KENYA CERTIFICATE OF BASIC EDUCATION (K.C.B.E)

COMPETENCE ASSESSMENT EXAMINATION CKEAB 001

LEARNER'S DETAILS

Name: _____

School: _____

Assessment Number: _____. Date: _____

School Code: _____. Signature: _____.

INSTRUCTIONS TO LEARNERS

1. Write your name, assessment number, class and date on all the answer sheets provided.
2. Answer all the questions in the spaces provided.
3. Use a blue or black pen for writing. Pencils should be used only for drawings and diagrams.

SCORE GRID

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Marks	4	6	4	4	4	6	6	10	12	10	10	8	10	100
Learner Score														

Section	Max Marks	Learner Score
A	40	
B	60	
TOTAL	100	

Performance Levels Grid

Level	Level	% Range	Points	Learner's score
Exceeding (EE)	EE1	90–100%	8	
	EE2	75–89%	7	
Meeting (ME)	ME1	58–74%	6	
	ME2	41–57%	5	
Approaching (AE)	AE1	31–40%	4	
	AE2	21–30%	3	
Below (BE)	BE1	11–20%	2	
	BE2	1–10%	1	

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SECTION A: (40 Marks)

Answer all questions in this section.

1. (a) Define a computer. (2 marks)

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_____

(b) Give two reasons why modern society depends heavily on computers. (2 marks)

_____

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2. A Grade 10 learner visits a museum and sees several early computing devices.
(a) State the main purpose of the Abacus. (1 mark)

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(b) Explain how Napier's Bones worked. (2 marks)

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_____

(c) State one limitation of the Pascaline. (1 mark)

_____

_____

(d) Give two uses of the Jacquard Loom in the development of modern computing. (2 marks)

_____

_____

3. Write the technology with its generation of computers:

(a) Vacuum tubes _____ (1 mark)

(b) Transistors _____ (1 mark)

(c) Integrated circuits _____ (1 mark)

(d) Very Large Scale Integration (VLSI) _____ (1 mark)

4. State the function of each type of bus:
(a) Data bus (1 mark)

_____

_____

(b) Address bus (1 mark)

_____

_____

(c) Control bus (1 mark)

_____

_____

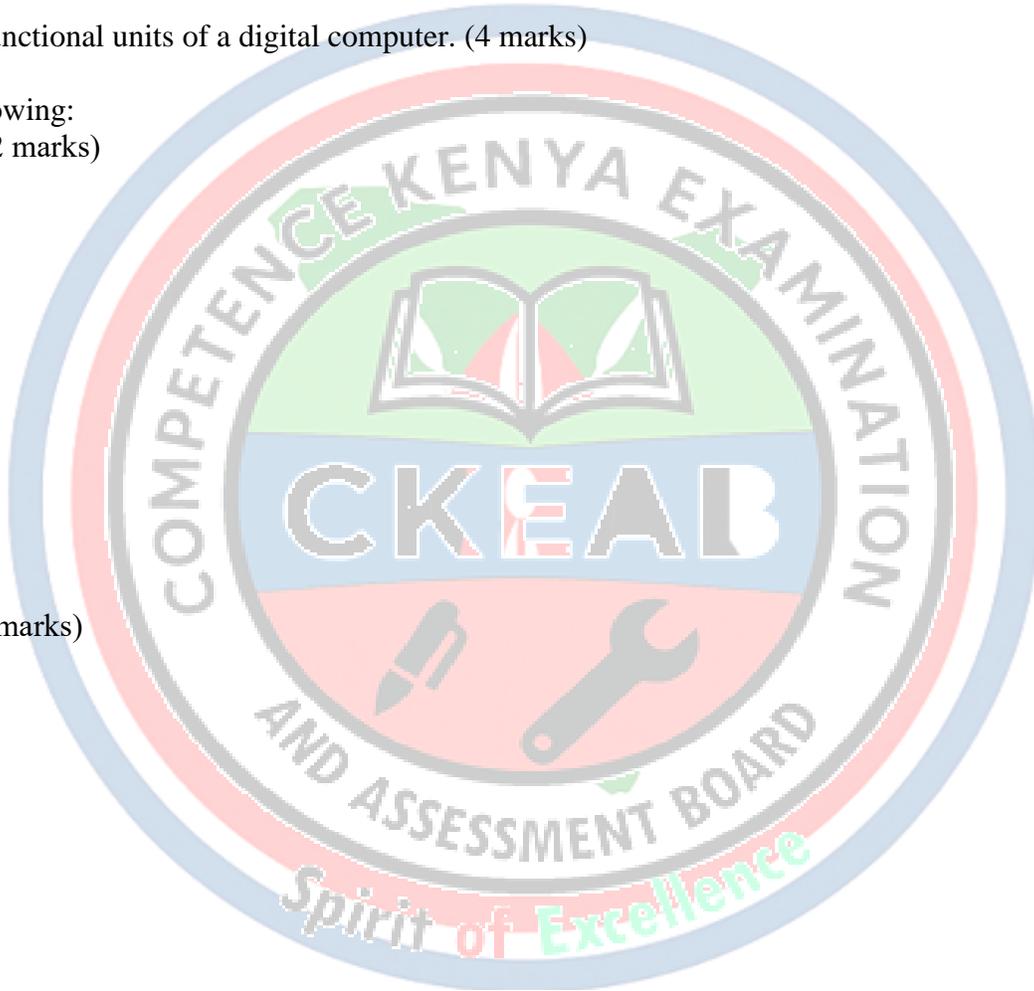(d) System bus (1 mark)

_____

_____

5. List four main functional units of a digital computer. (4 marks)

6. Convert the following:
(a) 18_{10} to binary (2 marks)

(b) 62_{10} to octal (2 marks)

(c) 255_{10} to hexadecimal (2 marks)

7. Give the function of each:
(a) ALU (2 marks)

_____

_____

(b) Control Unit (2 marks)

_____

_____

(c) Registers (2 marks)

_____

_____

SECTION B: (60 Marks)
Answer all questions

8. A school is upgrading from old desktop computers to modern laptops to improve digital learning.

(a) Describe ONE key technology used in each of the following generations:

   i. First Generation _____ (1 mark)

   ii. Second Generation _____ (1 mark)

   iii. Third Generation _____ (1 mark)

   iv. Fourth Generation _____ (1 mark)

   v. Fifth Generation _____ (1 mark)

(b) Explain TWO advantages of fourth-generation computers for a school environment. (2 marks)

_____

_____

(c) State TWO disadvantages of first-generation computers that made them unsuitable for modern schools. (2 marks)

_____

_____

(d) Suggest ONE reason why the school prefers laptops over desktops. (1 mark)

_____

_____

9. A technician is repairing a computer that keeps restarting. They suspect problems with the Von Neumann architecture components.

(a) State the three key elements of a Von Neumann computer. (3 marks)

_____

_____

_____

(b) Explain the role of each element in the fetch–execute cycle. (3 marks)

_____

_____

_____

(c) Describe the relationship among these elements during program execution. (3 marks)

_____

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(d) Give three reasons why understanding architecture is important for computer technicians. (3 marks)

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_____

10. A company wants to buy processors and is comparing RISC and CISC.

(a) State TWO differences between RISC and CISC architectures. (4 marks)

_____

_____

(b) Give TWO advantages of RISC processors in battery-powered devices like smartphones. (2 marks)

_____

_____

(c) Explain TWO reasons why some computers still use CISC processors. (2 marks)

_____

_____

(d) State TWO examples of devices where RISC architecture is widely used. (2 marks)

_____

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11. A programmer is designing a program that stores colors using numbers.

(a) Convert 101011_2 to decimal. (2 marks)
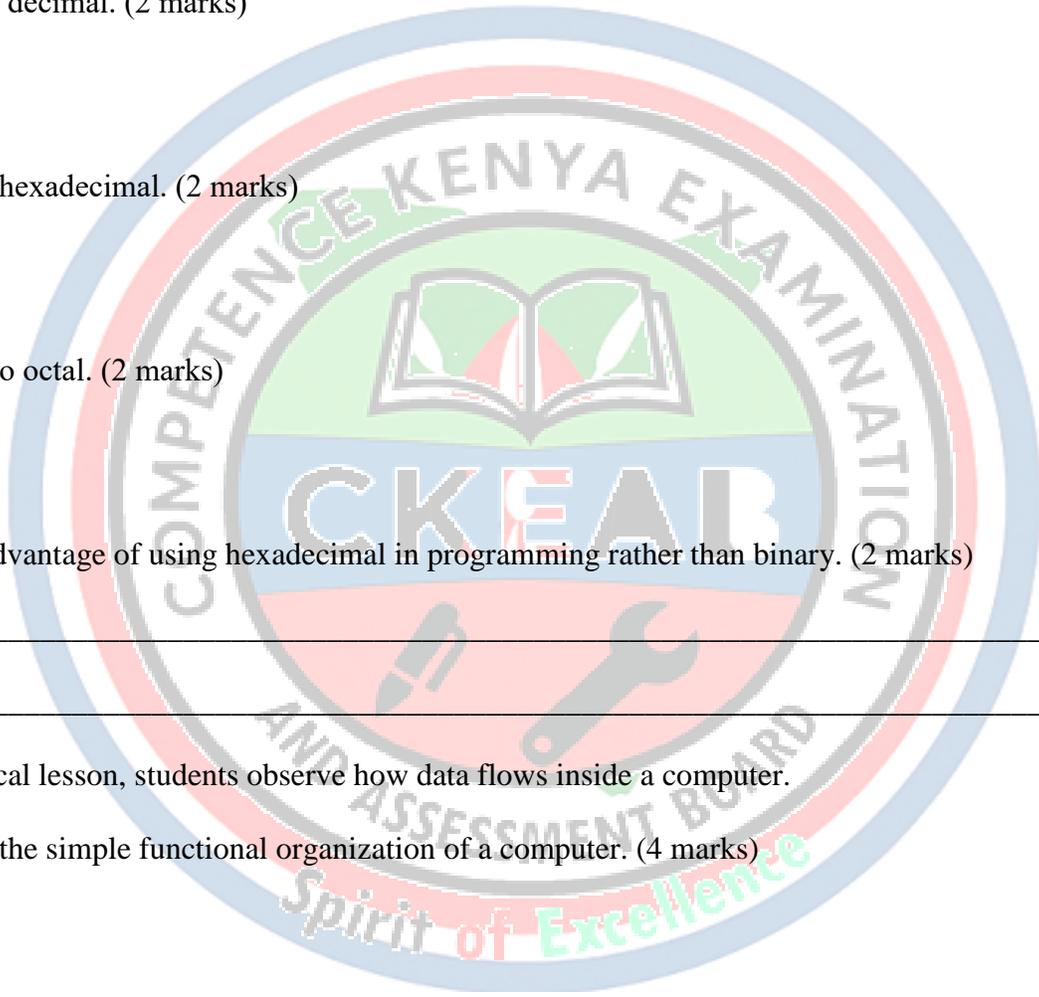
(b) Convert $3A_{16}$ to decimal. (2 marks)

(c) Convert 72_{10} to hexadecimal. (2 marks)

(d) Convert 1100_2 to octal. (2 marks)

(e) Explain ONE advantage of using hexadecimal in programming rather than binary. (2 marks)

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_____

12. During a practical lesson, students observe how data flows inside a computer.

(a) Draw and label the simple functional organization of a computer. (4 marks)

(b) Explain the role of control signals in computer operation. (2 marks)

_____

_____

(c) State TWO differences between primary and secondary storage. (2 marks)

_____

_____

13. A student wants to connect a printer, keyboard, and external storage device to a computer.
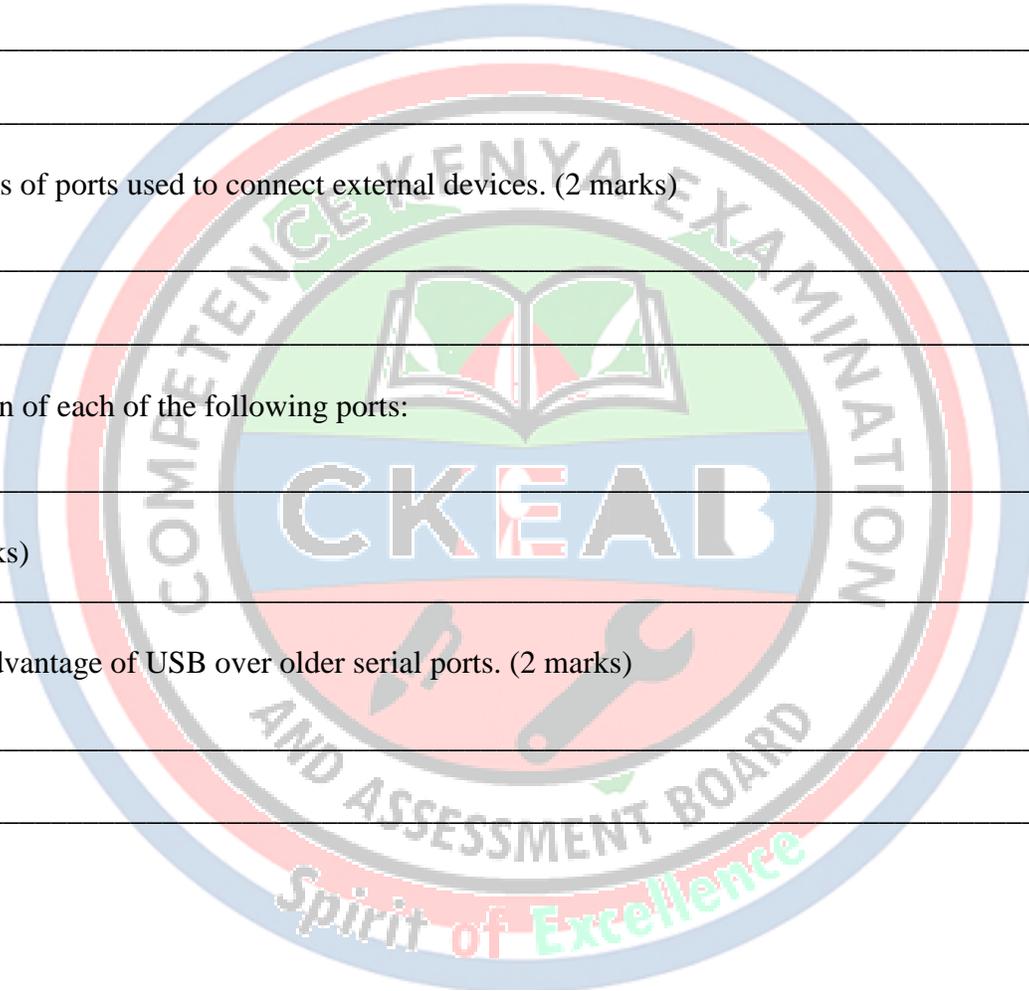
(a) Define the term interface in computers. (2 marks)

_____

_____

(b) State TWO types of ports used to connect external devices. (2 marks)

_____

_____

(c) Give the function of each of the following ports:
   i. USB (2 marks)
_____

   ii. HDMI (2 marks)
_____

(d) Explain ONE advantage of USB over older serial ports. (2 marks)

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