THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education

451/1 COMPUTER STUDIES Paper 1

(Theory)

Mar. 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	

SECTION A (40 marks)

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

1. State **two** ways in which a computer could be used in the health care sector other than record keeping. (2 marks)

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2. State **four** operations that may be performed on a file by an operating system. (2 marks)

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3. Explain the term *website* as used in the Internet. (2 marks)

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4. Explain a reason necessitating governments to enact data protection laws. (2 marks)

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5. The following data is to be entered in spreadsheet cells:

(a) 0922 111 000

(b) 31/01/2022

State the cell format, other than the text format, that can be applied to the respective data cells in order to appear as it is. (2 marks)

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6. When an image inserted in a desktop publishing document is selected, handles on its place holder appears. State **three** uses of these handles. (3 marks)

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7. State a circumstance under which dry-run testing is performed when developing a program. (2 marks)

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8. State **two** ways in which data validation is implemented on an input form of a database application. (2 marks)

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9. Mikal has been employed as a computer trainer in an organisation. State **three** roles that she is likely to play in the organisation. (3 marks)

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10. List **three** electronic data processing modes used in computers. (3 marks)

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11. Distinguish between *data collection* and *data capture* as used in data processing. (4 marks)

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12. Describe each of the following features of a graphical user interface operating system:

(a) Pointer (2 marks)

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(b) Desktop (2 marks)

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13. State a circumstance under which each of the following input devices may be used:

(a) Optical character reader (1 mark)

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(b) Optical mark reader (1 mark)

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14. State the characteristics of an impact printer. (3 marks)

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15. Describe each of the following features of a word processor:

(a) Hyphenation (2 marks)

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(b) Status bar (2 marks)

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SECTION B (60 marks)

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

16. (a) The following are segments of programming languages **A** and **B** respectively:

A
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00100
00111
```

B
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SELECT name, class
FROM studentsDetails
WHERE House= "Athi Boys"
```

(i) Identify the generation of programming language used in each respective segment. (2 marks)

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(ii) State **two** advantages of each of the generation of programming language labelled **A** and **B**. (4 marks)

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(b) An organisation intends to increase salaries of employees using the following rates:

Current Salary	**Percentage Increment**
Greater than or equal to 70000	5%
Greater than 50000 and less than 70000	8%
Less than or equal to 50000	10%

Write a pseudocode that reads the total population of employees in the organisation and then performs the following for each employee:

- Reads the current salary
- Compute the increment
- Display current salary, increment and the new salary.

Hint: increment = current salary × percentage increment rate (9 marks)

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17. (a) Distinguish between *octal number system* and *binary number system.* (4 marks)

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(b) Subtract 17_{10} from 23_{10} using 8-bits one's complement leaving the answer in binary notation. (4 marks)

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(c) State **four** ways in which a graphic designer would use a computer in a media company. (4 marks)

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(d) State **three** functions of an operating system in respect to disk management. (3 marks)

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18. (a) Explain **three** benefits of e-commerce to a company that deals with importation and selling of cars. (6 marks)

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(b) A systems analyst intends to study an existing system. State **five** reasons for this study.
(5 marks)

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(c) Distinguish between *usability testing* and *functional testing* as used in system development.
(4 marks)

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19. (a) Explain the purpose of each of the following features of a spreadsheet chart:

(i) Legend (2 marks)

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(ii) Data series (2 marks)

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(iii) Data marker (2 marks)

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(b) A school intends to install a computer network. Explain **three** challenges that the school may experience after the installation. (6 marks)

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(c) Xpat ICT company has been tasked to construct a network for an organisation. Explain **three** factors that the company should consider when selecting the media for the connectivity. (3 marks)

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20. (a) State the functions of each of the following protocols as used in computer network:

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(i) SMTP (1 mark)

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(ii) FTP (1 mark)

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(iii) DNS (1 mark)

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(b) State **two** characteristics of each of the following network topologies:

(i) Mesh topology (2 marks)

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(ii) Ring topology (2 marks)

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(c) With the aid of a diagram, describe a centralised computing configuration. (4 marks)

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(d) Explain each of the following computer security threats:

(i) Social engineering (2 marks)

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(ii) Vulnerability. (2 marks)

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