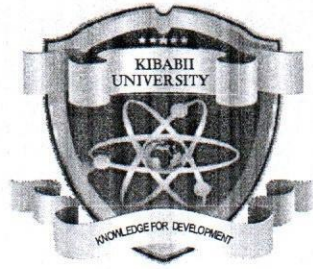


15



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

**UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR**

**MAIN EXAMINATIONS
YEAR ONE SEMESTER TWO EXAMINATIONS**

**FOR THE DIPLOMA
(INFORMATION TECHNOLOGY)**

COURSE CODE: DIT 066

COURSE TITLE: PROCEDURAL PROGRAMMING

DATE: 04/10/2021

TIME: 9.00AM – 11.00AM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (24 MARKS) – COMPULSORY

- a. Study the code snippet below and answer the following questions

```
#include <stdio.h>
int main()
{
    const int p;
    p = 4;
    printf("p is %d", p);
    return 0;
}
```

- i. What will be the output of the following C code? **[2 marks]**
- ii. State a reason for your answer in b (i) above. **[2 marks]**
- b. Distinguish between machine language and symbolic language based on form and translator. **[4 marks]**
- c. The area of a rectangle is the product of the length and the width. Write a C program that reads the length and the width of the rectangle from the keyboard, computes the area of the rectangle and displays the area on the standard output (screen monitor). **[6 marks]**
- d. Using flowchart constructs, explain the differences between **while** and **do ... while** statements. **[6 marks]**
- e. Musoke, an upcoming programmer is contemplating embarking on system development for his small workshop but is at a loss on whether to use interpreted language or compiled language. He has sought your opinion on why he should use either of the languages. Advise him appropriately. **[6 marks]**

QUESTION TWO (18 MARKS)

- a. Contrast the following terms as used in C programming? **[4 marks]**
 - i) Source code and object code
 - ii) Literal Constant and Symbolic Constant
- b. Write C function that will return the cube of an integer passed. **[6 marks]**
- c. Given the following grading system, write a C program to demonstrate how you would implement the same using switch statement. **[8 marks]**

| Average | Grade |
|---------|-------|
| 70-100 | A |
| 60-69 | B |
| 50-59 | C |
| 40-49 | D |
| 0-39 | F |

QUESTION THREE (18 MARKS)

- a. A variable can be any sequence of characters that may include: a-z, A-Z, 0-9 and `_` additionally a variable name must be unique within its scope and is case sensitive. State three other rules that a variable must follow. [3 marks]
- b. Fill the following table by describing what each of the escape characters will do [3 marks]

| Escape Character | Description |
|------------------|-------------|
| <code>\n</code> | |
| <code>\t</code> | |
| <code>\a</code> | |

- c. Mary, a mathematics student at KAFUCO has been from a programming class where her teacher advised her to use functions in doing an assignment. She's is wondering why she should use functions while she can accomplish the same thing without functions. Give her your considered advice with reasons. [4 marks]
- d. Write a C program that stores integers given by users in a one-dimensional array. Your program should display the sum and average of the array. [8 marks]

QUESTION FOUR (18 MARKS)

- a. Using relevant examples, explain the use of `scanf` and `printf` functions. [4 marks]
- b. Giving example, discuss three types of programming errors. [6 marks]
- c. Study the following code snippet and answer the questions that follow.

```
#include <stdio.h>
int sum(int x, int y)
{
    return x+y;
}
int main ()
{
    int num1=10, num2=30, ans=0;
    ans=sum(num1, num2);
    printf("The sum of %d and %d is: %d", num1, num2,ans);
    return 0;
}
```

Required:

- i. What is the output of the above code? [1 mark]
- ii. what is `stdio.h` and why is it enclosed in angle brackets (<>)? [2 marks]
- iii. Explain the flow of program execution. [5 marks]

QUESTION FIVE (18 MARKS)

- a. Explain modular programming. [2 marks]
- b. Identify any four advantages of modular programming. [4 marks]
- c. Discuss any three factors to consider when choosing a programming language. [6 marks]

- d. The Fibonacci sequence is one of the most famous formulas in mathematics. Each number in the sequence is the sum of the two numbers that precede it. So, the sequence goes: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, and so on. The mathematical equation describing it is $X_{n+2} = X_{n+1} + X_n$. Write a C program that uses recursion to generate the Fibonacci series. **[6 marks]**