SECTION A (10 Marks)

Answer **ALL** questions in this section.

1. For each of the items (i) – (x) choose the correct answer from among the given alternatives and write its letter beside the item number.

(i) A computer is

A a device used for drawing graphs only
B a device that is built from hardware and uses software
C a software for defining problems
D an electronic machine that will process data and change it into information
E an electronic machine for manipulation of information.

(ii) A device that is used to connect a computer to normal telephone system is

A Laser printer
B Modem
C Satellite
D RAM
E VDU

(iii) One kilobyte is equivalent to

A 1000 bytes
B 1024 bits
C 1000 bits
D 1024 bytes
E 1000 characters.

(iv) It has been possible to manufacture small but powerful computers today because of

A stable and good supply of electricity
B very large scale integration
C good integrated circuits
D improved vacuum tubes
E powerful transistors.

(v) Which of the groups of items given below represents a set of data storage devices?

A Floppy disk, diskette, keyboard
B CD, diskette, hard disk
C Floppy disk, magnetic tape, Vdu
D Hard disk, keyboard, magnetic tape
E Magnetic tape, mouse, diskette.

(vi) A program is normally written in high level language. Which of the following statements is true for a high level language?

A It is written in binary
B It does not need to be translated for execution
C Instructions in the language represent numbers of machine instruction
D It is translated by an assembler before execution
E It is difficult to learn.

(vii) A computer error that arises due to language translation is know as

A syntax error
B compilation error
C logic error
D personal error
E Y2K.

(viii) The equivalent of octal 124 in decimal system is.

A 80
B 82
C 86
D 84
E 67.

(ix) Locating and correcting errors in a computer program is called

A analysing
B coding
C debugging
D fixing
E correcting.

(x) A flow chart is

A a method of programming
B usually a difficult program to understand
C a graphical representation of logical flow of a program
D a method of showing a problem in steps of instructions
E a method of making the problem easy.

SECTION B (10 Marks)

2. Match the items in List A with the responses in List B by writing the letter of the correct response beside the item number.

LIST A

(i) Error in a program
(ii) Warm booting
(iii) User interface
(iv) The CPU of microcomputer
(v) Output from the computer which has not been printed
(vi) Enables the user to easily create and edit text
(vii) WAN
(viii) Control unit
(ix) Operating system
(x) Program

LIST B

A.	A type of line printer	K.	Part of the central processing unit which controls flow of data
B.	Booting when the computer was not turned on before	L.	The part of computer that we interact with when giving the instruction to the computer
C.	Controls only the input devices	M.	Word processing application software
D.	Turning on the computer from the cold	N.	Soft copy
E.	Restarting the computer	O.	ALU
F.	Bug	P.	Microprocessor
G.	Controls the general operations of the computer	Q.	Non-impact printer
H.	Magnetic disk	R.	The part of the computer that we only use to receive processed results from the computer
I.	Computer network which covers a large area	S.	A set of related records
J.	Written instructions and commands that make the computer work	T.	A magnetic disk and a floppy disk

SECTION C (40 Marks)

Answer **ALL** questions in this section.

3. Write LET statements to perform the indicated tasks.
   (a) Assign the value of expression (A-B)/2 to C2
   (b) Assign the string cost to C $
   (c) Replace the value of A $ by the string DOS, WINDOWS
   (d) Increase the value assigned to B by 7.

4 (a) Give the name of the device that makes it possible for the CPU to work.
   (b) Magdalena bought a floppy disk with a computer game on it. Has she bought hardware, software or both? Why?
   (c) Define the following terms:
      (i) Bytes
      (ii) Bits.

5. The words RAM and ROM are often used when computer memory is discussed.
   (a) What do the following abbreviations stand for?
      (i) RAM
      (ii) ROM
   (b) What are main differences between RAM and ROM?
   (c) Give one use of RAM
   (d) Give one use of ROM.

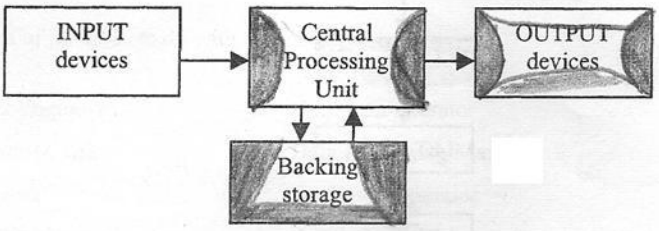
6. An operating system is a software.

(a) Name two tasks done by the operating system

(b) Name one operating system used by computers

(c) Microcomputers can carry out multitasking. Give the meaning of the term multitasking.

7.



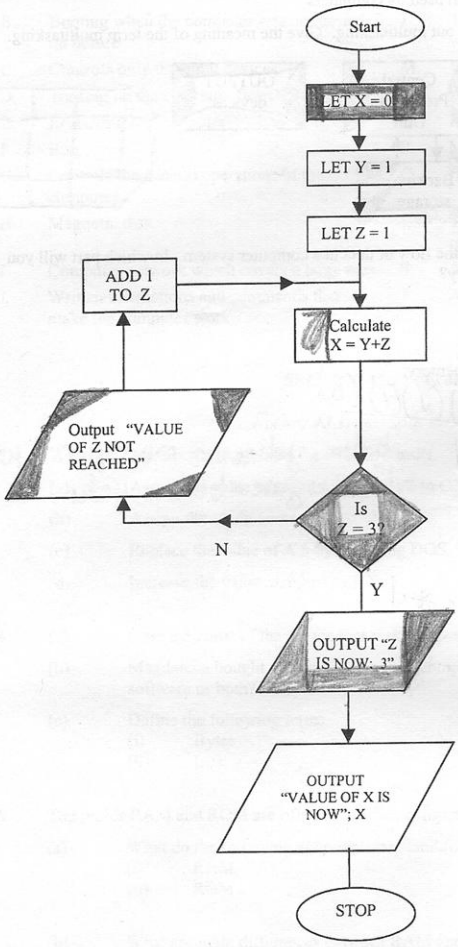
(a) The diagram above shows the flow of data in a computer system. In which part will you expect to find main memory?

(b) Name two input devices.

(c) Name two output devices.

(d) Give one use of the main memory.

8. A computer program is to be written using the following flow chart. Dry run the flowchart and write down all the output produced.



9. In early days of computing, programs were normally written in Assembly Language. Today, programs are normally written in a high-level language.

   (a) Give two advantages of a high level language to a programmer

   (b) An expert programmer is writing a Game program. Why might this programmer prefer to use Assembly Language? (Give two reasons).

10. Here is a list of job titles to do with computers.

Computer Engineer	Computer operator
Data Control Clerk	Data Processing Manager
File librarian	Keyboard Operator
Programmer	Salesman
Shift leader	System analyst

For each of the tasks below, write down the most likely job title for the person doing it. Use the job title only once.

(a) Correcting errors in a program

(b) Sending data to the computer

(c) Testing a new computer system

(d) Demonstrating a computer to a new customer.

11. Correct the errors found in the following LET statements:

(a) 90 LET C $ = SAFARI

(b) B20 LET C = C + 1

(c) 40 LET X + Y = T

(d) 50 LET AB = A+ B

12. The following record structure for a data file has been set up by a programmer.

Field name	Field length	Field type	Key field
Name	25	Character	NO
Address	20	Character	NO
Admission Number	06	Numeric	YES
Telephone Number	13	Alphanumeric	NO
Date admitted	08	Date	NO

(a) How many fields does each record in this file contain?

(b) Explain why only 'Admission Number' is a key field?

(c) Define the term record

(d) Find errors in this record

ADMISSION NUMBER	NAME	ADDRESS	TELEPHONE NUMBER	DATE ADMITTED
00079982	SAFIRI SALAMA	BOX 73 MOROGORO	023-262449	03-09-1999

SECTION D (40 Marks)

Answer **FOUR (4)** questions from this section.

13 (a) State two system commands used in Basic. How are they used? (4 marks)

(b) There are three types of numeric constants used in BASIC. With examples write short notes on each. (6 marks)

14 (a) Which of the following are illegal variable labels? Why?

(i) F1 (ii) 9X (iii) BC (iv) A97 (v) B (vi) 67 (4 marks)

(b) Using one example explain the difference between Assignment statement and a READ statement. (2 marks)

(c) Write LET statements to perform the indicated tasks.

(i) Assign the tenth power of I + R to A.

(ii) Assign the N x C of $1 + \frac{R}{C}$ and multiply the result by P to K

(iii) Assign monthly payment to M. Monthly payment is given by an expression

$$\frac{Lx\frac{R}{12}}{I-\left[1+\frac{R}{12}\right]^{-12xT}}$$

(iv) Store the content of P $ in Q$. (4 marks)

15 (a) If A = 1, B = 2, C = 3 write TRUE for a true statement and FALSE otherwise.

(i) $A/C * B <= .5$

(ii) (A< C) AND (A+B=C)

(iii) NOT [(A >B) OR (C >A)] (4 marks)

(iv) [(A>B) OR (B >C)] AND (-B+C< 0)

(b) What are the differences between the GO TO and ONGO TO statements as used in BASIC (3 marks)

(c) What will be printed when the following code is run?

```
10  LET A = 5
20  LET B = 3
30  IF A<7 AND B>10 THEN PRINT B
40  LET B = A+B
50  IF A+B<15 THEN PRINT A ELSE PRINT B
```

```
60    PRINT "THAT'S ALL"
70    PRINT A + B
80    END                                    (3 marks)
```

16 (a) Define the following terms:
(i) One-dimensional array
(ii) Sorting
(iii) Array (3 marks)

(b) How many rows, columns and elements has the array defined by the following DIM Statements?
(i) 10 DIM A (8,3)
(ii) 20 DIM X (5, 7), Y (10, 8) (3 marks)

(c) Show the output of the following program

```
70    FOR P = 1 TO 4
80    FOR T = 1 TO 4
90    LET M (P,T) = P * T
100   NEXT T
110   NEXT P
150   FOR K = 1 TO 4
160   PRINT M(K, K);
170   NEXT K
180   END                                    (4 marks)
```

17 (a) Define batch processing. Explain why READ is used in BASIC as a batch processing statement. (4 marks)

(b) Explain the use of RESTORE statement as used in BASIC. (2 Marks)

(c) Given the following BASIC program code determine the output.

```
100   READ A, B
150   DATA  6, 8, 10, 12
160   RESTORE
170   READ C, D
180   PRINT  A; B; C; D;                     (4 marks)
```

18. (a) How is INT function used in BASIC? Give examples in each case. (2 marks)

(b) Why do the following two BASIC statements produce two different types of results? The statements are:

```
10    PRINT RND (1)
20    PRINT INT [10*RND(1)].                 (2 marks)
```

(c) Write the following expressions in BASIC (use built in functions where possible):

(i) $Z = \sin(x^2) + \tan(y) + \log(A)$

(ii) $X = R - \frac{5P^5}{S^{15}}(4Z^2 - 3A) - \frac{5x}{9Z^3}$

(iii) $R = \tan(Z^2) + \ell nA^3$. (6 marks)