

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			



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:

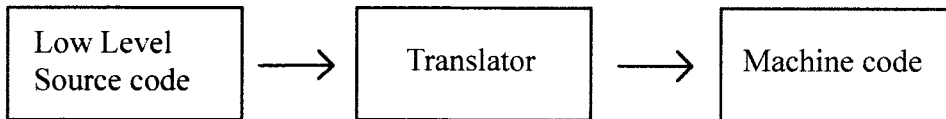


Figure 1

- (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)

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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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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 mark)

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(ii) Memory capacity; (1 mark)

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(iii) Data transmission speed. (1 mark)

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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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