THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

451/1 **Paper 1**

COMPUTER STUDIES (Theory)

Nov. 2022 – 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 **three** questions from section **B**.
(f) All answers should be written in the spaces provided on the question paper.
(g) **This paper consists of 14 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	

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SECTION A

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

1. State the components of a computer system which performs each of the following tasks:

(a) Comparisons of numbers (1 mark)

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(b) Convert data into a computer format (1 mark)

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(c) Coordinate operations of an entire computer (1 mark)

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2. Explain the term *system files* as used in operating system. (2 marks)

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3. Explain the term *label* as used in a spreadsheet program. (2 marks)

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4. Ahmed noted that some documents in his office computer were illegally accessed from other computers in his organisation's network. State **two** control measures he should put in place to prevent further access. (2 marks)

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5. **Figure 1** shows an extract from a spreadsheet program used by a shopkeeper to compute the total cost of items in stock.

	A	B	C	D
1	ITEM	UNITS	UNIT PRICE	TOTAL COST
2	Cooking fat	3	250	
3	Sugar	4	100	

Figure 1

Write a function that would be used to obtain the total cost of cooking fat. (2 marks)

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6. Emmanuel inserted a textbox and typed some text in it while working with a desktop publishing program. He realised that some of the text he had typed was not visible. State **three** ways in which he could make the text visible. (3 marks)

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7. Explain the term *software documentation* as used in systems development. (2 marks)

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8. State **three** types of errors that may occur during computerised data processing. (3 marks)

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9. Mary has been employed as a Web Administrator in a media house. State **three** official duties that she is likely to be assigned by her supervisor. (3 marks)

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10. (a) Explain the term *time slice* as used in computer data processing. (2 marks)

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(b) State **two** advantages of multiprocessing mode of data processing. (2 marks)

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11. State **two** differences between a *transaction file* and *a report file* as used in data processing. (2 marks)

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12. State **three** disk management activities that may be performed on a computer's hard disk during formatting operation. (3 marks)

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13. The following is a list of computer output devices:

speaker, plotter, screen projector, touch screen, LCD, printer

Categorise each of them as either softcopy output devices or hardcopy output devices. (3 marks)

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14. State **three** advantages of using a wireless computer keyboard. (3 marks)

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15. State **three** types of objects that may be created in a database during the design stage. (3 marks)

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SECTION B

*Answer question **16** and any other **three** questions from this section.*

16. (a) State **three** advantages of machine programming languages. (3 marks)

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(b) Describe **two** types of translators as used in computer programming. (4 marks)

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(c) A financial institution would like to computerise its loaning processes. To ascertain the legibility of a borrower, the system should accept a customer's ID number and check whether the customer has previously defaulted the repayment of any loan. If the customer is reported to have defaulted, the message DEFAULTER is displayed, otherwise the amount of loan requested is granted. If the amount requested is greater than or equal to 1 million, a repayment period of 6 years is displayed. If the amount is greater than 500,000 and less than 1 million, a repayment period of 3 years is displayed. Otherwise a repayment period of 1 year is displayed.

Draw a flowchart to represent the logic of the computerised system. (8 marks)

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17. (a) With the aid of an example in each case, state **one** difference between a *nibble* and a *byte* as used in computer data representation. (3 marks)

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(b) (i) Convert the binary number 11101.101_2 to its decimal number equivalent. (3 marks)

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(ii) Perform the following binary arithmetic operation using two's complement.

$1110_2 - 1001_2$ (2 marks)

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(c) State **two** differences between BCD and EBCDIC as used in computer coding scheme. (4 marks)

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(d) Ann would like to use a smartphone to attend an online lesson, where a teacher is using video presentation. State **three** features that a smartphone must have for an effective online lesson. (3 marks)

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18. (a) Explain each of the following terms as used in Information and Communication Technology (ICT):

(i) Electronic Funds Transfer (EFT) (2 marks)

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(ii) blogging (2 marks)

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(iii) simulation (2 marks)

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(b) Distinguish between *pilot change over* and *parallel change over* as used in system development. (4 marks)

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(d) Ann would like to use a smartphone to attend an online lesson, where a teacher is using video presentation. State **three** features that a smartphone must have for an effective online lesson. (3 marks)

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18. (a) Explain each of the following terms as used in Information and Communication Technology (ICT):

(i) Electronic Funds Transfer (EFT) (2 marks)

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(iii) simulation (2 marks)

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(b) Distinguish between *pilot change over* and *parallel change over* as used in system development. (4 marks)

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(c) Philip has developed a computerised system for a school and is currently in its implementation stage.

(i) State **three** activities which he would carry out at this stage. (3 marks)

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(ii) State **two** technical personnel who would be involved during this stage. (2 marks)

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19. (a) (i) State **two** differences between *serial* and *parallel* cables as used in computers. (4 marks)

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(ii) Name **four** cables other than those in 19(a)(i) that are used to connect a computer with other devices. (2 marks)

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(b) Describe each of the following qualities of information:

(i) Completeness (2 marks)

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(ii) Timeliness (2 marks)

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(c) State the function of each of the following features in word processing:

(i) Word wrap (1 mark)

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(ii) Sort (1 mark)

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(iii) Indent (1 mark)

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(d) A hard disk of a computer was reported to have crashed. State **two** control measures that should have been put in place to prevent such an occurrence. (2 marks)

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20. (a) Explain the effect of each of the following occurrence in a computer network:

(i) A bus network topology with a missing terminator (2 mark)

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(ii) A uni-directional ring network topology with one computer not operational (2 marks)

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(iii) A star network topology with a hub not operational (2 marks)

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(b) A school intends to connect their computer labs with the school administration block using a fibre optic cable. State **three** benefits that the school will realise from using the cable. (3 marks)

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(c) Explain each of the following terms as used in data security:

(i) recycle bin (2 marks)

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(ii) patch (2 marks)

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(iii) tapping (2 marks)

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