Name:..... Index No ...../.....

451/1
COMPUTER STUDIES
Paper 1
(Theory)
Oct./Nov. 2010
$2\frac{1}{2}$ hours

Candidate's Signature .....

Date .....

THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education
COMPUTER STUDIES
Paper 1
(Theory)
$2\frac{1}{2}$ hours

Instructions to Candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the spaces provided above.
*(c) This paper consists of **TWO** sections; **A** and **B**.*
*(d) Answer **ALL** the questions in section **A**.*
*(e) Answer question **16** and any other **THREE** questions from Section **B**.*
*(e) **ALL** answers should be written in the spaces provided on the question paper.*
*(f) **This paper consists of 12 printed pages.***
*(g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***

For Examiner's Use Only

Section	Questions	Candidate's Score
A	1- 15	
B	16	
	17	
	18	
	19	
	20	
	Total Score	

SECTION A (40 marks)

*Answer **all** the questions in this section in the spaces provided.*

1 List **four** activities carried out by a data processing system. (2 marks)

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2 (a) Define data communication. (1 mark)

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(b) State **two** characteristics of an effective data communication system. (2 marks)

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3 Explain why an intranet is a more secure way to share files within an organisation compared to the internet. (2 marks)

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4 Distinguish between a formula and a function as used in spreadsheets. (2 marks)

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5 State **four** functions which are specific to Network Operating Systems. (4 marks)

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6 The word race is appearing several times in a long story document composed using a DTP package. How would this word be safely replaced with the word content?. (3 marks)

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7 Study the pseudocode below and determine its output. (3 marks)

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1.  (a)  T  =  0
    (b)  M  =  0
    (c)  K  =  1
2.  (a)  M  =  M + T
    (b)  T  =  T + 5
    (c)  K  =  K + 1
3.  Repeat step 2 while K < 3
4.  Write M, T
5.  Exit
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8 Give **two** reasons why the use of finger prints and voice input can be used as reliable forms of security in computer systems. (2 marks)

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9 State the purpose of each of the following memories in a computer system. (2 marks)

(a) RAM

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(b) Hard disk

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10 Explain why telecommuting is not suitable for a doctor when carrying out an operation on a patient. (2 marks)

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11 Copyright laws are laws granting authors the exclusive privilege to produce, distribute, perform or display their creative works. It is a legal framework for protecting the works such as book publishing, motion-picture production and recording. State two challenges that are posed to these laws by ICT. (2 marks)

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12 State **two** reasons why it is necessary to use standard furniture in a computer laboratory. (2 marks)

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13 Describe the following terms as used in mail merging: (4 marks)

(a) main document;

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(b) data source.

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14 State **three** ways in which ICT can be used in shipping control. (3 marks)

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15 A firm operates an order system that coordinates orders, raw materials and inventory across its three factories. Currently the orders are processed manually at each factory and communicated to the others over the phone . The management intends to computerise their operations. State the first two computer professionals who will be required and their roles. (4 marks)

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SECTION B (60 marks)

*Answer question **16** and any other **three** questions from this section in the spaces provided.*

16 (a) Machine language programs are more difficult to write than high-level language programs. State two reasons for this. (2 marks)

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(b) In order to process examination results of students in a school, their names, index numbers and scores in 11 subjects are required. The average score for each student is then determined and a grade assigned. This process is repeated for all 40 students in a class.

Draw a flowchart to:

- Read a student's name, index number and the scores in all the subjects.
- Determine the student's average score.
- Assign a grade to the student depending on the average score as follows:

Score	**Grade**
$80 \leq$ score	A
$60 \leq$ score < 80	B
$40 \leq$ score < 60	C
score < 40	F

- Display the student's name, index number, average score and the grade.
- Repeat the above steps for all the students in the class. (10 marks)

(c) Below is a list of program segments in different generations of programming languages. Identify the language for each. (3 marks)

(i)
```
LDA  105
SUB  40
ADD  20
```

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(ii)
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10000110    10111101
01111000    0001100
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(iii)
```
For x: = 1 to 10 do

        Write (x);
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17 (a) The following are some of the phases in the systems development life cycle (SDLC): system analysis, system design, system implementation, system review and maintenance. State **four** activities that are carried out during the system implementation phase. (4 marks)

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(b) Give **three** reasons why system maintenance phase is necessary in SDLC. (3 marks)

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(c) State **two** instances where observation is not a viable method of gathering information during system analysis stage. (2 marks)

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(d) Various considerations should be made during input design and output design. State **two** considerations for each case. (4 marks)

Input design.

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Onput design.

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(e) State **two** reasons why an organisation may use other strategies of software acquisition other than developing their own. (2 marks)

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18 (a) Using **two** examples, explain the term field properties as used in database design. (2 marks)

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(b) Below is an extract from a hospital database table.

Patient No	Name	Date Registered	Amount paid	Remarks
LDK/001	Mathew Olang	04/05/08	2500.00	To go for x-ray
LDK/004	Joy Chelimo	07/06/08	1200.00	Medicine to be ordered
LDK/008	John Kamau	09/08/08	3500.00	To be admitted for further check up
LDK/002	Gerald Wasike	02/04/05	800.00	To come back for review

(i) State with reasons the most suitable data types for the following fields: (8 marks)

(I) patient No;

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(II) date registered;

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(III) amount paid;

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(IV) remarks.

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(ii) Which would be the most appropriate primary key field for the above table? (1 mark)

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(iii) What is the purpose of a primary key field in database design? (1 mark)

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(iv) Describe how information about patients who registered after 09/08/06 can be extracted from the database. (3 marks)

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19 (a) Explain how data in a computer system is secured using: (4 marks)

(i) password;

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(ii) user access level.

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(b) State **three** characteristics of a suitable password. (3 marks)

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(c) State **two** characteristics of a computer that is infected by computer viruses. (2 marks)

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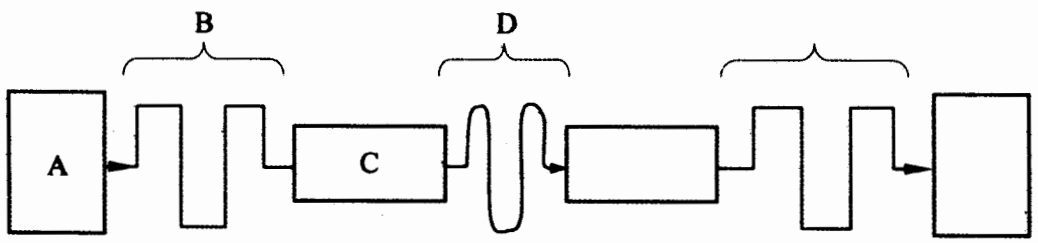
(d) (i) The figure below shows how data is transmitted through a public telephone line.



Name A, B, C and D. (4 marks)

A ..... B .....

C ..... D .....

(ii) State **two** advantages of using fibre optic cables over satellite in data communication. (2 marks)

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20 (a) Using ones complement, convert the decimal number -9 into a 6-bit binary number. (3 marks)

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(b) (i) State **three** standard coding schemes used in data representation. (3 marks)

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(ii) In a certain coding scheme, each character occupies 7 bits.
Letters of the alphabet are assigned consecutive codes.
If letter N is represented by 1010010;
What is the representation of letter A in this coding scheme? (3 mark)

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(c) Using twos complement, show how the arithmetic below would be carried out on a 8-bit computer system. (6 marks)

(+54) - (+29)

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