1920/203
STRUCTURED PROGRAMMING
July 2017
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY

MODULE II

STRUCTURED PROGRAMMING

3 hours

INSTRUCTIONS TO CANDIDATES

*This paper consists of **TWO** sections; A and B.*
*Answer **ALL** the questions in section A and any **FOUR** questions in section B in the answer booklet provided.*
Candidates should answer the questions in English.

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.

Turn over

SECTION A (40 marks)

Answer ALL questions in this section.

1. The following is a program code written in one of the programming languages:

   ```
   LDA  34
   ADD  #1
   STO  34
   ```

   (a) Identify the generation of programming language. (1 mark)

   (b) State **three** benefits of using the generation language. (3 marks)

2. Distinguish between a *program* and *programming* as used in software development.

   (4 marks)

3. Given that the value of a variable X is 90. State the output when each of the following statements is executed in C programming language. (4 marks)

   (a) X += 25;

   (b) X *= 2;

   (c) X-= 42;

   (d) X %=3

4. State the difference between *putchar(a)* and *putchar a[0]* statements as used in C programming. (2 marks)

5. With the aid of a syntax statement, describe the **three** parts of a *for loop* as used in C programming language. (4 marks)

6. (a) Describe the term *white space* as used in C programming language. (2 marks)

   (b) State **two** examples of white space characters as used in C programming. (2 marks)

7. Distinguish between *call by value* and *call by reference* as used in programming. (4 marks)

8. (a) Outline **three** places in a C program where a variable can be declared. (3 marks)

   (b) Outline the function of each of the following statements in a C program: (3 marks)

       (i) int mult(int x,int y)

       (ii) Scanf("%d%d",&a&a)

       (iii) Scanf("%s",t(i))

9. State the difference between r+ and w+ file commands as used in C programming. (4 marks)

10. Describe **two** parts of a pointer declaration as used in C programming. (4 marks)

SECTION B (60 marks)

*Answer any **FOUR** questions in this section.*

11   (a)   Outline **four** operations that can be performed on a linked list.   (4 marks)

       (b)   Andrew would like to develop a system using one of the programming languages. Explain **three** factors that he should consider when selecting the appropriate language.
             (6 marks)

       (c)   Write a C program code that would prompt a user to enter 10 integer numbers. The program should then sum up the numbers and display the results. Use a *while loop*.
             (5 marks)

12   (a)   Explain each of the following terms as used in programming:

           (i)   Interpreter;

           (ii)   editor.   (4 marks)

       (b)   Explain **two** factors to consider when declaring *formal parameters* in C programming.
             (4 marks)

       (c)   Write a C program code that would prompt a user to enter two numbers. The program should then use a function to compute the sum of the two numbers and display the results.
             (7 marks)

13   (a)   Outline the function of each of the following printf () format specifies used in C programming.   (3 marks)

           (i)   %c

           (ii)   %e

           (iii)   %f

       (b)   (i)   Describe the term *technical documentation* as used in programming.   (2 marks)

           (ii)   Annet would like to include information in the program documentation that would assist users of the system. Outline **four** types of information that she should include in the document.   (4 marks)

       (c)   Write a C program code that would prompt a user to enter two integer values. The program should then compute the product of the two numbers and display the output.
             (6 marks)

14   (a)   Outline **three** reasons for declaring variables in a program.   (3 marks)

       (b)   Distinguish between a *bubble sort* and a *selection sort* as used in data structures.
             (4 marks)

(c)   Write an algorithm that would be used to add an element into a stack.   (4 marks)

(d)   Write a C program code that would initialise variable *num* to 10. The program should then display the value and address of variable *num*.   (4 marks)

15   (a)   Explain the use of a flowchart in program design.   (2 marks)

    (b)   Distinguish between *decision tree* and *decision table* as used in program design.   (4 marks)

    (c)   Explain each of the following terms as used in data structures:

        (i)   queue;

        (ii)   linked list.   (4 marks)

    (d)   Write a C program code that accepts two strings of not more than 30 characters. The program should then join the two string values and display the output.   (5 marks)

THIS IS THE LAST PRINTED PAGE.