Name_____ Index No._____

1920/203
STRUCTURED PROGRAMMING
July 2015
Time: 3 hours

Signature _____

Date_____

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CERTIFICATE IN INFORMATION TECHNOLOGY

MODULE II

STRUCTURED PROGRAMMING

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of examination in the spaces provided above.
*Answer **All** the questions in section A and any **FOUR** questions in section B.*
Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum score	Candidate's score
A	1 - 10	40	
B	11	15	
	12	15	
	13	15	
	14	15	
	15	15	
		Total score	

This paper consists of 14 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** the questions in this section*

1. Outline the function of each of the following *preprocessor commands* as used in a C program.

(i) #include (1 mark)

(ii) #define (1 mark)

(iii) #if (1 mark)

(iv) #error (1 mark)

2. With the aid of an example in each case, distinguish between a *second generation* and a *fourth* generation programming languages. (4 marks)

3. Outline **two** differences between an *interpreter* and a *compiler* as used in programming. (4 marks)

4. Given that x=10 and y =14.State the *Boolean* results for each of the following.

(i) x!=y; (1 mark)

(ii) x++=12; (1 mark)

(iii) x>y; (1 mark)

(iv) y>x &&x<y. (1 mark)

5. Differentiate between a *break* and a *continue* statement as used in a C program. (4 marks)

6. Outline the function of each of the following escape *sequence* operators:

(i) \r (1 mark)

(ii) \f (1 mark)

(iii) \n (1 mark)

(iv) \t (1 mark)

7. Explain the role of each of the following C program statements.

printf("enter the student data"); (1 mark)

scanf("%d,%c,%s,&k,n,&d); (3 marks)

8. Marion developed a program using a C programming language. Explain **two** features of this language. (4 marks)

9. The following is a program written using à C programming language. Identify the errors in the program. (4 marks)

```
#include<stdioh>
Main()
{
int p[10],i;
float avg=0;
printf(enter 10 numericals);
for(i=0;i<=9;i++)
{
scan("%d",&p[i]);
}
for(i=0;i<=9;i++);
{
avg=avg+p[i];
}
avg=(float)avg/0;
printf("enter average is %k\n",avg);
```

10. Write a C program that would add 5 consecutive numbers starting from number 3. The program should then display the output after every counter. Use a *While loop.* (4 marks)

SECTION B (60 marks)

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

11. (a) (i) Outline **three** characteristics of a *pointer variable* as used in C programming. (3 marks)

(ii) Outline **two** disadvantages of using pointers when writing a C program. (2 marks)

(b) Distinguish between an *object oriented* and *structured programming* language. (4 marks)

(c) Write a C program that will display *value* and the *address* of variable *a* given that a=5.Use pointers. (6 marks)

12. (a) Outline the function of each of the following file modes used in C program.

(i) r+ (1 mark)

(ii) a+ (1 mark)

(iii) w (1 mark)

(b) (i) Describe a sorting technique that uses the *divide and conquer* method. (3 marks)

(ii) Write a Pseudo code that would be used to perform a selection sort as used in data. (4 marks)

(c) Write a C program that would compute and display the area of two rectangles given that the length and width are 10, 15 and 20,40 respectively. *Use functions.* (5 marks)

13. (a) (i) State the difference between *getw()* and *putw()* as used in C Programming language. (2 marks)

(ii) Explain **two** ways in which parameters can be passed to a function in C programming. (4 marks)

(b) Mercy is in the process of developing a system. Describe **two** types of documentations that she is likely to come up with. (4 marks)

(c) Write a C program that would prompt the user to enter the choice of fruit and display the message as shown in table 1.Use a *case statement.* (5 marks)

Character	**Message**
O,o	I love Oranges
A,a	My best fruit is apple
B,b	Bananas are sweet
Any other	I don't know the taste

Table 1

14. (a) Marion used a linear search to locate a record in a file. Outline **two** advantages of this type of search in programming. **(2 marks)**

(b) Mathew used arrays to display information. Explain **two** disadvantages he may have realised.
(4 marks)

(c) Distinguish between *formal* and *actual parameters* as used in C programming language.
(4 marks)

(d) Write a C program that would prompt a user to enter two numbers and check whether the numbers are equal. Use an *If Statement.*
(5marks)

15. (a) Describe each of the following *design tools* as used in programming.

(i) data flow diagram; (2 marks)

(ii) decision table. (2 marks)

(b) Write a C program that would accept a word and display the length of the word. (5 marks)

(c) Aggy wants to develop an information system for an organization. Explain **three** factors she should consider when selecting an appropriate language to use for developing the system. (6 marks)