

Name _____ Index No. _____

Candidate's signature _____

Date _____

451/1
COMPUTER STUDIES
PAPER 1
THEORY
JULY/AUGUST 2014
2 ½ HOURS

KIBWEZI DISTRICT FORM FOUR INTER-SCHOOL EXAMINATIONS
Kenya Certificate of Secondary Education
COMPUTER STUDIES
PAPER 1
2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

1. Answer all questions in the spaces provided
2. Answer all questions in section A
3. Answer question 16 and any other three in section B

FOR OFFICIAL USE ONLY

| SECTION | QUESTION | SCORE |
|--------------------|-----------------|--------------|
| A | 1 – 15 | |
| B | 16 | |
| | 17 | |
| | 18 | |
| | 19 | |
| | 20 | |
| Total score | | |

This paper consists of 11 printed pages

Turn Over

SECTION A (40 MARKS)
ANSWER ALL QUESTIONS.

1. State two tasks of a processor (2mks)

2. Define the following terms
(i) Computer Network (2mks)

(ii) Data transmission (2mks)

3. Give one reason why a computer is referred to as electronic device. (1mk)

4. Explain the following input/output terms
(i) Read (2mks)

(ii) Write (2mks)

5. (i) In word processing what is a template? (1mk)

(ii) State two advantages of using a template to create a document (2mks)

6. Kalekye tried to retrieve a file from the computer but did not appear as expected. State three possible causes for this (3mks)

7. With an aid of a diagram, explain the difference between an analogue signal and a digital signal (2mks)

8. Explain the role of a modem in communication. (2mks)

9. Give two differences between tower-style and desktop system units. (2mks)

10. (i) Give three reasons while a mobile phone is regarded as a computer. (3mks)

(ii) Which category of computer would you place an Ipad or a tablet? (1mk)

11. List down three advantages of ATM cards. (3mks)
-
-
-
12. Mention two things likely to come eyestrain in the computer room. (2mks)
-
-
-
13. Explain four ways that computer technology could make a office more efficient. (2mks)
-
-
-
-
14. Explain the following concepts as used in spreadsheets
- (i) Automatic recalculation (2mks)
-
-
-
- (ii) What if analysis (2mks)
-
-
-
15. Give two main functions of an input device. (2mks)
-
-
-
-

SECTION B (60 MARKS)

ANSWER QUESTION 16 AND ANY OTHER THREE

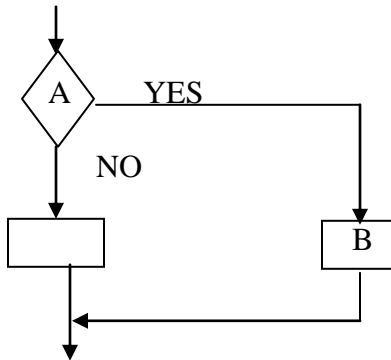
16. (a) Explain the meaning of the following as used in computer programming. (2mks)

(i) Syntax

(ii) Semantics

(b) Give six factors to be considered while choosing a programming language

(c) (i) Name the control structure shown by the diagram below. (1mk)



(ii) Name the symbols labeled A and B in the diagram above (2mks)

A _____

B _____

(d) Draw a flowchart for a program that is to prompt for 10 numbers, accumulate the sum and then find the average. The output is the accumulated totals and the average.

17. (a) Define the following terms

(i) Biometric Analysis

(2mks)

(ii) Telecommuniting

(2mks)

(b) Outline four devices required in order to conduct a video conference (2mks)

(c) Suggest how computers may be made more friendly for persons that use
(i) Blind (2mks)

(ii) Without hands (2mks)

(d) (i) Give three advantages of fully automated manufacturing (3mks)

(ii) Discuss the application of Artificial Intelligence in Natural language processing (2mks)

18. (a) Explain each of the following computer terminology as used in data representation (4mks)

(i) Bit

(ii) Byte

(iii) Nibble

(iv) Word

(b) Distinguish between binary and octal number systems. (2mks)

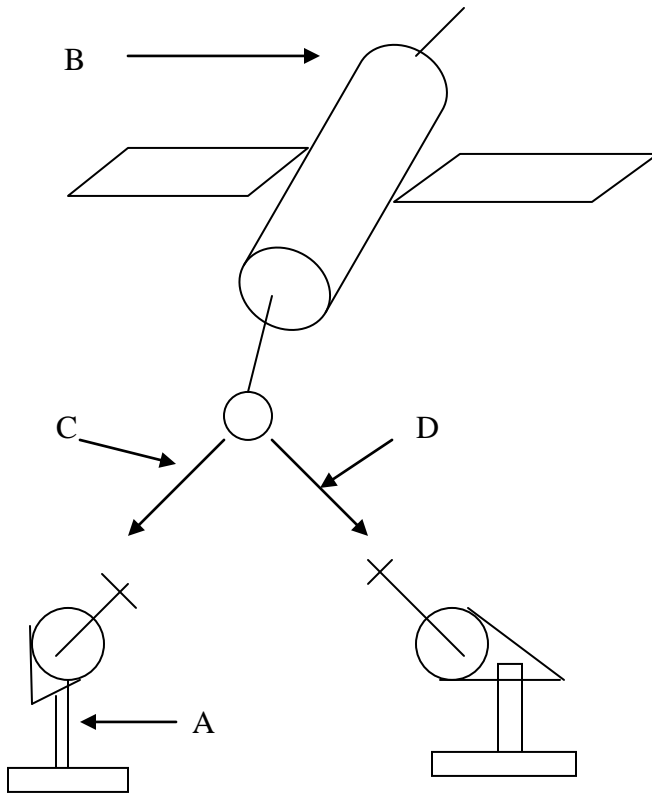
(c) Convert the following Decimal numbers to their Binary equivalent

(i) 45_{10} (3mks)

(ii) 4.75 (3mks)

(d) Convert 1010000000111111_2 to their Hexadecimal equivalent without using base 10. (3mks)

19. Study the diagram below and answer the questions that follow.



(i) Name the communication media in the diagram

(1mk)

(ii) Name the parts labeled A, B, C and D

(4mks)

A _____

B _____

C _____

D _____

(iii) List three advantages of the above communication media

(3mks)

(b) In relation to networking

(i) Define the term network topology.

(1mk)

(ii) Distinguish between logical and physical network topologies. (2mks)

(c) Explain the functions of the following network device. (4mks)

(i) Network interface card (NIC)

(ii) Gateway

(iii) Bridge

(iv) Repeater

20. (a) (i) Explain the term Disk Defragmenter. (1mk)

(ii) Give two advantages of this feature (2mks)

(b) Distinguish between disk compressing and disk formatting (2mks)

(c) Give four reasons for formatting a disk before use. (4mks)

(d) (i) What is meant by the term disk partitioning (1mk)

(ii) Give two reasons for partitioning a disk (2mks)

(e) Explain three possible causes for a printer failing to print (3mks)

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COMPUTER STUDIES
PAPER 1
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KIBWEZI DISTRICT FORM FOUR INTER-SCHOOL EXAMINATIONS
Kenya Certificate of Secondary Education
COMPUTER STUDIES
PAPER 1
MARKING SCHEME

1. State two tasks of a processor (2mks)
 - Fetch data and information from memory
 - Decodes instructions
 - Executes/runs programs
 - Controls hardware operations through sending of control signals

Any 2 @ 1 total 2
2. Define the following terms
 - (i) Computer Network
 - A collection of two or more computers connected using transmission media for the purpose of communication and sharing of resources.
 - (ii) Data transmission (2mks)
 - Passing of information from one terminal to another in a computer network through telecommunication terminals.
3. Give one reason why a computer is referred to as an electronic device (1mk)
 - It uses electric signals to process data
 - It is made up of electronic components and uses electric energy to operate

Any 1 @ 1 total = 1
4. Explain the following input/output terms
 - (i) Read
 - Transfer data from an input device to the computer e.g. the computer reads data from a disk, a keyboard, etc
 - To move or copy data from backing storage to the main memory
 - (ii) Write (2mks)
 - Transfer information from the computer to an input device e.g. the computer writes input on a printer or onto a disk
 - To move or copy data from the main storage to the backing storage

Any one @ 2 = 2
5.
 - (i) In word processing what is a template? (1mk)
 - A document that acts as a blue print or outline for other documents of the same type
 - It contains the standard text, graphics and formatting for use in all documents of this type
 - (ii) State two advantages of using a template to create a document (2mks)
 - It helps save time and makes creating of new documents easy
 - It ensures that there is consistency between the documents being created

This paper consists of 8 printed pages

Turn Over

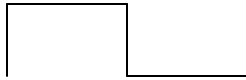
6. Kalekye tried to retrieve a file from the computer but did not appear as expected. State three possible causes for this. (3mks)
- File may not have been saved
 - File may have been deleted
 - File may have been located in different folder from the original one she was trying to retrieve from (i.e. moved)
 - File may have been destroyed by a computer virus
 - File name may have been changed

Any 3 @ 1 total = 3

7. With an aid of a diagram, explain the difference between an analogue signal and a digital signal (2mks)
- An analogue signal is continuous in nature, while a digital signal is in discrete form



½ - Analogue signal – sine wave ½



½ - Digital signal – box wave ½

8. Explain the role of a modem in communication (2mks)
A modem at the sending computer converts (modulates) data signals from digital to be transmitted as analogue signals and once they reach their destination the modem at the receiving computer converts (demodulates) the analogue signal back to its original digital form.
9. Give two differences between tower-style and desktop system units (2mks)
- Tower style is designed to stand alone on the floor while desktop units lie on the desk with the monitor placed on the top
 - Tower style unit have more space for expansion than typical desktop units
10. (i) Give three reasons while a mobile phone is regarded as a computer (3mks)
- It is electronic/uses electronic signal
 - It has a display unit
 - It has a keypad
 - It has a memory for storage
 - It is programmable

Any 3 @ 1 total = 3

- (ii) Which category of computer would you place an I pad or a tablet? (1mk)

- Microcomputer
- PDA
- Palmtop

Any 1 @ 1 = 1

11. List down three advantages of ATM cards (3mks)
- Offer 24 hour service to customer
 - Ensures more flexibility in cash deposits and withdrawals
 - It is secure because it required personal identification number (pin) usually held by card holder
 - Eliminates the need for human bulk clerks

Any 3 @ 1 total = 3

12. Mention two things likely to cause eyestrain in the computer room. (2mks)
- Poor lighting of the room
 - Bright monitors
 - Flickering monitors
 - Very bright wall paints
- Any 2 @ 1 total = 2
13. Explain four ways that computer technology could make an office more efficient. (2mks)
- Faster and easier retrieval of data i.e. reduces the time and effort needed to access and retrieve information
 - Increased accuracy of data
 - Better presentation of data
 - Ensures economic and storage space
 - Ensures faster processing of data
- Any 4 @ ½ total = 2
14. Explain the following concepts as used in spreadsheets
- (i) Automatic recalculation (2mks)
- Ability of an electronic spreadsheet to adjust the result of a formula automatically when the values are changed, without they correspond with the different input
- (ii) What is analysis (2mks)
- A feature in spreadsheets used to find out the effect of changing certain values in a worksheet on the other cells
 - It involves changing the values of one of the arguments in a formula in order to see the difference the change would make on the result of the calculation
- Any one @ 2 total = 2
15. Give two main functions of an input device (2mks)
- Accept data and instructions from the user and sends them into the CPU
 - Converts data into a form that the computer can understand (i.e. machine sensible form)

SECTION B (60 MARKS)

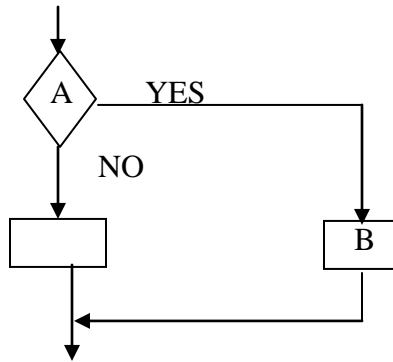
ANSWER QUESTION 16 AND ANY OTHER THREE

16. (a) Explain the meaning of the following as used in computer programming. (2mks)
- (i) Syntax - the rules that govern the arrangement of commands in a particular language
- (ii) Semantics – the meaning attached to every command in a particular language
- (b) Give six factors to be considered while choosing a programming language (3mks)
- Purpose of the program to be developed
 - Each of learning and use of the proofing language
 - Availability of the relevant translator
 - Execution time
 - Whether programmer is familiar with the language
 - Popularity in the market
 - Documentation
 - Availability of programmes

Any six @ ½ total = 3

(c) (i) Name the control structure shown by the diagram below.

(1mk)



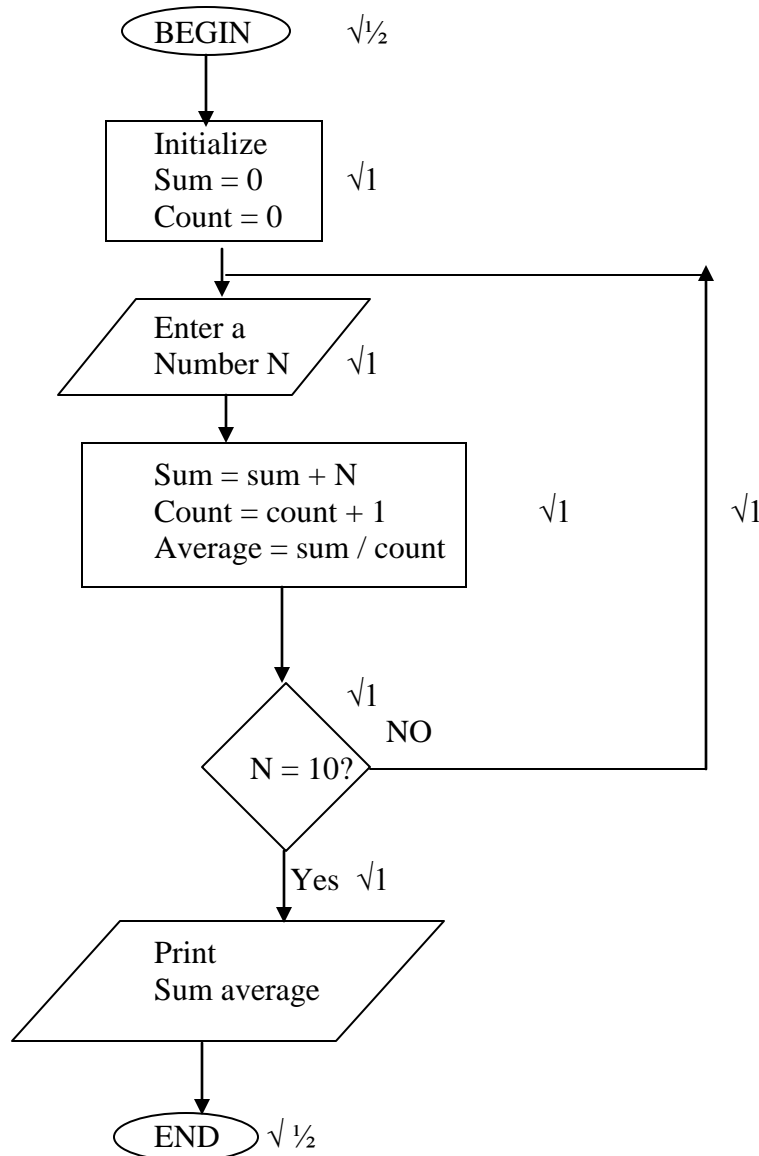
- Selection control structure

(ii) Name the symbols labeled A and B in the diagram above (2mks)

A – Decision box

B – Process symbol

(d) Draw a flowchart for a program that is to prompt for 10 numbers, accumulate the sum and then find the average. The output is the accumulated totals and the average.



Notes

| | |
|------------------|---------------|
| Begin/end - | 1 |
| Initialization - | 1 |
| Entering - | 1 |
| Processing - | 1 |
| Decision - | 1 |
| Output - | 1 |
| Correct flow - | $\frac{1}{7}$ |
| Total | 7 |

17. (a) Define the following terms
- (i) Biometric analysis (2mks)
- The study, measurement and analysis of human biological characteristics. It uses a computer and a biometric device to recognize and analyse features of human body parts such as finger prints, tips, voice, iris, colour etc
- (ii) Telecommuniting (2mks)
- A situation where an employee works in a location that is remote from the normal place of work either on full-time or part – time basis through a networked setting
- (b) Outline four devices required in order to conduct a video conference (2mks)
- A computer
 - A digital video camera (camcorder) attached to a computer
 - Networking software for video conferencing
 - A microphone
 - Speakers
- Any four @ ½ total = 2mks
- (c) Suggest how compile may be made more user friendly for persons that are
- (i) Blind (2mks)
- Development of Braille keyboards or engraved keyboards
 - Installation of talking software
- (ii) Without hands (2mks)
- Use of voice activated commands
 - Installation of powerful multimedia system and speech recognition devices
- (d) (i) Give three advantages of fully automated manufacturing (3mks)
- Increased efficiency due to balanced workload and production capacity
 - Production increases in the workspace
 - Improves customer semice
 - Enables production of adequate and high quality foods in good time
 - Enables efficient utilization of resources
- Any 3 @ 1 total = 3
- (ii) Discuss the application of Artificial intelligence in natural language processing (2mks)
- Involves development of programming language whether spoken or written
 - It makes the task of data processing even faster
18. (a) Explain each of the following computer terminologies as used in data representation (4mks)
- (i) Bit – A binary unit, a “O” or a “I”
- (ii) Byte – A group/collection of 8 bits need to represent a character
- (iii) Nibble – A group of four binary digits
- (iv) Word – Total number of bits that a single register of a particular machine can hold
- (b) Distinguish between binary and octal number systems (2mks)
- Binary (Base 2) number system has joint four static usually represented by “O” and “I” while octal has eight different characters represented by 0, 1, 2, 3, 4, 5, 6, 7

(c) Convert the following decimal numbers to their binary equivalent (3mks)

(i) 45_{10}

| | | | | | |
|---|----|---|---|--|------------------------|
| 2 | 45 | | | | |
| 2 | 22 | r | 1 | | arrangement 1 |
| 2 | 11 | r | 0 | | correct calculations 1 |
| 2 | 5 | r | 1 | | correct answer 1 |
| 2 | 2 | r | 1 | | |
| 2 | 1 | r | 0 | | |
| 2 | 0 | r | 1 | | |

$$= 101101_2$$

(ii) 4.75 (3mks)

Has two parts

Whole part

| | | | | | | | |
|---------------|---|---|---|---|---|----------------------|---|
| $\frac{1}{2}$ | { | 2 | 4 | | | | |
| | | 2 | 2 | r | 0 | $\sqrt{\frac{1}{2}}$ | arrangement - $\frac{1}{2} \times 2 = 1$ |
| | | 2 | 1 | r | 0 | | correct calculations - $\frac{1}{2} \times 2 = 1$ |
| | | | 0 | r | 1 | | correct answer - $\frac{1}{2} \times 2 = 1$ |

$$= 100 \sqrt{\frac{1}{2}}$$

Fractional part

$$\left\{ \begin{array}{l} 0.75 \times 2 = 1.50 - 1 \quad \sqrt{\frac{1}{2}} \\ 0.50 \times 2 = 1.00 - 1 \end{array} \right. \quad \text{captured}$$

$$= 0.11$$

\therefore Whole part + fractional part

$$= 100 + 0.11$$

$$= 100.11_2 \quad \sqrt{\frac{1}{2}}$$

(d) Convert 1010000000111111_2 to its Hexadecimal equivalent without using base 10. (3mks)

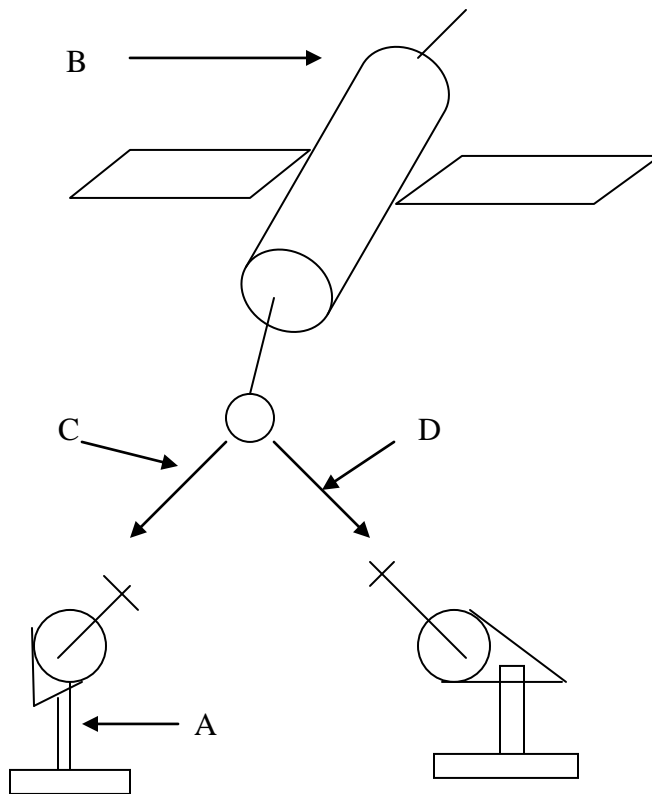
| | | | | | |
|-------|-------------------|-------------------|-------------------|-------------------|------------|
| 2^0 | $2^3 2^2 2^1 2^0$ | $2^3 2^2 2^1 2^0$ | $2^3 2^2 2^1 2^0$ | $2^3 2^2 2^1 2^0$ | $\sqrt{1}$ |
| 0001 | 0100 | 0000 | 0111 | 1111 | |

$$= (1) + 4 + (0) + [4 + 2 + 1] + [8 + 4 + 2 + 1] \left. \vphantom{\begin{matrix} (1) + 4 + (0) + [4 + 2 + 1] + [8 + 4 + 2 + 1] \\ (1) + (4) + (0) + (7) + (15) \end{matrix}} \right\} \frac{1}{2}$$

$$= (1) + (4) + (0) + (7) + (15)$$

$$= 1407F_{16} \sqrt{1}$$

19. Study the diagram below and answer the questions that follow.



- (i) Name the communication media in the diagram (1mk)
 - Satellite communication ✓
- (ii) Name the parts labeled A, B, C and D (4mks)
 A – Receiving earth station ✓
 B – Satellite in space ✓
 C – Down link ✓
 D – Uplink ✓
- (iii) List three advantages of the above communication media (3mks)
 - It is fast ✓
 - Provides a large ✓ constant line of sight
 - Can reach remote ✓ areas

(b) In relation to networking

(i) Define the term networking topology (1mk)

- Refers to the arrangement of the computers, printers and other equipment connected on the network

(ii) Distinguish between logical and physical network topologies (2mks)

Logical (signal) topology deals with the way data passes from one device to the next in a network while physical topology refers to the physical arrangement (layout) of devices on the network
 (Two marks one off for correct answer)

(c) Explain the functions of the following network device (4mks)

(i) Network interface card (NIC)

- Creates a physical link between the computer and the transmission media

- (ii) Gateway – Provides access to a wide area network
- (iii) Bridge – Device that selectively determines segment where message is to be delivered
- (iv) Repeater - Receives a weak signal cleans and amplifies it for transmission over the next position of the network

20. (a) (i) Explain the term Disk Defragmenter (1mk)
A tool used to rearrange scattered files and folders on a storage media

- (ii) Give two advantages of this feature (2mks)
- Rearranges scattered folders and files on storage media
 - Reduces the time the read/write had used to locate files or folders
 - Consolidates related data close to each other hence frees space in the storage media

Any 2 @ 1 total = 2

(b) Distinguish between disk compressing and disk formatting
Compressing is creating more space on a disk by squeezing disk contents (files) into smaller storage location on the disk while disk formatting is preparing a new disk for storage through creation of tracks and sectors.

2 marks one for correct answer

(c) Give four reasons for formatting a disk before use. (4mks)

- Prepare it for storage by creating tracks and sectors
- Prepare the root directory and file allocation tables
- Remove/delete existing files stored on the disk
- To determine the effective storage capacity
- Check for bad sective on the disk

(d) (i) What is meant by the term disk partitioning (1mk)

The process of dividing a disk into two or more volumes

(ii) Give two reasons for partitioning a disk (2mks)

- Install more than one operating system
- For the purpose of back up to that one partition facts the other can be used

(e) Explain three possible causes for a printer failing to print (3mks)

- Printer may not be installed
- Printer may not have been set as default printer
- The data interface cable to printer could be missing or loose
- Printer is not powered
- Selection of wrong printer

Any 3 @ 1 total = 3

Name _____ Index No. _____

Candidate's signature _____

Date _____

451/2
COMPUTER STUDIES
PAPER 2 (PRACTICAL)
JULY/AUGUST 2014
2 ½ HOURS

KIBWEZI DISTRICT FORM FOUR INTER-SCHOOL EXAMINATIONS
Kenya Certificate of Secondary Education
COMPUTER STUDIES
PAPER 2
2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

1. Save **ALL** your work using the filenames provide
2. Answer **ALL** questions

This paper consists of 5 printed pages

Turn Over

451/2
COMPUTER STUDIES
PAPER 2 (PRACTICAL)
JULY/AUGUST 2014

KIBWEZI DISTRICT FORM FOUR INTER-SCHOOL EXAMINATIONS
Kenya Certificate of Secondary Education
COMPUTER STUDIES
PAPER 2
MARKING SCHEME

This paper consists of 10 printed pages

Turn Over