THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

036/1 INFORMATION AND COMPUTER STUDIES 1
(For Both School and Private Candidates)

Time: 3 Hours Tuesday, 16th October 2007p.m.

Instructions

1. This paper consists of sections A, B and C.
2. Answer **all** questions in sections A and B and **two** (2) questions from section C.
3. Calculators and Cellular phones are not allowed in the examination room.
4. Write your **Examination** Number on every page of your answer booklet(s).

SECTION A (10 Marks)

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) The device that can eliminate the manual step of keying in the data is called a

A key-to-disk machine
B optical scanner
C keypunch machine
D electronic register
E mouse.

(ii) An impact printer gets its name by

A having the same print quality as an electric typewriter
B transferring a pattern of dots on paper
C transferring a whole or partial character by striking the ribbon
D using heat to transfer an image onto the paper
E creating continuous character images using light.

(iii) The following is not the function of the control unit:

A To coordinate transfer of data to and from primary storage
B To change the sequence in which instructions are executed when directed to do so
C To recognize data and to execute instructions
D To perform arithmetic operations
E To direct and to control input and output devices.

(iv) An optical recognition can read

A magnetically encoded numbers
B any combination of numbers and letters
C bar codes in supermarkets
D electronically encoded patterns
E specially coded characters or patterns.

(v) The following is a direct access storage device:

A A tape
B A card
C A disk
D A printer
E A joystick.

(vi) A programming language that uses normal sentences in English is called a

A machine language
B first generation language
C procedure-oriented language
D natural language
E high level language.

(vii) Fundamental steps in developing computer programs and application software include all of the following except

A maintenance
B language selection
C analysis and design
D supervisor approval
E implementation

(viii) The REM statement is used to

A document a program
B reserve room in the computer's memory for subscripted variables
C remember values that are assigned to LET statements
D permit the use of matrix operations
E skip one line before executing the next command

(ix) When used in a PRINT statement, the colon (:) will

A cause an error message
B result in printing expressions, numbers and messages closer together
C result in printing expressions, numbers, characters and messages in the next field
D cause the computer to skip one line before printing
E result in printing null characters on the screen

(x) Data can be entered directly into the computer system from a terminal when using the

A TERM statement
B ENTER statement
C READ statement
D LET statement
E INPUT statement

SECTION B (10 Marks)

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

List A

(i) TAB
(ii) LET
(iii) Scripted variables
(iv) Modem
(v) Logical
(vi) Structured design
(vii) Problem definition
(viii) Coding
(ix) Coder
(x) Technical design

LIST B

A Allows companies to electronically, store, rearrange and print key paragraphs
B Example of first generation computer
C Possible carrier with computer manufacturer
D The use of a device to encode a transform data into digital codes
E Used in BASIC program to represent lists or table numbers
F Another name for a computer programmer
G An error that will not result in an error message
H A type of number that is only evenly divisible by itself
I A hardware device that is used in data communications
J A file organization method that involves storing logical records in a given sequence, usually based on key control field in the record
K Will cause the values of the variable to be stored in computer memory
L The activity of producing software in a formal project environment
M Used to produce attractive output in a computer program
N A program that combines separate modules into a one executable program
O The overall purpose is to find the best possible way to develop software
P Procedures and rules used to develop data communications software
Q The step of application development where input requirements are determined
R Rules that are used with a particular programming language
S The process of writing the necessary instructions in a computer programming language
T A type of implementation procedure

SECTION C (40 Marks)

Answer ALL questions in this section.

3 What does each of the following flowchart symbols represent?

(a) 

(b) 

(c) 

(d) 

4. (a) What is the difference between an algorithm and a pseudocode?

(b) When numbers are used in a BASIC program, commas should not be included (e.g. 1000 should not be written as 1,000). Why?

5. (a) Distinguish between an assembler and an interpreter as used in programming languages.

(b) Explain two circumstances under which you would format a floppy diskette.

6. (a) (i) What is a Binary Coded Decimal (BCD)?

(ii) Represent the decimal number 2003 as a BCD code.

(b) (i) What is a hexadecimal number system?

(ii) Convert the hexadecimal number EC to a decimal (base ten) number.

7. (a) Why can't we use zero (0) as a step value in the FOR and NEXT loops?

(b) Correct errors in the following nested FOR/NEXT loop:

```
FOR I = 1 TO 5
    FOR J = Q TO R
    .
    .
    NEXT I
NEXT J
```

(c) What rules should be remembered when using nested FOR/NEXT loops?

8. What are the qualities of a good algorithm?

9. (a) Write a BASIC statement that will join A$ and B$ and produce C$. If A$ = JOSEPH and B$ = MILENZO what will C$ be equal to after this statement is executed?

(b) What is the general format of the LET statement? Give one example.

10. (a) List down three program structures.

(b) What is data?

11. Write down the output of the following program:

```
COUNT = 0
LIMIT = 5
ANAME$ = "ABDALLAH HAMIS"
DO UNTIL COUNT = LIMIT
    COUNT = COUNT + 1
    PRINT ANAME$
    PRINT
```

```
LOOP
PRINT "THE END"
END
```

12. (a) What are the functions of the main memory? (4 marks)

(b) Line numbers in a BASIC program serve two purposes. What are they? (3 marks)

SECTION D (40 Marks)

Answer FOUR (4) questions from this section.

13. (a) Write down the order in which arithmetic operators are evaluated. How are the operators at the same level operated? (4 marks)

(b) Evaluate the expression $[a + A/(22/7)]^3$ where A = 154. (3 marks)

(c) List down the three types of information processing systems. (3 marks)

14. (a) Dry run the following nested FOR/NEXT loop and write down the output.

```
10  FOR i = 1 To (3 * 4) STEP - 4
20      FOR j = 1 To 2 STEP - 1
30          PRINT i, j
40      NEXT j
50  NEXT i
```

(6 marks)

(b) (i) What is a variable? (1 mark)

(ii) Differentiate a numeric variable from a string variable. (3 marks)

15. (a) What steps are followed in setting up a counter for loop control? (3 marks)

(b) What input statements are available in BASIC? Explain the use of each statement. (4 marks)

(c) What is the need of using RESTORE statement? (3 marks)

16. (a) What is the advantage of using arrays? (4 marks)

(b) Write a BASIC program which prints the largest number in an array of 10 numbers. (6 marks)

17. (a) Development of a program can be broken down into six phases. State them. (6 marks)

(b) Differentiate library functions from user-defined functions. (4 marks)

18. (a) Explain three types of errors which a programmer may encounter when preparing a BASIC program. (6 marks)

(b) (i) What is an email? (1 mark

(ii) List two advantages and two disadvantages of the email. (3 marks)