

# KCSE 2023 PREDICTION CYCLES



## COMPUTER PAPER 1&2



### KCSE 2023 TOP PREREDICTION CYCLE 1-5

#### CLASS OF KCSE 2023 NOVEMBER

*The set Comprises of 5 Prediction Cycles prepared by a panel of Top Writers from KNEC Nairobi HQ*

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All KCSE 2023 November Candidates are advised to take the questions in this package of predictions serious as they prepare for the national exams!

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## KENYA EDUCATORS CONSULTANCY

**KCSE 2023 TOP PREDICTION MASTER CYCLE 1**  
Kenya Certificate of Secondary Education

**451/1 - COMPUTER STUDIES – Paper 1**  
– 2½hrs

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

Admission Number.....Class.....

Date.....

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**Instruction to candidates**

- a) Write your name and index number in the space 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 space provided in the question paper.
- g) **This paper consists of 14 printed pages.**
- h) **Do not remove and 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 Number	Candidate's Score
A	1-15	
B	16	
	17	
	18	
	19	
	20	
<b>Total Score</b>		

**SECTION A (40 MARKS)**  
**ANSWER ALL QUESTIONS IN THIS SECTION**

1. Name the two common types of system units and differentiate them. (2 marks)

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2. Define the following characteristics of a computer system. (2 marks)

- (i) Versatile
- (ii) Reliable

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3. Digital computers work with digital content. Describe a digital device. (2 marks)

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4. Differentiate between third and fourth generation computers (2 marks)

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5. (a) Mamboleo company is in the process of computerizing its services. List four measures that should be put into consideration to protect the users in their computerized areas. (2 marks)

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(b) Give two reasons why powder and liquid extinguishers are not recommended unlike gaseous extinguishers. (2 marks)

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6. Without proper marketing, a business cannot survive in a competitive environment hence computers are being used in a number of ways to enhance marketing. List any three ways of ensuring this is effected. (3 marks)

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7. Differentiate between the following as used in computers. (3 marks)

- (i) Tab Key
- (ii) Spacebar
- (iii) Clicking

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8. Control unit is an essential component of the CPU. Describe the functions of the control unit. (2 marks)

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9. (a) Differentiate between buffers and Registers (2 marks)

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(b) Speech recognition devices are used to capture natural sound and convert the input into digital form. State two problems related to speech recognition devices. (2 marks)

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10. Define Solid-state storage and give two examples. (2 marks)

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**11. (a)** Explain how a pixel affects the resolution of a monitor. (1 mark)

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(b) List two types of computer output on microform (COM). (2 marks)

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**12.** Differentiate between *high definition multimedia interface* and *Firewire* interface. (2 marks)

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**13.** A warranty is an agreement between the buyer and the seller. It spells out terms and conditions after selling a product in case of failure or malfunction. Describe any three basic requirements a good warranty should cover. (3 marks)

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**14. (a)** Differentiate between pasteboard and master page as used in DTP (2 marks)

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(b) Differentiate between graphic-based and layout based desktop publishing software. (2 marks)

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15. Differentiate between Network database and Relational database. (2 marks)

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**SECTION B (60 MARKS)**

**ANSWER QUESTION 16 AND ANY OTHER THREE QUESTIONS IN THIS SECTION**

16. (a) Define the following terms as used in programming (2 marks)  
i) Source code

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ii) Object code

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(b) Differentiate between Assembler and Interpreter as used in programming. (2 marks)

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(c) Identify the type of programming language used in the codes below; (1 mark)

(i)    **1101 1101**                    **1011 1011**  
      **1110 0001**                    **1100 0111**  
      **0010 1110**                    **1011 0011**

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(ii)    **LDA    A, 20**  
      **ADD    A, 10**  
      **STO    B, A**  
      **NOP**

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(d) On the Nairobi-Nakuru highway, the Kenya Police have put speed cameras at a certain point to read the time a vehicle passes a point (A) on the road and then reads the time it passes a second point (B) on the same road. (Points A and B are 200 meters apart). The speed of the vehicle is calculated using:

- $Speed = \frac{100}{(time\ at\ point\ B - time\ at\ point\ A)} (Km/hr)$

- The maximum allowed speed is 100 kilometers per hour.
- 500 vehicles were monitored using these cameras over a 1-hour period.

(i) Write a pseudo code, which: (5 marks)

- Inputs the start time and the end time for the 500 vehicles that were monitored
- Calculates the speed for each vehicle using the formula above.
- Outputs the speed for each vehicle and a message if the speed exceeded 100 km/hour.
  - >=100km/hr “High Speed”
  - <100km/hr “Normal Speed”

(ii) Draw a flow chart for the above pseudo code.

(5 marks)

17. (a) In order to generate information from data items, a set of processing activities have to be performed on the data items in a specific sequence depending on the desired result. Draw a well labeled diagram to illustrate data processing cycle. (2 marks)

- (b) A data entry clerk experiences some common errors when typing. Most of the time, she finds that:
- (i) After every calculation, the result is less than the expected number of digits required e.g. 345.7896543 the result is given as 345.789.
  - (ii) Different characters are typed wrongly, for example instead of typing 12873457 she types 128734S7.

Identify the two types of errors commonly experienced by the clerk during data processing in (i) and (ii) above respectively. (2 marks)

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(c) State two ways a user can ensure data accuracy is maintained during data processing. (2 marks)

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(d) (i) State three advantages of a computerized filing system as used in data processing. (3 marks)

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(ii) State two disadvantages of a serial file organization method in computing. (2 marks)

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(iii) Differentiate between distributed processing and interactive processing modes; stating one application area of each. (4 marks)

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18. (a) Write the following acronyms in full as used in operating systems.

(i) GUI (1/2 mark)

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(ii) WIMP (1/2 mark)

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(b) State **three** factors considered when choosing an operating system for use in a computer. (3 marks)

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(c) An operating system manages and organizes a computer system using the following structures: File, Folder and Drive. State the meaning of the underlined items respectively. (3 marks)

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(d) (i) Differentiate between error handling and interrupt handling as used in operating systems. (2 marks)

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(ii) State **three** reasons why most network technicians prefer using command line operating systems to configure networking equipment. (3 marks)

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(e) Disk management is one important aspect in secondary storage in computer systems. Explain the following tools used by an operating system to manage disks in the computer. (3 marks)

(i) Formatting

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(ii) Partitioning

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(iii) Defragmentation

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19. (a) Define the following terms as used in networking. (3marks)

(i) Network

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(ii) Intranet

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(iii) Browser

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(b) The World Health Organization is global entity that deals with health issues around the world. It has computer networks linking its regional and continental offices using internet. State **two** importance of the internet to such organization. (2 marks)

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(c) Mr. Zuma, the Principal of a school wishes his school to have an internet connection in a bid to improve its service delivery. Mention **four** internet connectivity requirements that must be present to enable the connection. (2 marks)

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(c) Explain the following as used in e-mail:

- Inbox (1 mark)

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- Drafts (1 mark)

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(e) (i) Failure of information systems is a major concern in the security of data in computing systems. State **two** causes of such failure. (2 marks)

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(ii) Explain the following computer crimes.

- Fraud (1 mark)

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- Industrial espionage (1 mark)

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(f) Excluding passwords, state **two** other security control measures used to guard against unauthorized access to computers in a network. (2 marks)

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20. (a) Convert the  $1010.011_2$  to decimal equivalent. (3 marks)

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(b) Perform the following number system conversions. (3 marks)

(i)  $342.25_8$  to binary.

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(ii)  $503_{10}$  to hexadecimal (3 marks)

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(c) (i) Compute the binary arithmetic given below:

(3 marks)

$$10111 + 10001 + 101$$

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(ii) Using 8-bit notation, perform the **twos** complement of  $25_{10} - 15_{10}$ , leaving your answer in binary.

(4 marks)

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**THIS IS THE LAST PRINTED PAGE**

**451/2 COMPUTER STUDIES-  
PAPER 2  
(PRACTICAL)  
2 ½ hours**

**KCSE 2023 TOP PREDICTION MASTER CYCLE 1  
Kenya Certificate of Secondary Education  
(K.C.S.E)**

**Instructions to candidates**

- (a) Indicate your name and index number at the top right hand corner of each printout
- (b) Write your name and index number on the CD/Removable storage medium provided.
- (c) Answer all the questions
- (d) All questions carry equal marks
- (e) Passwords should to be used while saving in the CD/Removable storage medium
- (f) All answers must be saved in your CD/Removable storage medium
- (g) Make a printout of the answers on the answer sheet
- (h) Arrange your printouts and tie/staple them together
- (i) Hand in all the printouts and the CD/Removable storage medium used
- (j) This paper consist of 5 printed pages
- (k) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that o questions are missing

1. MASL is a company that engages in the sales of the following Mobile service providers: Faiba, Gateway, Vodafone and SAF. The company uses sales representatives who operate at various regions in Nakuru town. Each sales representative presents monthly sales to the manager (Values are in Ksh).

	A	B	C	D	E	F
1	<b>Mobile_Accessories Sales LTD</b>					
2	<b>Product type</b>					
3	<b>Sales Rep.</b>	<b>Faiba</b>	<b>Gateway</b>	<b>Vodafone</b>	<b>SAF</b>	<b>Total Sales</b>
4	Kipkulei	24000	37500	39500	49500	
5	Tom	15000	26500	21500	25500	
6	Sharon	5500	14800	3500	16500	
7	Oscar	7000	15500	14500	64500	
8	Linda	11000	69000	2200	64500	
9	Danelaw	33500	12000	14500	25500	
10	Muriithi	15500	80000	17200	23500	

- (a) Using spreadsheet package,
- Enter the information given in the table 1 into a worksheet. Save workbook as **MASLREPS** and rename sheet 1 as **Sales**. (20 marks)
  - Validate all the cells in the Product Type columns to allow entry of numeric data **only**. A message, "Invalid data! Enter numbers" should be displayed whenever a cell is typed with non-numeric data. (3 marks)
- (b) Using formulae, determine the;
- Total sales for each Sales representative (2 marks)
  - Product type Total Sales for each month. (2 marks)
- (c) Each sales person earns Bonus points for the sales of each product type based on the following criteria.
- 1 point if sales are greater than 50,000 for Faiba,
  - 2 points if sales are greater than 60,000 Gateway,
  - 3 points if sales are greater than 50,000 Vodafone
  - 2 points if sales are greater than 60,000 for SAF

Insert a column **BonusPoints** and compute the points of each sales Person. (4 marks)

- (d) Insert a blank column **Awards** and based on the **Total Sales** earned by each sales representative. Use a function to display the remarks on Awards as follows: (5 marks)

**Total Sales**

More than 250,000  
 More than 100,000 and less than 250,000  
 Less than 100,000

**Awards**

Cash  
 Voucher  
 Try again

- (e) Format the figures in worksheet as follows: (4 marks)
- Title and subtitle:
    - ✓ Double underline
    - ✓ Font type – Algerian
    - ✓ Font size 26
  - Apply borders to the data in the workbook.

- (f) Rotate Up, all the Product Type heading labels in the worksheet. (1 mark)
- (g) Generate a column chart to represent the Total sales for each sales representative. Label your chart accordingly and place it in worksheet 2 renamed as CHART. (7 marks)
- (h) Print MASL and CHART (2 marks)

2. Using word processing program type the document as it appears and save it as **EDUC AI**

## ARTIFICIAL INTELLIGENCE IN EDUCATION

For decades, science fiction authors, futurists, and movie makers alike have been predicting the amazing (and sometimes catastrophic) changes that will arise with the advent of widespread artificial intelligence. So far, AI hasn't made any such crazy waves, and in many ways has quietly become ubiquitous in numerous aspects of our daily lives. From the intelligent sensors that help us take perfect pictures, to the automatic parking features in cars, to the sometimes frustrating personal assistants in smart phones, artificial intelligence of one kind or another is all around us, all the time.

**W**hile we may not see humanoid robots acting as teachers within the next decade, there are many projects already in the works that use computer intelligence to help students and teachers get more out of the educational experience. Here are just a few of the ways those tools, and those that will follow them, will shape and define the educational experience of the future.

- α Automation of basic activities in education, like grading.
- α Educational software can be adapted to student needs.
- α It can point out places where courses need to improve.
- α Students could get additional support from AI tutors.
- α AI may change where students learn and how they acquire basic skills.
- α It is altering how we find and interact with information.

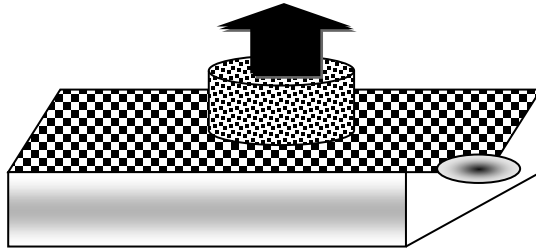
### *Automation basic activities in education, like grading.*

In lower grades, teachers often find that grading takes up a significant amount of time, time that could be used to interact with students, prepare for class, or work on professional development. AI can be used to automate grading systems and present the output in tables .

GRADE THREE COMMON EXAMINATION				
SIR NAME	LANGUAGE SKILLS	COMPUTING SKILLS	ENVIRONMENTAL SKILLS	Total Score
Macmillan	87	50	78	
Trevor	92	95	76	
Johnstone	73	85	90	
Kathleen	67	56	75	
<b>Count</b>				
<b>Highest Scores</b>				

### *Educational software can be adapted to student needs.*

From kindergarten to graduate school, one of the key ways artificial intelligence will impact education is through the use of application programs. learners can draw 3D diagrams such as the one shown below



Teachers may not always be aware of gaps in their lectures and educational materials that can leave students confused about certain concepts. Artificial intelligence offers a way to solve that problem.

- a. using a word processing application software type the document below as it appears and save it as EDUC AI (22 Marks)
- b. Copy the document EDUC AI in a new document and save it as EDUC AI2 then use it to answer the questions that follows (2 Marks)
- c. Format the heading as follows;
  - Center align, font size – 14, font color – red, font type – Algerian, double underline, scale – 130% (3 Marks)
- d. Insert your name, Adm No ,system time as a header and your class and page number as a footer (2 Marks)
- e. Spell check the document to remove all typing errors (2 Marks)
- f. Center align the first paragraph (1 Mark)
- g. Find all occurrences of the word AI in the document and replace with “**Artificial Intelligence**” (1 Mark)
- h. Resize the diagram between the last two paragraphs and move it to the second paragraph and send it behind text (3 Marks)
- i. On the grade three table,
  - i. Split the cells in the total score column to separate each students’ marks (1 Mark)
  - ii. Insert a new row at the bottom of the table to display the average total scores and merge the first four columns of the row (3 Marks)
- j. Use appropriate function to calculate:
  - i. Total score (2 Marks)
  - ii. Number of students who did each exam (2 Marks)
  - iii. Highest score attained in each subject (2 Marks)
  - iv. Average total scores (2 Marks)
    - i. Print EDUC AI (1 Mark)
    - ii. EDUC AI2 (1 Mark)

# KCSE 2023 TOP PREDICTION MASTER CYCLE 2

Name:..... Adm No..... Class.....  
School..... Sign..... Date.....

451/1  
Computer Studies  
Paper 1  
(THEORY)  
2 ½ Hours

## INSTRUCTIONS TO CANDIDATES

- ⇒ Write your name and index number in the spaces provided above
- ⇒ Sign and write your name in the spaces provided above
- ⇒ This paper consists of **two** sections; A and B
- ⇒ Answer all questions in section A
- ⇒ Answer question 16 and any other three questions from section B
- ⇒ All answers should be written in the spaces provided on the question paper

### *For official use only*

Section	Question	Candidates score
A	1-15	
B	16	
	17	
	18	
	19	
	20	
TOTAL SCORE		

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**SECTION A (40 Marks)**

*Answer **all** questions in this section*

1. Give **TWO** reasons why Powder type fire extinguishers are not recommended to be used in a computer laboratory. (2 Marks)
  
2. State the purpose of each of the following memories in a computer system. (2 marks)
  - (i) ROM
  
  
  
  
  
  
  
  
  
  
  
  - (ii) RAM
  
3. State two factors that one would consider when selecting data entry method in computing. (2 Marks)
  
  
  
  
  
  
  
  
  
  
  
4. Describe the following types of printers and state one application area of each.(3Marks)
  - (a) Dot matrix



(b) Thermal printer.

5. Differentiate between in-house software and freeware. (2 Marks)

6. Give two importance of feedback mechanism in systems (2 Marks)

7. With an aid of a diagram, explain one-to-one database relationship. (2 Marks)

8. KASSU Secondary School intends to set up internet connection in their school for e-learning purposes. Advise the school management on four internet connectivity requirements that is required for them to be able to access internet. (2 Marks)

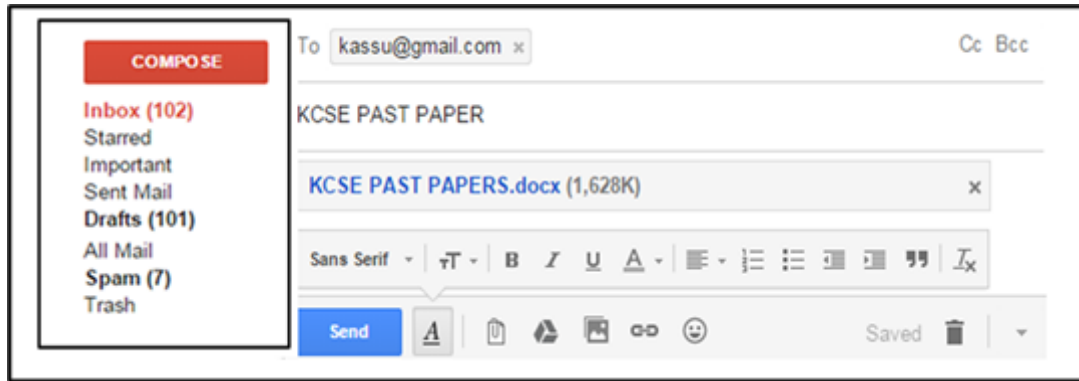
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9. The figure below shows an extract of an e-mail application.



What is meant by each of the following terms: (3 Marks)

(a) Trash

(b) Spam

(c) *Inbox*

10. State two ways in which users in an organization can be a security threat to data in an information system. (2 Marks)

11. State three negative impact of information communication technology on the Environment. (3 Marks)

12. In a computer based information system, state the purpose of the following files and give **one** example where such a file may be required in a school. (4 marks)

a. Report file.

b. Sort file.

13. State three responsibility of a Database administrator in an organization. (3 Marks)

14. With an example for each, describe how computers are used in the following areas of education; (3 Marks)

a. Simulation

b. Tutorial

15. a. Dan a computer student noticed that every time a person enters the computer lab the computer screen flickers. Identify three reasons why the monitor might be flickering  
(3 Marks)

b. State two ways in which the problem can be solved (2 Marks)

**SECTION B (60 Marks)**

*Answer **question 16** and any other **three** questions*

16. a. State two advantages and two disadvantages of high level programming language  
(2 Marks)

b. State three situations when REPEAT .. UNTIL structure can be used in writing a program  
(3 Marks)

c. The roots of the equation  $ax^2 + bx + c = 0$  are given by the formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

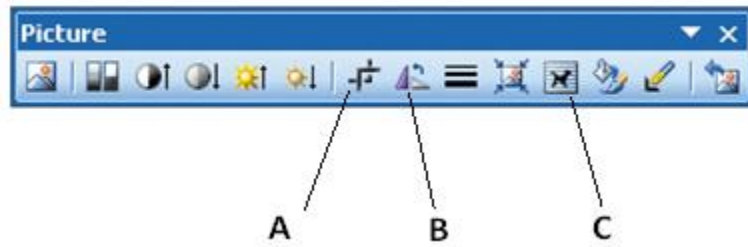
i. Write a pseudocode for the above program

(5 Marks)

ii. Draw a flow chart for the above pseudocode

(5 Marks)

17. (a) (i) The figure below shows a picture tool bar



Name and state the functions of the features marked A, B and C:

(i) A (1 Mark)

(ii) B (1 Mark)

(iii) C (1 Mark)

(b) State the importance of Column breaks as used in word processor. (1 Mark)

(c) Change case is where a user applies so that the text can have some contrast in size. Write the word Digital SIGNAL (2 Marks)

(i) Title case

(ii) Toggle case

(d) Define the following terms as used in charts. (2 Marks)

(i) Legend

(ii) Data range

(e) The table below shows how a kiosk owner uses a spread sheet to keep records in a shop.

	A	B	C	D	E	F
1	ITEM NAME	NUMBER OF ITEMS	UNIT COST	TOTAL BUYING PRICE	TOTAL SELLING PRICE	PROFIT
2	Blue band	150	120			3600
3	Toss	135	50			1350
4	Cow boy	120	120			2880
5	Panga soap	118	50			1180

(I) Write a **function** to calculate the total buying price. (2 Marks)

(II) Write a **formula** to calculate the Profit. ( 2 Marks)

(III) The total buying prices of all items was increased by 12% and the value 12% is placed in cell B6. Using cell addresses with absolute referencing, write a formula to calculate the Total Selling Price in cell E2. (2 Marks)

(IV) State the output of the expression =SUMIF(F2:F5,"<1 500")would return.(1 Mark)

18. a. Describe the term prefixing an extra sign bit as used in data representation. (2 Marks)

b. Convert each of the following numbers system.

(i)  $0.78125_{10}$  to binary (2 Marks)

(ii)  $3A9_{16}$  to Octal (2 Marks)

c. Perform the following binary operation. (3 Marks)

$$1010.11 + 111.10 - 101.11$$

d. Using one's complement, perform the following binary arithmetic leaving the answer decimal notation.  $17_{10} - 45_{10}$  (6 Marks)



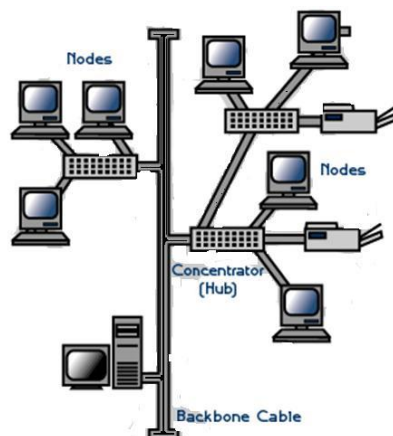
19. a. Distinguish between the following terms as used in data communication (6 Marks)

i. Guided transmission medium and unguided transmission media

ii. Multiplexing and demultiplexing

iii. Logical and physical Topology

b. Below is a diagram of a network topology.



- i. Name the above topology (1 Mark)
- ii. State two advantages and two disadvantages of using the topology named above (4 Marks)
- c. List and explain the two data transmission techniques (4 Marks)

20. a. Distinguish between a computer drive and computer driver

(2 Marks)

b. State any four factors to consider when selecting an operating system

(4 Marks)

c. Explain any four factors that dictates how the operating system organizes data in a computer

(4 Marks)

d. Define the term file in relation to the operating system

(1 Mark)

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e. The operating system stores details of a file for easy identification and retrieval of files. Explain any four file details the operating system uses to search and identify a file (4 Marks)

f. Distinguish between a menu driven operating system and graphical user interface operating system (2 Marks)

# KCSE 2023 TOP PREDICTION MASTER CYCLE 2

Name:..... Adm No.....Class.....  
School..... Sign.....Date.....

451/2  
COMPUTER STUDIES  
Paper 2  
(PRACTICAL)  
Time 2 ½ HOURS


## INSTRUCTIONS TO CANDIDATES

1. Type your name and index number at the top right hand corner of each printout
2. Sign and write the date of the examination below the name and index number on each printout
3. Write your name and index number on the compact disks
4. Write the name and version of the software used for each question attempted in the answer sheet
5. Passwords should not be used while saving in the compact disks
6. Answer all the questions
7. All questions carry equal marks
8. All answers must be saved in your compact disks
9. Make a printout of the answers on the answer sheets provided
10. Hand in all the printouts and the compact disks

## Question 1

(a) Using Desktop Publishing application program, design the following publication. Name the file as HEALTHY\_SCHOOL

(19mks)




# FOUNDATIONS FOR A HEALTHY SCHOOL

**T**he implementation of the health and physical education curriculum is a significant component of a healthy school environment.

The Ministry of Education's "Foundations for a Healthy School" ([www.edu.gov.on.ca/eng/healthy\\_schools/foundations.pdf](http://www.edu.gov.on.ca/eng/healthy_schools/foundations.pdf)) identifies four components that together represent a comprehensive approach to creating a healthy school. This approach ensures that students learn about healthy, active living in an environment that reinforces their learning through policies and programs that promote healthy, active living. **The four components are as follows:**

- high-quality instruction and programs
- a healthy physical environment
- a supportive social environment
- community partnerships



**The roles and responsibilities in health and physical education must involve the following groups :**

1. *Teachers*
2. *Students*
3. *Parents*
4. *Principals*

(b) Prepare the page layout out as follows:

- (i) Custom paper size: Width = 11.6” , Height = 8.268 (2mks)
- (ii) Set the margins to 0.787” all round (2mks)
- (iii) Divide the page into TWO equal horizontal parts using a ruler guide. (2mks)
- (iv) The border of the design should start from the set margins (2mks)

**NB:** After designing one part of the divided page, TWO copies of the publication should fit into one page in landscape as set up above.

- (c) Create a logo as shown to measure **height 1.213”** and **width 1.118”** (3mks)
- (d) (i) The main title text (near the logo) should be of **Candara, Font size 26, Bold and Right aligned** (4mks)
- (ii) Set-up the rectangular object with the main heading to a background color of **Accent 1** (1mk)
- (e) The text on the lower part of the publication should be formatted as follows: (3mks)
  - Color: **Custom color combination (Red=51, Green=4, blue=252)**
  - Alignment: **Left**
  - Font: **Size 10**
- (f) Format all other text to **times new roman font type** and **font size 12** (2mks)
- (g) Apply a style to the line below the text in columns and a thickness of 4.5” in weight (1mk)
- (h) Enforce hyphenations to the text in columns (1mk)
- (i) The star object with text “ Reach every group” should be a 24-point star. Format the text inside to font type **calibri** (2mks)
- (j) Make the designs to fit one page (1mk)
- (k) Group all objects in the two designs as one. (2mks)
- (l) Insert a footer using your name index number, aligned to the center (2mks)
- (m) Print the publication. (1mk)

## Question 2

The information in the table below was obtained from the books of Safiri Transport Company.

CAR	MODEL	REGNo	YEAR OF MANUFACTURE	DRIVER	IDNO	EMPLOYMENTNo	TRIPS MADE	DESTINATION	ALLOWANCE PER TRIP	DAILYPAYRATE
TOYOTA	PICKUP	KAG 725 H	1996	JOHN	122834	DI1223	5	NAIROBI	1250	1500
ISUZU	SALOON	KCB 725 D	2010	MARY	153458	DI9853	3	KERICHO	3400	1500
MAZDA	S/SAGON	KBC 763 L	2006	BETTY	986732	DO4587	15	KISUMU	4300	1500
IVECO	TRUCK	KAG 625 H	1987	KYLE	985443	DO6592	20	KERICHO	3400	1500
TATA	TRUCK	KZG 725	2011	PETER	758849	DI4010	25	KERICHO	3400	1500
JAC	TRUCK	KAA 740 H	1992	JERRY	985873	DO9203	40	NAIROBI	1250	1500
NISSAN	S/WAGON	KAG 552 M	1990	PAUL	857330	DO8345	2	MUHORONI	4100	1500
MAZDA	SALOON	KCB 678 J	2010	SETH	764943	DI9352	15	MOMBASA	8000	1500
MITSUBISHI	TRUCK	KCC 345 F	2006	KATE	934472	DI8754	2	KERICHO	3400	1500
TOYOTA	S/WAGON	KCA 892 U	1987	CALEB	109456	DI6557	1	MUHORONI	4100	1500
TOYOTA	S/WAGON	KAP 544 R	2011	TIM	678842	DO7395	1	KISUMU	4300	1500
ISUZU	S/WAGON	KAP 711 R	1992	PATRICK	764484	DO5764	7	NAIROBI	1250	1500
BENZ	SALOON	KBN 877 C	1991	BRIAN	769973	DI2343	3	KISUMU	4300	1500



- a. Using a database management application split the information in the above table into two tables namely vehicle and drivers respectively and save the database as Safiri Transport Company (15 Marks)
- b. Create a relationship between the two tables (2 Marks)
- c. Create an appropriate form that would be used to enter new records in the driver's table and save it as form driver (7 Marks)
- d. Create a query that will display a list of all the drivers who made more than 5 trips to kericho, include all the necessary details. Save it as kericho. (5 Marks)
- e. Create a query with a calculated field named total allowance to display the total allowance earned by each driver, include all the necessary details. Save it as allowance (5 Marks)
- f. Using both tables, create a query that would be used to complete each driver's earnings and save it as pay roll. (3marks)
- g. Using the payroll query in (f) design a report for Safari Transport Company that would used to calculate total allowance and monthly pay for each driver, assuming that each driver works for 25 days in a month. (7marks)
- h. Print vehicle, driver, form driver, kericho, allowance and payroll (6 Marks)

# KCSE 2023 TOP PREDICTION MASTER CYCLE 3

Kenya Certificate of Secondary Education

## 451/1 - COMPUTER STUDIES □ Paper 1

### FORM 4 (THEORY)

September. 2021 □ 2½hrs

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

Admission Number.....Class.....Date.....

#### Instruction to candidates

- Write your name and index number in the space provided above.
- Sign and write the date of examination in the spaces provided above.
- This paper consists of **two** sections **A** and **B**.
- Answer **all** the questions in section **A**.
- Answer question **16** and any other **three** questions from section **B**.
- All answers should be written in the space provided in the question paper.
- This paper consists of 12 printed pages.
- Do not remove any page from this booklet.
- Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
- Candidates should answer the questions in English.

#### For Examiner' s Use Only

Section	Question Number	Candidate' s Score
A	1-15	
B	16	
	17	
	18	
	19	
	20	
Total Score		

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**SECTION A (40 Marks)**

*Answer all questions in this section*

1. Today, many companies are re-engineering their products to implement the USB connection to the computer. State any two reasons for the drift. (2 Marks)

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2. Bochongo high school managed to construct a computer laboratory but did not have funds for equipping it with computers. A British company offered to donate some computers to the school
- a. After an assessment, it was identified that the supplied computers were the third generation of computers, state any two characteristics of third-generation computers. (1 Mark)

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3. (a) It was noted that after every lesson, the students complained of itchy eyes and mild headache. State any two reasons for this problem. (2 Marks)

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- (b) State any one solution of the problem mentioned in (2b) above. (1 Mark)

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4. State any two methods of input available for the operation of a smartphone. (2 Marks)

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5. Define the term relationship as used in database management systems. (1 Mark)

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6. State any two importance of referential integrity with reference to database tables. (2 Marks)

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7. State the function of an append query. (1 Mark)

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8. Computers are known to create employment for many people in different computing fields. List any two duties of the IT professionals listed below. (4 Marks)

a. System analyst.

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b. Network engineer.

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9. Interfaces enable computer users to interact with the operating system.

a. State four advantages for using a graphical user interface in loading programs and files. (4 Marks)

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- b. A vehicle assembly company has introduced robots to replace the human workforce. State two effects this would have on the work force. (2 Marks)

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10. A system analyst is employing a programmer to write a software for a new computer-based system. State the benefits of this method of obtaining appropriate software. (3 Marks)

11. Give any two advantages of OLED monitors over the LED monitors. (2 Marks)

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12. Distinguish between margins and borders as used in word processing.

(2 Marks)

13. In recent times, computer scientists and engineers have managed to come up with smarter computers, which can almost simulate human thinking and learning often referred to as artificial intelligence (AI), instead of relying on conventional program instructions. List any **two** application areas of artificial intelligence. (2 Marks)

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14. DTP is known to be sophisticated software well suited for desktop publishing.

(a) Explain the following terms as used in desktop publishing. (2 Marks)

- Pasteboard

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- Text overflow

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(b) The figure below shows a formatting tool used in DTP. Identify its name. (1 Mark)



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15. Spreadsheet is the dream software for accountants due to their ability to handle numeric oriented data

(a) Identify the type of cell referencing used in the expressions below: (2 Marks)

=RANK(\$C\$3:\$A\$10, 0)

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=SUM(A\$3:A12)

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(b) State the importance of forms in a spreadsheet during data entry. (1 Mark)

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(c) Differentiate between sorting and filtering as used in worksheet data management. (2 Marks)

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**SECTION B (60 Marks)**

*Answer question 16 and any other **three** questions*

16. When writing a computer program using a high-level programming language, it needs to be translated into object code for it to be understood and executed by the computer.

a. State any two advantages of an interpreter. (2 Marks)

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b. State any three characteristics of the third-generation programming languages. (3 Marks)

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The pseudocode below was written by a learner. Use it to answer the questions that follows

```
Start  
Sum=0  
For count=0 - 4 do  
Print "enter a number (N)"  
Input N  
If P>10 then  
Number out of range  
Else  
Sum=sum + N  
Print sum  
End if  
End for  
Stop
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c. Identify the errors in the above pseudocode and re-write it correctly. (3 Marks)

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17. a) State one application of computing where real-time processing is more appropriate than batch processing and give a reason why (2 Marks)

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(b) i) State three reasons why hospitals have changed from a manual system to a computer-based system for storing patient records (3 Marks)

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ii) State any three data access methods that can be used to retrieve a patients record in a computerized system. (3 Marks)

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iii) Other than storing patient records, state any other three ways the computers can be used in a hospital. (3 Marks)

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c) Data protection rules give legal rights to individuals and state that personal data stored on computer systems must be kept secure.

i) Give one legal right for personal data. (1 Mark)

.....

ii) Give three software methods of protecting data. (3 Marks)

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18. Information systems are known to be the driving force for any organization. The success of an organization depends on the design and implementation of its information system.

a. Define any four components of an information system. (4 Marks)

b. State the stage in systems development when the activities listed below are performed. (2 Marks)

- i. The system analyst presents a report recommending for a change in the system.
  - ii. The system analyst creates a logical design of the system.
  - iii. The project stakeholders invite users to have a feel of the system before implementation.
  - iv. The system analyst monitors and evaluates the system performance.
- c. Distinguish between the direct and phased changeover strategies. (2 Marks)

- d. Describe the system characteristics listed below. (4 Marks)
- i. Systems have a life cycle.

- ii. The interdependency between subsystems.

- .....
- e. State any three reasons that may lead to information system change in an organization. (3 Marks)
- .....
- .....

19. After data is processed, it is important to keep it somewhere either permanently or semi -permanently for future use.

a. Briefly describe how data is stored/ represented on a solid-state storage device. (2 Marks)

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b. State any two advantages of solid-state storage devices. (2 marks)

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c. Distinguish between BCD and EBCDIC coding schemes. (2 Marks)

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d. Using 8 bits and twos complement subtract  $43_{10}$  from  $30_{10}$ , giving your answer in decimal notation (5 Marks)

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e. Convert  $11011011111.1111_2$  to its equivalent Hexadecimal number (1 Mark)

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f. Determine the value of x in the equation;  $1001101_2 - X_{10} = 11010_2$  (3 Marks)

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20. Networking is said to be important in facilitation of data transfer.

(a) Dr. Jabari, a networking expert trained his students on various data communication aspects. After a lesson, he asked them to state and explain **three** modes of data transmission. As a student, what answers would you provide? (3 Marks)

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(b) Differentiate between LAN and WAN as used in computer networks. (2 Marks)

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(c) State **two** advantages of fiber-optic transmission media. (2 Marks)

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(d) In a computer network, a server computer must be installed with a network operating system in order to operationalize a number of network functions. State **three** functions performed by a network operating system (NOS). (3 Marks)

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(e) (i) Define the following terms as used in the internet.

- Browser (1 Mark)

- Spam (1 Mark)

(ii) Many organizations own and manage websites for various uses. One use of website by a business is conducting their business activities through e-commerce. Mention **three** advantages of e-commerce. (3 Marks)

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***This is the last page***

451/2 - **COMPUTER STUDIES** – Paper 2  
(PRACTICAL)  
TIME: 2 HRS

**KCSE 2023 TOP PREDICTION MASTER CYCLE 3**  
Kenya Certificate of Secondary Education  
(K.C.S.E)

Name.....Adm.No.....Class.....

Date:.....Signature:.....

**INSTRUCTIONS TO CANDIDATES**

1. Type your name and admission number at the top right hand corner of each printout
2. Sign and write the date of the examination below the name and index number on each printout
3. Write your name and index number on the compact disks
4. Write the name and version of the software used for each question attempted in the answer sheet
5. Passwords should not be used while saving in the compact disks
6. Answer all the questions
7. All questions carry equal marks
8. All answers must be saved in your compact disks
9. Make a printout of the answers on the answer sheets provided
10. Hand in all the printouts and the compact disks.
11. This paper consists of 4 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.



1. KASSU School intends to carry out mathematics contest in their school for the year 2021. The following is a standard letter inviting other schools to the event.

(a) (i) Create a folder; name it as your name and admission number. (2 marks)

(ii) Using word processor, create the document as it appears. Give the filename **CONTEST** in the folder created (a)(i) above. (19 marks)



THE PRINCIPAL

September 4<sup>TH</sup> 2021

Dear Sir/Madam,

**RE: KASSU SCHOOL ANNUAL NATIONAL MATHEMATICS CONTEST**

We have the pleasure to invite your school for the National Mathematics Contest sponsored by the Worldwide Tech Ltd and Brooklyn University to be held at KASSU School on **Saturday 2<sup>nd</sup> October 2021 starting at 8.00am.**

The objective of the contest is to demystify the perception and fear that students have towards mathematics as being difficult in order to improve the performance of the subject in the country. All participating students will receive Certificates of Participation and those who excel will receive trophies and certificates of merit. Top students i.e. position 1 & 2 per form and in each category (Junior and Senior); boys, girls and mixed, will receive trophies. **Brooklyn University shall award a one-year full scholarship fees to the Best Form Three Boy and Best Form Three Girl.**

The mathematics department that produces the top boy and girl at the grand finale will win a cash prize of **Ksh 150,000 for the department.**

Please confirm your participation by calling the school through **Mr. Olunga on 0726927450** before 27<sup>th</sup> September 2021 to facilitate for logistical preparataions.

Yours faithfully

**MR. TOMASO K. NOAH**

**MRS. KATE WINSLEY**

**PRINCIPAL**

**HOD MATHEMATICS**

**Value Proposotion: Exemplary Excellence in Academic Endeavours**

- (b) Set the page settings as follows: (4 marks)
- Paper Size: A4
  - Top margins: 0.4" (1.016) cm
  - Bottom margins: 0.4" (1.016) cm
  - Gutter: 0.22" (0.548) cm
- (c) Format the subject heading which starts with “**RE: KASSU SCHOOL....**” as follows: (3 marks)
- Alignment: Centre
  - Font size: 18
  - Font type: Britannic Bold
- (d) Insert header “Your name and admission number” and include a line object under. (1 mark)
- (e) Apply the following to the paragraph starting with “*The objective of the contest .....*”
- Hanging indent By 0.6” (1 mark)
  - Line spacing to 1.3 (1 mark)
- (f) Format the text containing “**Value Proposition**” as follows: (2 marks)
- White font color
  - Dark red background
- (g) Create a copy of the document save As **CONTEST\_2** and proofread your work. (2 marks)
- (h) Insert page numbering at the bottom right of each page. (1 mark)
- (i) Group all objects in the school logo. (1 mark)
- (j) Apply the following character spacing formats to the second paragraph. (2 marks)
- Condensed by 0.9pts
  - Kerning for fonts at 8 points & above.
- (k) Convert all the last paragraphs into three columns of the same width and height. A line between should separate the columns. (3 marks)
- (l) (i) Convert the names and designations at the bottom of the letter to one column and five rows. (3 marks)
- (ii) Merge the empty rows inside the table to one cell. (1 marks)
- (iii) Put a strikethrough to the names of the designations. (1 mark)
- (m) Insert a watermark with any picture from your computer gallery to authenticate your document. (1 mark)
- (n) Print the two documents. (2 marks)

2. XYZ is a training college that offers three courses to students. A student sits for three types of examinations every semester. Each examination is marked out of 100%. The following table shows sample data collected from the database:

RECORD NO.	STUDENT ID	STUDENT NAME	EXAM CODE	GENDER	COURSE CODE	DATE ENROLLED	COURSE DESCRIPTION	TUITION FEE	SEMESTER	SCORE
1.	ENG-001	MIKE	01	M	D-ENG	01/11/2017	Diploma in Engineering	Sh. 25,000	2	75
2.	CSC-002	KIOKO	02	F	D-CSC	02/11/2017	Diploma in Computer Science	Sh. 35,000	2	80
3.	NUR-003	ABIUD	03	M	D-NUR	03/11/2017	Diploma in Nursing	Sh. 15,000	2	65
4.	ENG-004	JANE	02	F	D-ENG	01/11/2017	Diploma in Engineering	Sh. 25,000	2	60
5.	CSC-002	KIOKO	03	F	D-CSC	02/11/2017	Diploma in Computer Science	Sh. 35,000	2	78
6.	NUR-003	ABIUD	01	M	D-NUR	03/11/2017	Diploma in Nursing	Sh. 15,000	2	72

- a). Using a database management application split the information in the above table into three tables namely; (15 marks)
- Student enrolment
  - Exam performance
  - Courses offered
- b). Create a relationship between the three tables (3 marks)
- c). Create appropriate forms to be used for entering the records (6 marks)
- d) Create a query to:
- Show all students whose score is greater than 70% save it as **HighScore** (3 marks)
  - Show students whose name end with the letter 'E' save it as **Engineers** (3 marks)
  - Show all students taking Diploma in Computer Science save it as **Comps** (3 marks)
- e). Create a report called **Tuition Summary** displaying the following details: (7 marks)
- Student ID
  - Student Name
  - Course Description
  - Tuition fees
  - Total fees collected
- f). Using a report called **ANALYSIS**, create a column chart showing students performance in the exam. (5 marks)

g). Print the tables student enrolment, exam performance, courses offered, the Tuition summary and Analysis reports.

(5 marks)



Name..... Index No...../.....

School..... Date .....

Candidate's Signature.....

451/1  
COMPUTER STUDIES  
PAPER 1  
(THEORY)  
TIME: 2 ½ HRS

## KCSE 2023 TOP PREDICTION MASTER CYCLE 4

*Kenya Certificate of Secondary Education (K.C.S.E)*

451/1  
COMPUTER STUDIES  
PAPER 1  
(THEORY)  
TIME: 2 ½ HRS

### Instructions to candidates

1. This paper consists of TWO sections; A and B
2. Answer all questions in sections A.
3. Answer question 16 and any other three questions from section B.

### FOR EXAMINERS USE ONLY

SECTION	QUESTION	
A	1 – 15	
B	16	
	17	
	18	
	19	
	20	
TOTAL MARKS		

*This paper consists of 14 printed pages.  
Candidates should check to ensure that all  
pages are printed as indicated and no question(s) is missing*

1. Name two factors that determine the quality of a scanner (1 mark)

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2. Differentiate between freeware and shareware (2 marks)

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3. Name and explain three types of system maintenance (3 marks)

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4. Describe briefly the functions of a modem for transmitting data between two computers through a standard telephone line (2 marks)

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5. Define the term Biometrics and explain how it could be used to enforce security in computer systems (2 marks)

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6. Describe any three integrity constraints in a database (3 marks)

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7. Explain the following basic operations of the machine cycle in the control unit (3 marks)

i. Fetching

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ii. Decoding

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iii. Execution

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8. Write the following acronyms if full (2 marks)

I. HDMI.....

II. SATA.....

III. PnP.....

IV. WORM.....

9. Ministry of Lands prefers to use hard copy output over soft copy when handling documents for land matters. Give two reasons for this preference (2 marks)

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10. Joan needs to send 15 photos to her friend Jean. She chooses to send all the photos together as a single email attachment. Each photo is 1.5 MB in size ,but the maximum possible attachment size is 20 MB. State how Joan can solve this problem (2 marks)

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b) Differentiate between a word wrap and a text wrap (2 marks)



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11. Define the term ergonomics (2 marks)

b) State and explain three examples of ergonomics (3 marks)

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12. Name and explain three functions of operating system (3 marks)

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b) Explain the term Pen Computing (2 marks)

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13. As regards to communication within a computer network, what do you understand by the following terms: (2 marks)

a) Ethernet topology

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b) Token ring topology

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14. Explain the following terms as used in Desktop Publishing (2 marks)

i) Cropping

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.....

ii) Master page

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.....

15. Change case is where a user applies so that the text can have some contrast in size .Write the word

(2 marks)

Corona VIRUS

- i) Title case.....
- ii) Toggle case .....

**SECTION B (60 MARKS)**

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

16. Equity Bank pays 10% interest in shares exceeding 100,000 shillings and 4% on shares that do not meet this target. However no interest is paid on deposits in the members (KWFT) bank account.

(a) Design a pseudo code for a program that would

- (i) Prompt the user for shares and deposits of a particular member.
- (ii) Calculate the interest and total savings
- (iii) Display the interest and total savings
- (iv) Display the interest and total savings in the screen for a particular member of the trust fund.

(7 marks)

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b) Draw a flowchart for the above pseudocode (8 marks)

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17. Seal Honey sells computer accessories and needs to order supplies. A spreadsheet program is used to calculate the orders as shown below.

	A	B	C	D
1	ITEM	Price per unit	Number ordered	Cost(Ksh)
2	Flash Disk	1200	50	
3	Memory card	1000	15	
4	Modem	3000	20	
5			TOTAL	

a) Using absolute cell reference, write an expression to calculate the total cost in cell D3  
(1 mark)

b) Write down the data type that is stored in cell (2 marks)

i) C4

ii) D3

c) Write a function to display the number of cells in which the price per unit is greater than 2,000  
(1 mark)

d) State three ways by which threats to data integrity can be minimized (3 marks)

ii) Differentiate between logical file and physical file (2 marks)

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e) Explain the following concepts as used in telecommunication systems. (3 Marks)

(i) Attenuation

(ii) Bandwidth

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.....

(iii) Repeater

f. Explain any three functions of UPS (3 marks)

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18. a) Explain any two coding schemes used in data representation (2 marks)

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B i) Using 8 bit representation, give the ones complement of  $-35_{10}$  (3 marks)

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ii) What is the seven –bit of twos complement of  $0110_2$  (2 marks)

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c) Perform the following calculation (3 marks)

$$110001_2 + 100111_2 - 01111_2$$

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d)(i) Convert the binary number  $110.101_2$  to Octal (2 marks)

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ii) Convert  $9.625_{10}$  to binary (3 marks)

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19. (a) Despite the introduction of the ATM cards, human resource is still necessary in banks. Give two reasons why human beings are still needed. (2mks)

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(b) State three advantages of the using the ATM card. (3mks)

.....  
.....  
.....

(c) What is virtual reality? (2mks)

.....  
.....

(d) List three areas where virtual reality is used. (3mks)

.....  
.....  
.....  
(e) What is GPS in air traffic control? (2mks )

.....  
.....  
(f) Outline three ways computers can be used to enhance marketing. (3mks)

.....  
.....  
(a) i) Distinguish between a system analyst and a programmer. (2marks)

.....  
.....  
(ii) List **two** types of job opportunities that are available in the field of computer hardware. (2marks)

.....  
.....  
(b) Highlight any **two** factors you would consider before enrolling for an ICT course in a college. (2marks)

(c) Give two disadvantages of observation when used in fact finding. (2marks)

.....  
.....  
(d) Explain the following changeover strategies.

(i) Parallel changeover. (2marks)

.....  
.....  
(ii) Phased changeover. (2marks)

.....  
.....  
(e) Explain briefly each of the following in data security.

(i) Firewalls. (1mark)

.....  
.....  
(ii) Data encryption. (1 mark)

(iii) Sabotage. (1mark)

**451/2**  
**COMPUTER STUDIES**  
**PAPER 2**  
**Time: 2<sup>1</sup>/<sub>2</sub> hours**

**KCSE 2023 TOP PREDICTION MASTER CYCLE 4**

Name..... index number.....

Signature ..... Date .....

**INSTRUCTIONS TO CANDIDATES**

- i. Write your name and index number in the spaces provided above
- ii. Sign and write the date of examination in the spaces provided above.
- iii. Write the name and the version of the software used for each questions attempted in the answer sheet
- iv. Answer all the questions
- v. All questions carry equal marks
- vi. Passwords should not be used while saving in the diskette/removable media
- vii. All answers must be saved in your removable media
- viii. Make a print out and tie/staple them together
- ix. Hand in all the printout and the removable media
- x. *This paper consists of 4 printed pages. Candidates should check the question paper to*
- xi. *Ensure that all the pages are printed as indicated and no questions are missing.*



1. (a) Using a DTP software design the publication shown on the next page as it is appears.(34mks)
- The length of the publication must be exactly 1 A4 page.
  - The document should not be doubled sided.
  - Other than the small fonts try and use any other fancy fonts available in your software.
  - Save your publication as Kodak 1.
- (b) Insert a second page with all objects on page 1 (2mks)
- (c) Type your name and index number in the header and footer section respectively. (4mks)
- (d) Fit four copies of the design into a single page. Save as Kodak 2. (8mks)
- (e) Print Kodak 1 and Kodak 2. (2mks)

**Kodak Professional**

**ProFotoCENTRE**

Professional Photo Lab

ORDER No.: \_\_\_\_\_

AGFA COLOR

**P**restige  
PAPER

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NAME \_\_\_\_\_

ADS \_\_\_\_\_

DATE \_\_\_\_\_

TEL \_\_\_\_\_ TIME READY

Total		
Adv		
Bal		

Quality	Make & Size	Dev/Print/Mount

Figure 2 is an extract from a spread sheet program showing transaction details of ferry uniform distributors. Use it to answer the questions that follow.

	A	B	C	D	E	F
1	<b>Customers</b>	<b>Items Bought</b>	<b>Price</b>	<b>Quantity Bought</b>	<b>Date Bought</b>	
2	Leeny Distributors	Tunic	600	1000	06/03/2018	
3	Maky Distributors	Stockings	300	1500	06/02/2018	
4	Top Hill Distributos	Pullover	1000	7000	04/03/2019	
5	Kagiri Distributors	Tie	150	3000	06/05/2018	
6	Lonny Distributors	Shirt	500	2000	02/12/2017	
7	Maky Distributors	Shirt	500	1500	03/01/2019	
8	Top Hill Distributos	Tie	150	400	01/07/2018	
9	Leeny Distributors	Tunic	600	1000	04/05/2019	
10	Kagiri Distributors	Stockings	300	1500	10/11/2017	
11	Lonny Distributors	Pullover	190	7000	11/10/2017	
12	Maky Distributors	Tie	150	3000	16/04/2019	
13	Top Hill Distributos	Shirt	450	2000	26/09/2018	
14	Leeny Distributors	Tunic	400	1500	15/05/2019	
15						

- (a) Open a spread sheet program and create a **FORM** and use it to enter the data as it appears. Save the work book as *Uniformdistributors*. (14 marks)
- (b) Copy the data in sheet 1 to sheet 2 and rename sheet 2 as *Modified*. (1 mark)
- (c) Add the following details in cells A16 to B18 (2 marks)

Price	Discount
>=500	5%
<500	10%

- (d) Insert a new column between the item Bought and Price. Label it 'Material' (1mark)
- (e) Using data validation list populate colour as follows (5marks)

Item Bought	Material
Tunic	Silk
Stockings	Cotton
Pullover	wool
Tie	Polyester
Shirt	Nylon

- (f) On sheet , use a formula with cell references to:
- Determine the total cost of each item bought by each customer (3 marks)
  - Using absolute cell referencing. Determine the new cost of the items bought given that a discount is awarded on each item bought as follows (3 marks)
    - price below 500 – 5%
    - price of 500 above – 10%
  - Calculate total items bought by each customer (5marks)
- (g) Copy the data in *Modified* to sheet 3 and rename sheet as *Filter*. Filter **Tunic** where customer is **Leeny Distributors** (5 marks)
- (h) Create a column chart in a new sheet that compares the quantity of ties bought by kagiri and top hill distributors. Label the chart appropriately. (5 marks)
- (i) Print out:

- i. Sheet1; (1 marks)
- ii. Modified displaying the formulas; (2 marks)
- iii. Filter; (1 marks)
- iv. Chart; (1 marks)

Name:..... School:.....

Adm No. ....Class ..... Index Number;.....

451/1

COMPUTER STUDIES

Paper 1

THEORY

Time: 2 ½ Hours

## KCSE 2023 TOP PREDICTION MASTER CYCLE 5

*Kenya Certificate of Secondary Education (K.C.S.E)*

### INSTRUCTIONS TO CANDIDATES

- Write your **Name**, **Class**, **Admission Number** and **Index Number** in the spaces provided.
- Answer **ALL** the questions in **section A**
- Answer **question 16 (Compulsory)** and **any other three** questions from **section B**.

**For Official Use Only**

Question	Maximum score	Actual score
1-16		
17		
18		
19		
20		
TOTAL SCORE		

*This paper consists of 14 printed pages*

*Candidates should check the question paper to ensure that all the printed pages are printed as indicated and no questions are missing.*

**SECTION A: (40 MARKS)**  
**ANSWER ALL QUESTIONS IN THIS SECTION**

1. (a) State any **two** types of data processing methods (1 mark)

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- (b) During a visit to the typing room, Jane a computer student observed a type of printer that uses a beam to create an image on a rotating drum. As the beam hits the drum, some regions attract ink toner particles. The toner is then fused onto a piece of paper.

- I. State the name of this type of printer and indicate whether it is an impact or non-impact printer. (1 mark)

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- II. List **two** advantages of using the printer mentioned in a. above. (2 marks)

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2. Bunamfan Water Company sends out field officers to take consumer meter readings. The data collected by the officers is then keyed into the computer. The system then generates utility bills which are printed and sent to the consumers.

- i. State **two** transcription errors that are likely to occur during meter reading or input (2 marks)

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- ii. State **two** ways such errors can be avoided (1 mark)

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- iii. State the type of processing carried out (1 mark)

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3. Highlight the dangers associated with the following in a computer laboratory set up:

a. High humidity in the computer laboratory (1mark)

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b. Purchasing software before assessing requirements (1mark)

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c. Using foreign flash disks on the computer. (1mark)

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d. Entering the computer lab with food (1 mark)

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4. (a) Mention at **least two** trends in the technological revolution of computers. (1 mark)

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(b) To process an instruction, the CPU goes through a cycle of three stages. Name each of the stages. (3 marks)

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5. (a) Explain the importance of the following spreadsheet operations. (2 marks)

(i) Freezing columns

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(ii) Data validation

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(b) Name **two** types of relationships that can be applied in database design. (2 marks)

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6. Briefly explain any **four** block operations that can be performed on data in word processing (4 marks)

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7. (a) Mutiso wanted to upgrade the RAM of his computer. State two factors Mutiso should consider when purchasing a RAM module. (2 marks)

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(b) Define the following terms: (2 marks)

(i) Computer Port

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(ii) Power supply unit

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8. Mkulima Bora is a society that embraced E-Commerce recently. The manager is convinced that there is illegal access to the company's system. State **TWO** ways in which the society can overcome this problem. (2 marks)

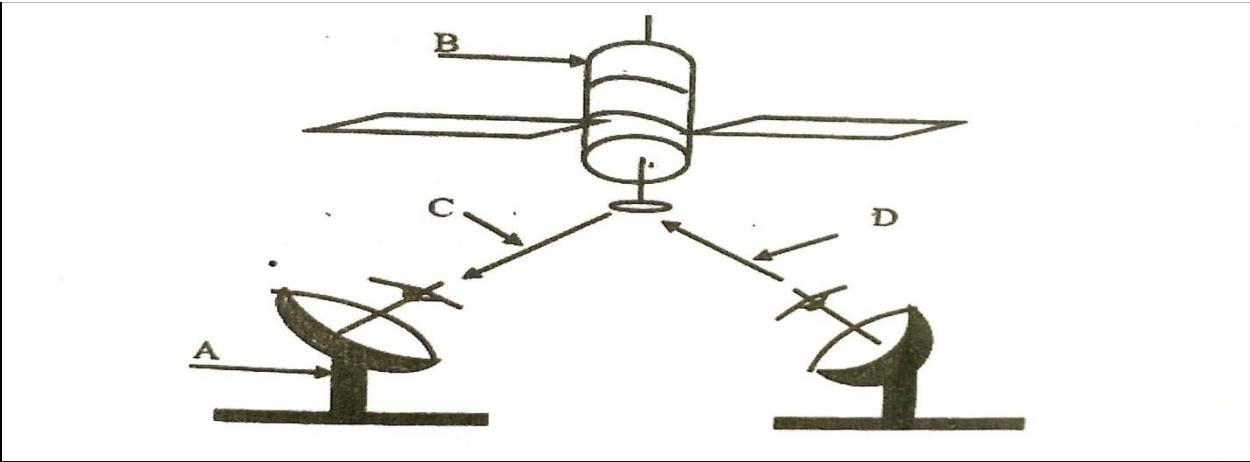


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9. (a) Study the diagram below and answer the questions that follow.



(i) Name the communication media depicted in the above diagram (1 mark)

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(ii) Name the parts labelled A, B, C, and D (3 marks)

A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

D \_\_\_\_\_

10. In a desktop publishing document, an image embedded can be transformed in various ways. Name any **three** ways one can use to make the image fit in a designated area. (3 marks)

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11. Differentiate between source program and object program. (2 marks)

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12. Differentiate between the following terms in Internet (4 marks)  
(i) Drafts and outbox

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(ii) cc and bcc

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13. State **two** characteristics of a computer that is infected by computer viruses. (2 marks)

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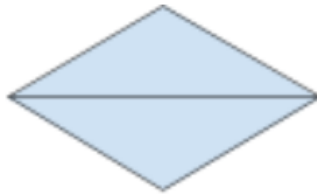
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14. Identify each of the following symbols as used in system flowchart . (1 mark)

(a)



(b)



15. Differentiate between bullets and numbering as used in DTP. (2 marks)

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**SECTION B (60 MARKS)**

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

16. a) State **any three** activities that occur in a program compilation process. (3 marks)

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- b) A program is needed for calculating the average age of students in a class. Write a pseudocode that will read the age of the students and calculate the average age. The program should terminate if the value of 999 is entered for age and output the number of times the statements within the loop were executed. (10 marks)

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c) Give **two** types of errors that may be detected during program testing (2 marks)

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17. a) State **four** functions which are specific to Network Operating Systems (4 marks)

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b) State **two** advantage of using fibre optic cables over satellite in data communication. (2marks)

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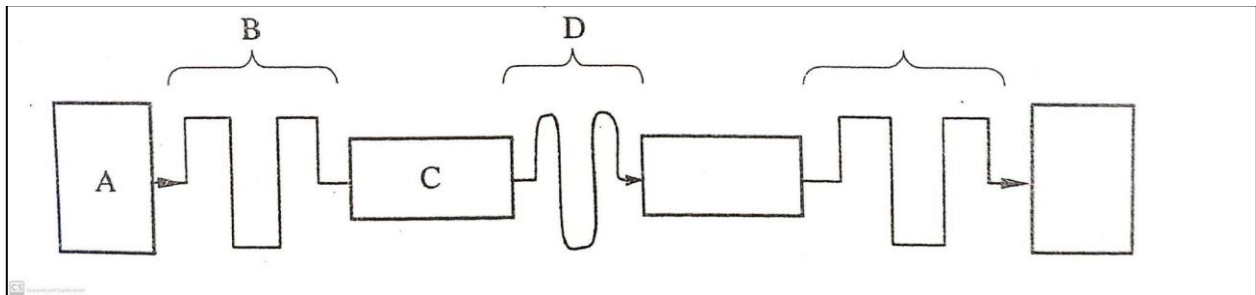
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c) (i) The figure below shows how data is transmitted through a public telephone line .

(4 marks)



Name A, B, C, and D

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d) (i) List any **two** items that may be referred to as data terminal equipments in a network .

(2 marks)

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(ii) Write the acronym MODEM in full (1 mark)

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(iii) Explain the purpose of a modem when connecting to the internet (2 marks)

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18. (a) State **THREE** roles of a programmer in system development life cycle. (3 marks)

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(b) State **four** activities that may be carried out when disposing off an old system in an organization. (4 marks)

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(c) Distinguish parallel changes over from straight change over as used in system implementation.

(2 marks)

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(d) Discuss any **two** fact finding methods.

(4 marks)

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(e) Differentiate between an open system and a closed system.

(2 marks)

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19. a) State **three** standard coding scheme used computing and electronic systems. (3 marks)

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b) Convert each of the following numbers

i)  $1001.001_2$  to octal. (2marks)

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ii)  $125.5_{10}$  to hexadecimal. (3marks)

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iii) Add  $1100.011_2$  to  $11001.0101_2$  and leave your answer in decimal (3 marks)

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- c) Using **two** compliments perform the following arithmetic leaving your answer in binary form. (4 marks)

$$13_{10} - 15_{10}$$

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20. (a) Distinguish between axis labels and data labels as used in spreadsheets. (2 marks)

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- (b) Name an electronic spreadsheet feature that allows one to perform the following actions. (4 marks)

Action	Feature
Provide pictorial summary of data	
Make one cell out of many	

List items from Highest to lowest or vice versa	
Make many cells out of one	

(c) Explain the difference between the printing of multiple pages and multiple copies as used in word processing (2 marks)

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(d) Describe the following categories of software (4 marks)

i) Firmware

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ii) Proprietary software

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(e) Explain the meaning of solid state storage media giving **TWO** examples of it.

(3 marks)

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**\*\*\*THIS IS THE LAST PRINTED PAGE\*\*\***

451/2

Computer Studies

COMPUTER STUDIES

Paper 2

(PRACTICAL)

Time: 2½ hours

## KCSE 2023 TOP PREDICTION MASTER CYCLE 5

Kenya Certificate of Secondary Education

Computer Studies

(PRACTICAL)

Paper 2

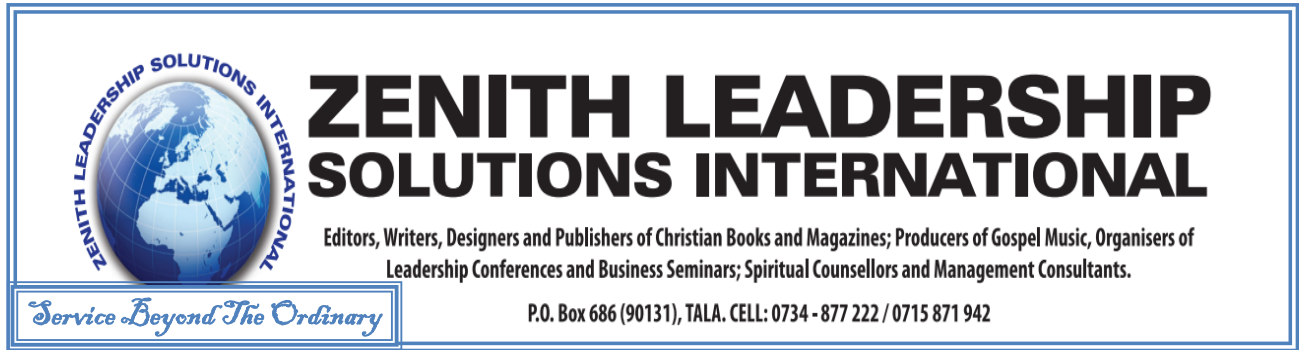
Time: 2½ hours

### Instructions to candidates

1. Write your name and Index number at the right hand corner of each print out.
2. Write your name and Index number on the CD provided.
3. Write the name and version of the software used for each question attempted in the answer sheet
4. Answer **all** the questions
5. Passwords **should not be used** while saving in the CD provided.
6. All answers **must** be saved in your CD provided.
7. Arrange your printouts and staple them together
8. Hand in all the **printouts** and the CD used
9. **This paper consists of 4 printed pages.**
10. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

## QUESTION 1

- a) Use DTP software to design the following business card using the following layout specifications:
- (i) Paper size A4 portrait. (2 marks)
  - (ii) Set the margins to 0.5 inches all round. (2 marks)
  - (iii) Divide the page into TWO columns (2 marks)
  - (iv) The border should occupy the first column (2 marks)
- b) Prepare the publication as exactly as it appears and save it as Business card. (10 marks)



- c) Insert your full name above the heading “ZENITH LEADERSHIP...” and centre it across (5 marks)
- d) Create the logo to occupy between 0.8” to 1.80” left and 0.70” to 1.85” from top. (5 marks)
- e) The title should occupy between 1.70” to 7.50” across and 0.75” to 1.45” from top. Font Arial black with italics and fill effect pattern of dark horizontal. (5 marks)
- f) The words “ZENITH LEADERSHIP” should occupy 2.50” to 5.70” across and 1.50” to 2.00” from top. Font Book antique size 26, bold and centered. (4 marks)
- g) The rest of the text is in font Bodoni MT size 12. (2 marks)
- (i) Align all the text as shown. (2 marks)
  - (ii) Group the publication as one. (2 marks)
  - (iii) Fit FOUR copies of the design into a single page. (2 marks)
- h) Include a page header with your index number. (2 marks)
- i) Save as Updated Business card. (1 mark)
- j) Print the publication **Business card** and **Updated Business Card**. (2 marks)

## Question 2

The table below shows records extracted from Motors Sales Company Database. Create a database and name it MOTOR SALES. (1 mark)

Customer Name	Customer Address	Customer Town	Car Reg No	Car Type	Car Make	Car price	Customer ID	Amount paid
Ogutu	254	Nakuru	KBJ 001T	Truck	Nissan	1,100,000	B001	800,000
John	678	Eldoret	KCM 002M	Bus	Mazda	2,400,000	B002	2,000,000
Uhuru	963	Nairobi	KBB 003V	Saloon	Toyota	800,000	B003	800,000
Ogutu	147	Nakuru	KCJ 004B	Pick up	Peugeot	1,000,000	B004	700,000
Chumba	456	Bungoma	KCH 678B	Lorry	Isuzu	3,000,000	B005	2,000,000
Kariuki	789	Webuye	KBB 006N	Pick up	Toyota	1,800,000	B006	1,600,000
John	678	Eldoret	KBJ 007D	Bus	Scania	7,500,000	B002	7,500,000
Uhuru	963	Nairobi	KCC 678G	Truck	Toyota	1,800,000	B003	1,800,000
Phillip	159	Kisumu	KCJ 009H	Saloon	Nissan	9,00,000	B007	900,000
Ogutu	254	Nakuru	KCH 010L	Pick up	Isuzu	1,500,000	B001	1,200,000
Uhuru	357	Kisumu	KCJ 011J	Saloon	Peugeot	600,000	B008	600,000
Kariuki	789	Webuye	KBG 012B	Bus	Isuzu	10,000,000	B006	9,500,000
Ogutu	147	Nakuru	KDA 013A	Truck	Nissan	2,700,000	B004	2,700,000

- a) Using the data above, create a table that will hold Car details and another table to hold Customer details. Name them **TABLECAR** and **TABLECUSTOMER** respectively and set appropriate *primary keys* (4 marks)
- b) Enforce referential integrity between two tables. (2 marks)
- c) Create different input forms for each table. Name them **FORMCAR** and **FORMCUSTOMER**. Use them to enter data into the tables. (12marks)
- d) Display a report only showing the details of the Customers who have cleared paying for the Car. Name the report **REPORTCLEARED**. Add “CLEARED CUSTOMERS” as the title of the report. (7 marks)
- e) Using the two tables create an *outlined report* showing the *customer details, the total amount paid by each customer and the total amount received* by the company. Name the report **SUMMARY** and the title as “OVERALL CUSTOMERS REPORT.” (8 marks)
- f) Create a query to display the Car details with balances of less than 300,000. Name the query as **BALQUERY**. (4marks)
- g) Create a report showing the *Car type, the total sales for each car type and the grand total*. Name the report as **REPORTGRAND**. (6 marks)

- h) Using landscape orientation, print **REPORTCLEARED, SUMMARY** and **REPORTGRAND** with *footers bearing your lastname and index number at the center of the page.* (6 marks)