



THE CO-OPERATIVE UNIVERSITY OF KENYA

END OF SEMESTER EXAMINATION NOVEMBER -2023

**EXAMINATION FOR THE DIPLOMA IN BUSINESS INFORMATION
TECHNOLOGY (YR I SEM II)**

UNIT CODE: DCSC 1102

UNIT TITLE: PROGRAMMING CONCEPTS

DATE: WEDNESDAY 29TH NOVEMBER, 2023

TIME: 9:00 AM – 11:00 AM

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INSTRUCTIONS:

- **Answer ALL Questions in Section A (Compulsory) and choose any other TWO Questions in Section B**

SECTION A

QUESTION ONE

(a) Create a C program that displays the text "hello world" (3 marks)

(b) What distinguishes an array from a list? (2 marks)

(c) Define the purpose of the following equipment: (2 marks)

a. Debugger

b. Library

(d) Determine the output of the subsequent code: (2 marks)

```
#include int main()
```

```
{
```

```
char var1; printf("Enter character: ");
```

```
scanf("%c",&var1);
```

```
printf("You entered %c.\n",var1);
```

```
/* \n prints the next line(performs work of enter).
```

```
*/ printf("ASCII value of %d",var1);
```

```
return 0;
```

```
}
```

(e) How would you define a compiler? (2 marks)

(f) Contrast the roles of an object and a class in C. (2 marks)

(g) Differentiate between a class and an object. (2 marks)

(h) Utilizing code examples, illustrate the distinctions between the do-while and while conditions. (4 marks)

(i) Define the term "variable." (2 marks)

- (j) Develop a simple code that prompts the user for two numbers, adds them together, and displays the result on the console. (5 marks)
- (k) Compare a local variable and a global variable. (4 marks)

SECTION B

QUESTION TWO

- (a) Design a program that prompts the user to input an employee's name, number of hours worked, and calculates the PAYE for the first 20 employees. The program should terminate after processing 20 employees. Each employee is paid a constant salary of 200 per hour worked. (10 marks)
- (b) Create a basic calculator program that supports the following operations: addition (+), subtraction (-), division (\div), and multiplication (\times). (10 marks)

QUESTION THREE

- (a) Implement a C program using a "Switch" case to display the twelve months of the year. (12 marks)
- (b) Explain the concepts of encapsulation, data hiding, inheritance, and polymorphism in the context of C. (8 marks)

QUESTION FOUR

- (a) Define the functionalities of the following operators: %, !, &&, ||, and ++. (10 marks)
- (b) Develop a C program that compares two numbers and outputs the smaller of the two. (10 marks)

QUESTION FIVE

Create a C program that implements a simple inventory system. Design a class `Product` with private attributes for product code, name, and quantity in stock. Include member functions to update the quantity, display product information, and check if the product is low in stock (quantity < 10). In the `main` function, create an array of `Product` objects, perform updates, and display product details. (20 marks)