

3.9 COMPUTER STUDIES (451)

The subject was tested using a **theory paper (451/1)**, a **practical paper (451/2)** and a **project paper(451/3)**. Paper 1 consists of two sections: section A (40 marks), fifteen compulsory short answer questions of not more than three marks each and section B (60 marks), five questions of 20 marks each. The candidates are supposed to answer four questions of which question 16 is compulsory. The practical paper consists of two questions of 50 marks each. The project paper is usually developed by the Council but assessed in the schools by the subject teachers. The project scores are brought to KNEC where they are standardized and combined with those from the practical paper to make to 100%.

This report is based on the analysis of performance of candidates who sat the year 2019 KCSE Computer Studies.

3.9.1 CANDIDATES' GENERAL PERFORMANCE

The table below shows candidates performance in Computer Studies (451) examination in the last 5 years 2015, 2016, 2017, 2018 and 2019.

Table 16: Candidates' Performance for the last five years: 2015, 2016, 2017, 2018 and 2019

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2015	451/1	11,862	100	51.20	17.27
	451/2&3		100	60.06	15.63
	Overall		200	111.23	31.54
2016	451/1	12,954	100	53.93	18.1
	451/2 & 3		100	61.62	15.35
	Overall		200	115.34	32.04
2017	451/1	13,475	100	58.81	16.76
	451/2 & 3		100	62.07	14.16
	Overall		200	120.83	29.17
2018	451/1	15,162	100	51.93	17.09
	451/2 & 3		100	62.83	14.88
	Overall		200	114.73	30.26
2019	451/1	19,406	100	58.00	16.90
	451/2 & 3		100	64.00	13.54
	Overall		200	122.98	28.59

From the table above, it is to be observed that:

- i) Candidature has continued to grow.
- ii) Candidature increased from 15,162 in 2018 to 19,406 in 2019 representing 27.99% increment.
- iii) Performance in *paper 1 (451/1)* improved significantly from a mean of 51.93 in 2018 to 58.00 in 2019, representing 11.7% increase.

- iv) Performance in both the *practical paper (451/2)* and the project *paper (451/3)* improved slightly from a mean of 62.83 in 2018 to in 64.00 in 2019 representing **1.86%** improvement. It is worth noting that this was the first time KNEC introduced assessment of the project work in two milestones.
- v) Overall performance in the subject improved from a mean of **114.73 (57.36%)** in 2018 to 122.98 (61.49%) representing **7.19%** increase.
- vi) The standard deviations for paper 1 and the combined papers 2 and 3 were also near ideal SD an indication that the test items were able to discriminate between the weak and strong candidates.

3.9.2 ANALYSIS OF QUESTIONS PERFORMED POORLY

Questions which were performed poorly are analyzed and briefly discussed below. The discussion is based on comments from the chief examiners reports and analysis of the candidates' responses from the sampled answer scripts. The discussion aims at pointing out candidates' weaknesses and proposed suggestions on the measures which if put in place the performance would improve.

3.9.3 Computer Studies Paper 1 (451/1)

Section A

Question 4

Peter has installed internet in his home computer in order to use it for browsing. State **three** ways in which he would prevent viruses from infecting the computer. (3 marks)

Requirements

Candidates were required to state ways of preventing viruses from infecting a home-based computer.

Weaknesses

Candidates failed to give the preventive measures required once a computer is connected to the internet.

Expected responses

Ways to prevent viruses in a home computer connected to the Internet

- Using antivirus shielding software
- By surfing smart, i.e. those site which are credible
- Using a firewall to deter unwanted packets from accessing the computer from the internet
- Install anti-spyware to prevent real time spying of the computer
- Not using storage media which has been used in suspicious computer
- Using complex and secured password to restrict access
- Enabling security settings of the bowser

Advice to the teachers

The teachers should teach exhaustively threats to computer security more so the computer viruses.

Question 9

- (a) Explain the term *toggle key* as used in computer keyboard. (2 marks)
- (b) List examples of toggle keys on a computer keyboard. (2 marks)

Requirements

This question required candidates to explain the term toggle key and give examples of such keys.

Weaknesses

Candidates confused between toggle keys and toggle cases

Expected responses

- (a) Toggle keys:
These are keys that alternate the input mode. When pressed ON they are intended to perform a task, when OFF, they perform different task.
- (b) Example of toggle keys:
Caps lock, Insert, Num Lock and Scroll lock.

Advice to the teachers

Teachers should research and teach exhaustively about toggle concepts.

Question 13

Distinguish between a *page break* and a *column break* as used in a word processor. (3 marks)

Requirements

Candidates were required to distinguish between page break and column break.

Weaknesses

Most of the candidates had difficulties in the choice of words to clearly distinguish the features.

Expected responses

Distinction between page break and column break

Page break is a code inserted by a WP program that instructs the printing device where to end the current page and begin the next.

Column break is a feature that breaks a column and starts the next column.

Advice to the teachers

Teachers should exhaustively teach word document features for learners to understand and not memorize.

SECTION B

Question 16

- (a) Explain the term *dry running* as used in program development. (2 marks)
- (b) Explain **three** properties of an algorithm. (6 marks)
- (c) To qualify to get a driving license, an applicant must be 18 years or over. Ten candidates applied for the driving license test. Draw a flow chart that would read the name and age of an applicant and display the names of those who qualify. (7 marks)

Requirements

This question required candidates to explain the term dry running as used in program development, explain three properties of an algorithm and to draw a flow chart to read the name and age of an applicant and to display the names of the qualifiers.

Weaknesses

Most of the candidates failed to interpret the question properly hence did not respond appropriately.

Expected responses

Meaning of dry running

- (a) Dry running is the process where a programmer manually works through a code to trace the values of variables and identify any error.

(b) Properties of an algorithm

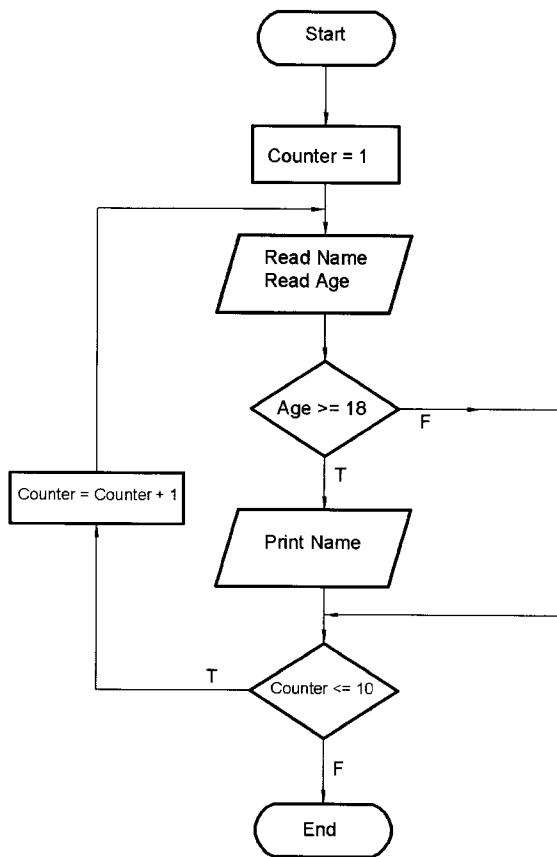
Finiteness: An algorithm must always terminate after a finite number of times steps.

Definiteness: Each step must be precisely be defines using an action to be performed at each step of the algorithm.

Input: Any operation performed needs beginning value associated with different activities in the operation.

Output: An algorithm must have a form of output/results/expected value/qualities.

(c)



Advice to the teachers

Teachers should teach elementary programming concepts exhaustively with help of real life examples.

3.9.4 Computer Studies Paper 2 (451/2)

Question 2

The Chief Printer of Zenith Printers Company would like to have business cards. As a Desktop Publishing (DTP) expert, you have been tasked to design the card for the officer.

- (a) (i) Open a Desktop Publishing program and set the page layout as follows:
- Paper size: 8.5 cm width by 5.5 cm height
 - Layout type: multiple pages per sheet
 - Target paper size: A4
 - Orientation: Portrait
 - Margin: 0.75 cm all round
- (5 marks)
- (ii) Save the publication as **business card**.
- (1 mark)
- (b) Design the card as it appears in Figure 3 ensuring that the card covers all the space in the page.
- (42 marks)

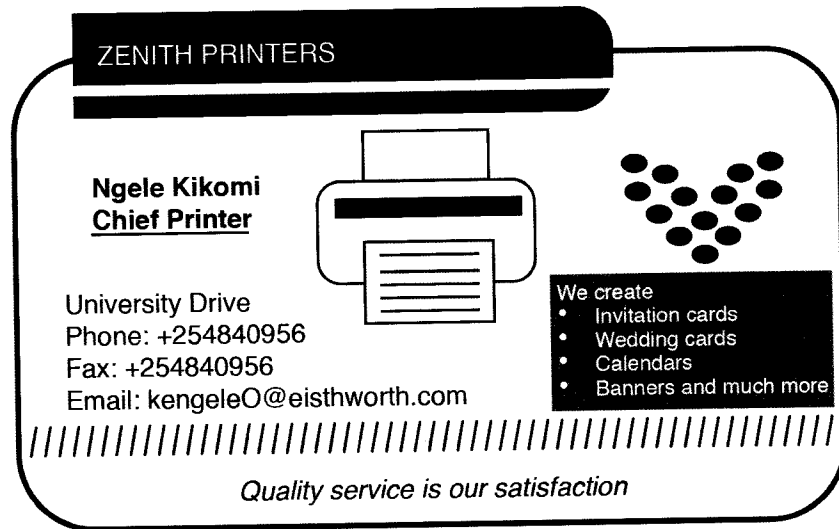


Figure 3

(c) Print out 10 copies of the card on a single A4 page. (2 marks)

Requirements

Candidates were required to design a business card using a desktop publishing software.

Weaknesses

Candidates failed to change units of measurements from inches to centimetres. The learners could not design correct objects and also failed to print ten copies of the card on a single page.

Expected responses

2 (a)	<p>Page layout</p> <p>each layout specification @1 = 5</p> <p>Saving @1</p>	6
(b)	<p>Card Border line</p> <ul style="list-style-type: none"> - Rectangle @1 - Applying curved corners @1 - Line thickness @½ - Arrangement of elements @1 	3.5
	<p>Zenith printers (black section)</p> <ul style="list-style-type: none"> - Rectangle @1 & semicircle @1 - Black filled @1 - Text only @1 - Text colour @1 - White edge @1 - Arrangement of elements @1 	7

	Ngele Kikomi ... <ul style="list-style-type: none"> - Text only @2 - Applying underline @½ - Applying bold @½ - Arrangement of elements @1 	4
	University Drive ... <ul style="list-style-type: none"> - Text only @2 - Text formatting @1 - Arrangement of elements @1 	4
	Arrow head dots <ul style="list-style-type: none"> - Drawing of circle dot @1 - Arrangement of dots @1 - Relative position on the card @½ 	2.5
	Printer Logo <ul style="list-style-type: none"> - 2 rectangles each @½ = 1 - Round edge on the rectangle @1 - Thick line @1 - Thin lines @1 - Parallel thin lines @1 - Applying white background (to hide sections of lines) @1 - arrangement of elements @1 	7
	We create text <ul style="list-style-type: none"> - Text only @2 - Bullets @1 - Applying white colour/background @1 - Arrangement of elements @1 	5
	Tilted lines bars <ul style="list-style-type: none"> - Rectangular outline @1 - Applying filled pattern @1 - Positioning @1 - Removing borders @1 	4
	Quality service <ul style="list-style-type: none"> - Text only @1 - Italics formats @½ - Positioning @½ 	2
	General Card layout <ul style="list-style-type: none"> - Coverage ≥ 80% of the page @1 - Use of appropriate font sizes @1 - Use of appropriate line weights @1 	3
	Printing <ul style="list-style-type: none"> - Print a card @1 - Printing 10 cards per paper @1 	2
	QUESTION TOTAL	50

Advice to teachers

Teachers should emphasize on the change of units of measurement, layout guides, grouping of objects after correctly placing them. Teachers should also expose learners to desktop publishing with emphasis on print setup settings.

Conclusion

Computer Studies is a skill-based subject therefore the teachers should embrace inquiry- based approach to teaching and expose the learners to a lot of hands on activities.

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