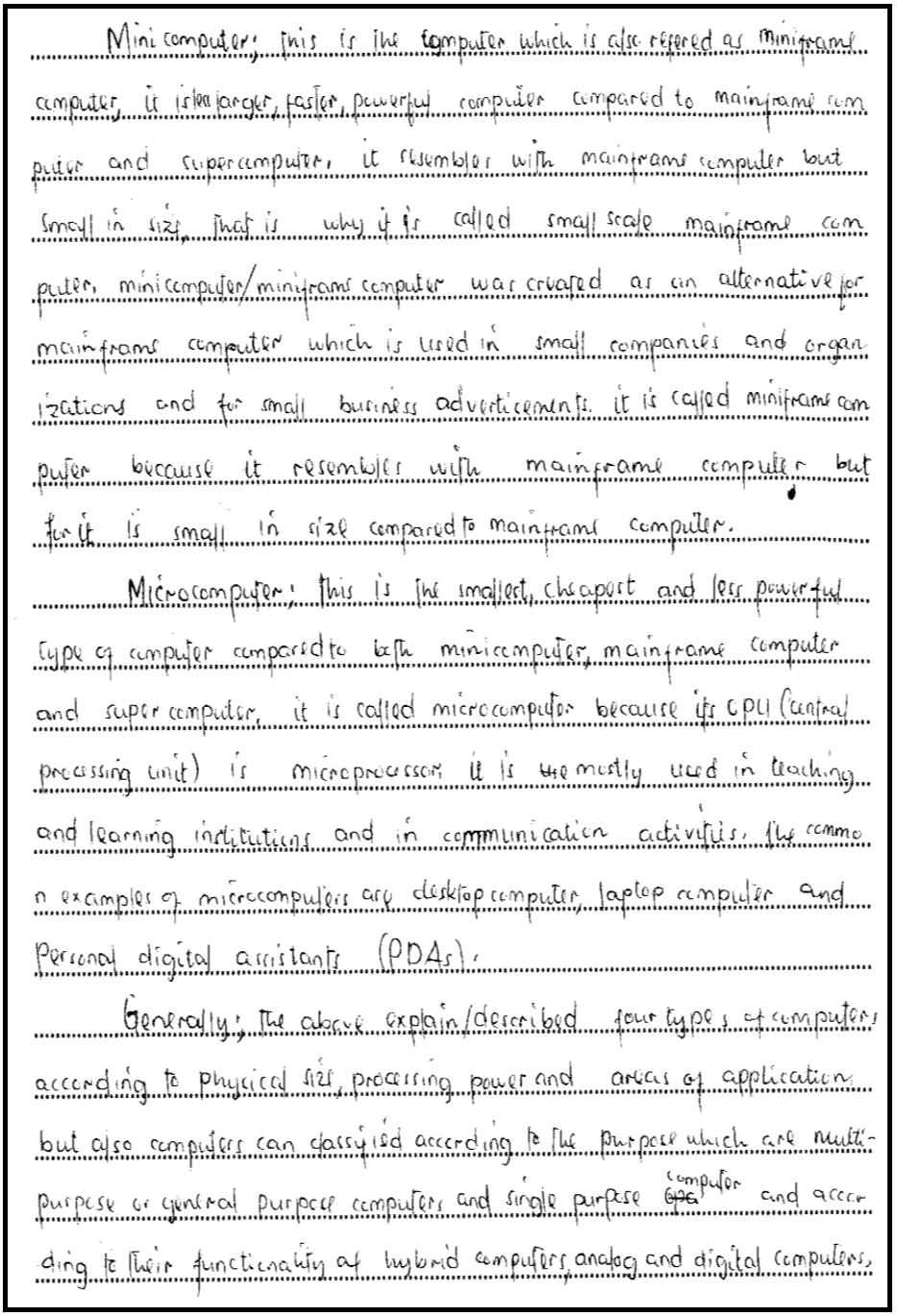


10. Describe four types of computers according to the physical size, processing power and application areas.

Computer is an electronic device capable of accepting input (data) process them and produce the meaningful output (information), due to that computing is the process of processing data to produce the meaningful information, computers are of different types according to the way used to classify them, computers can be classified according to the purpose, according to their functionality and according to their physical size, processing power and application. as stated above the following are the four types of computers according to the physical size processing power and application areas.

Super computer: this is the fastest, largest and the most expensive type of computer. it has high processing power due to its huge processing the computer emit high amount of heat thus the cooling alternative is needed. the super computer is very large in size due to its size it is kept in a special room. the super computer has high processing power thus it is used in scientific activities such as nuclear physics and controlling different weapons. the supercomputer is very expensive that is why it is possessed by the rich countries in the world like united states of America (USA) Japan south korea and china supercomputer is the most powerful and speed type of computer.

Mainframe computer: this is the type of computer which is less faster, larger, powerful and less expensive compared to the supercomputer. while the supercomputer is said to be the giant computer, mainframe computer is said to be bigger in size. mainframe computer is used in both scientific operations and for commercial purpose. the mainframe computer is also expensive but less compared to the supercomputer thus it is mostly possessed by the big and rich companies and organizations, in commercial purposes and in industries for daily activities concerning the production of new products.



Minicomputer: this is the computer which is also refered as minframe computer, it is a larger, faster, powerful computer compared to mainframe computer and supercomputer, it resembles with mainframe computer but small in size, that is why it is called small scale mainframe computer, minicomputer/minframe computer was created as an alternative for mainframe computer which is used in small companies and organizations and for small business advertisements. it is called minframe computer because it resembles with mainframe computer but for it is small in size compared to mainframe computer.

Microcomputer: this is the smallest, cheapest and less powerful type of computer compared to both minicomputer, mainframe computer and super computer, it is called microcomputer because its CPU (central processing unit) is microprocessor it is ~~the~~ mostly used in teaching and learning institutions and in communication activities. the common examples of microcomputers are desktop computer, laptop computer and personal digital assistants (PDAs).

Generally: the above explain/described four types of computers according to physical size, processing power and areas of application but also computers can classified according to the purpose which are multi-purpose or general purpose computers and single purpose ~~type~~ computer and according to their functionality of hybrid computers, analog and digital computers,

Extract 10.2: A sample of correct answer in question 10

Extract 10.2 shows the response from a student who explained correctly four types of computers according to the physical size, processing power and application areas. Also, the student managed to give correct introduction and conclusion.

3.0 PERFORMANCE OF STUDENTS IN EACH TOPIC

The Information and Computer Studies Assessment had 10 questions that were set from 9 topics. It was observed that, the students performed well in the questions set from the topic of *Computer Handling*. The performance was also good in multiple choice items and True/False questions. Multiple choice items were composed from the topics of *Information*, *The Computer*, *Word Processing*, *Spreadsheet*, *Computer Networking and Communication*, *Computer Handling* and *The Internet*. The True/False questions were set from the topics of *The Computer*, *Computer Evolution*, *Computer Handling* and *Spreadsheet.* The good performance is a result of the correct interpretation of the questions and the students' good practical skills.

On the other hand, five (5) topics, namely *Computer Networking and Communication*, *The Computer*, *Computer Software*, *The Internet* and *Spreadsheet* that were tested in questions 2, 4, 5, 6, 7 and 10 had an average performance. However, the performance of students was weak in the topic of *Word Processing*. Weak performance was attributed to insufficient knowledge and skills on the concepts taught under the stated topic, wrong interpretation of the requirement of the question, and lack of practical skills. The performance of students in different topics is summarized in the *Appendix.*

4.0 CONCLUSION

In this examination the majority of the students attempted most of the questions correctly. The analysis of the students' performance in each question shows that the students' performance in this paper was good in questions 1, 3 and 9 and it was of average in questions 2, 4, 5, 6, 7 and 10. On the other hand, it was weak in question 8.

The analysis of the nine topics which were examined shows that three topics had good performance, five topics had average performance and 1 topic had weak performance. Therefore, the overall performance in Information and Computer Studies Examination in 2021 was of average. The reasons for the average performance include insufficient knowledge and skills in the examined concepts and the students' ability to recall, explain, and make analysis in answering the questions.

5.0 RECOMMENDATIONS

In order to improve the students' performance in the Information and Computer Studies subject the following measures are recommended:

(a) Teachers should increase their efforts in teaching students how to edit and format texts in word document.

(b) Teachers should lead students in identifying various types of charts.

(c) Teachers should lead students in identifying predefined functions.

(d) Teachers should lead students in identifying physical network topologies.

(e) Students should read the examination instructions and questions carefully so as to understand clearly the requirements of the questions before attempting them.

(f) Students should be motivated to learn English. Fluency in English is an added advantage in attempting examinations.

APPENDIX

Analysis of Students Performance per Topic

S/N	Topic	Number of Questions	Percentage of Students who Scored 30 % Marks or Above	Remarks
1.	The Computer, Computer Evolution, Computer Handling and Spreadsheet.	1	94.7	Good
2.	Information, The Computer, Computer Handling, Word Processing, Spreadsheet, Computer Network and Communication and the Internet.	1	87.2	Good
3.	Computer handling	1	66.5	Good
4.	The Computer	2	62.8	Average
5.	The Internet	1	51.6	Average
6.	Computer Software	1	51.6	Average
7.	Computer Network and Communication	1	49.4	Average
8.	Spreadsheet	1	38.7	Average
9.	Word Processing	1	11.1	Weak