THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

451/1 – COMPUTER STUDIES – Paper 1

(THEORY)

Apr. 2021 – 2½ hours

Name ..... Index Number .....

Candidate's Signature ..... Date .....

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****.*
(f) ***All*** *answers should be written in the spaces provided on the question paper.*
(g) ***This paper consists of 15 printed pages.***
(h) *Do* ***not*** *remove any pages from this booklet.*
(i) ***Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***
(j) ***Candidates should answer the questions in English.***

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A	1–15	40	
B	16	15	
		15	
		15	
		15	
		Total Score	

AGOGA OYOMBE SECONDARY SCHOOL
PRINCIPAL
19 MAY 2021
P. O. Box 336, NG'IYA

SECTION A (40 marks)

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

1. List **four** input devices used to capture data by way of scanning. (2 marks)

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2. Explain **two** consequences of **not** restricting the use of USB flash drives in a school computer laboratory. (4 marks)

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3. Differentiate between a *computer power cable* and a *computer interface cable.* (2 marks)

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4. Explain **two** computer hardware features that may be considered when selecting a laptop computer to be used when developing a KCSE computer studies project. (4 marks)

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5. List **two** examples of operating systems that are **not** capable of supporting computer networks. (2 marks)

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6. Explain each of the following functions of an operating system:

(a) Process scheduling; (2 marks)

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(b) Interrupt handling. (2 marks)

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7. Give **two** examples of each of the following application packages:

(a) Databases; (1 mark)

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(b) Word processing; (1 mark)

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(c) Desktop publishing. (1 mark)

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8. State **two** ways of preventing children from accessing adult content in a computer device linked to the internet. (2 marks)

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9. A health centre stores patient's details in a computer. State **two** ways of maintaining confidentiality of the information. (2 marks)

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10. Convert the decimal number 9.25_{10} to its binary number equivalent. (3 marks)

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11. Explain the meaning of the term "*distributed data processing*" as used in computers. (2 marks)

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12. The area of a triangle is obtained using the formula: **area = ½ base × height**. Draw a flowchart that captures the input from a user, computes the area of the triangle and displays the results. (3 marks)

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13. State **two** circumstances that may necessitate the use of a questionnaire in system development. (2 marks)

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14. An organisation opted to connect their computers to form a network. State **two** ways through which the organisation may save on the costs of their operations upon implementing the network. (2 marks)

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15. State **three** benefits that may be realised by using ICT to manage automobile traffic operations. (3 marks)

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SECTION B (60 marks)

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

16. (a) Explain **two** ways that may be used to identify the existence of errors in a program. (4 marks)

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(b) **Figure 1** shows a program translation model involving the use of a translator:

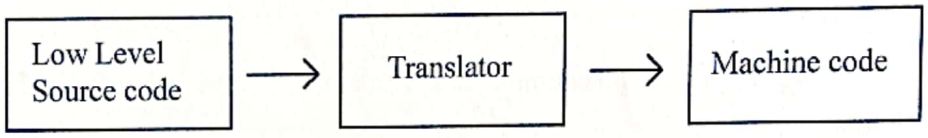

Figure 1

(i) State the type of translator that is required in this model. (1 mark)

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(ii) Explain the reason for the conversion from low level source code to machine code. (2 marks)

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(c) A private college intends to offer training on computer packages to a class consisting of 25 students. Each student is required to pay Ksh 2 000 for this training. A discount of 14% is awarded to each student who will have paid full fees by the opening date of the new term.

Write a pseudocode that captures fees paid by each student, determine whether the student is eligible for the discount, computes the total fees collected and the total discount awarded. (8 marks)

17. (a) Explain **three** benefits of using twisted pair cables in a local area network. (6 marks)

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(b) Charles has linked five computers at his home using star topology.

(i) Draw a diagram representation for this topology. (2 marks)

(ii) State **three** reasons that may have prompted him to use this topology. (3 marks)

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(iii) Explain **two** requirements for connecting the network to the internet. (4 marks)

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18. (a) Explain **three** ways through which advancement in ICT has benefited national security. (6 marks)

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(b) Convert the binary number 1101.011_2 to its decimal number equivalent. (3 marks)

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(c) A teacher entered test scores in a spreadsheet in the cells range C4 to C38. State the formula that should be used to:

(i) compute each of the following scores:

I. mean of the scores. (1 mark)

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II. number of scores whose values exceed 50. (2 marks)

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(ii) display the text "PASS" if the score is greater than or equal to 30 and the text "FAIL" if otherwise. (3 marks)

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19. (a) State the unit of measure for each of the following quantities in a computer:

(i) Processor speed; (1 n

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(ii) Memory capacity; (1 m

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(iii) Data transmission speed. (1 ma

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(b) Explain **three** functions of a query in a database. (6 marks

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(c) Peter created folders named ENG, MATHS and SWAHILI in a folder named STUDIES. In the folder ENG, he created the folders LIT and LANG while in the SWAHILI folder, he created LUGHA and FASIHI.

(i) Draw a Directory tree structure for all the folders created. (4 marks)

(ii) Given that the STUDIES folder is in the root directory of drive D, write the path for a file named REVISION.DOC stored in the LUGHA folder. (2 marks)

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20. (a) Explain **three** ways through which computer components in a computer laboratory may be protected against theft. (6 marks)

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(b) Computer studies subject has become an essential component of many professions. State **three** benefits of computer knowledge to an engineer. (3 marks)

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(c) A school opted to provide internet to users in the school through the use of wireless technology. Explain **three** challenges that the school may face by using this form of technology. (6 marks)

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