PAN AFRICA CHRISTIAN UNIVERSITY

(DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY)

END OF TERM EXAMINATION

DEPARTMENT:	**COMPUTING & INFORMATION TECHNOLOGY**
COURSE CODE:	**CICT 0113**
CAMPUS:	**ROYSAMBU**
COURSE TITLE:	**INTRODUCTION TO PROGRAMMING CONCEPTS**
EXAM DATE:	**MONDAY, (12TH APRIL 2021)**
TIME:	**START HOUR – END 02:30-05 :30 HRS**

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other THREE questions in Section **B.**
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A
(Answer ALL questions in this section)

SECTION A (10 Marks)

Question 1:

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

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i. Identify the generation of programming language **(1 Mark)**

ii. State three disadvantages of using the language **(3 Marks)**

b. 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)**

SECTION B

(Answer any THREE (3) questions in this section)

Question 2:

a. Below is a C program to calculate sum of two numbers. The program contains errors. Identify the errors **(5 Marks)**

```
#include<stdio>
void mane()
{
char a,b,c;
print("Please enter any two numbers: \n");
scanf("%d %d", &a, &b);
c =  a - b;
printf("The addition of two number is: %d", c);
```


b. Below is an array of unsorted data. Show the steps that a bubble sort technique would go through to sort the values in ascending order **(5 Marks)**

68	20	45	53	10	90

Question 3:

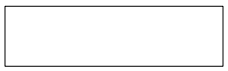
a. Below is a C program, give the expected output when the program executes **(5 Marks)**

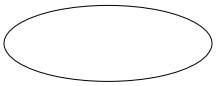
```
#include <stdio.h>

int main() {

   int a = 20;

   int b = 10;

   int c = 15;

   int d = 5;

   int e;


   e = (a + b) * c / d;

   printf("Value of (a + b) * c / d is : %d\n",  e );

   e = a + (b * c) / d;

   printf("Value of a + (b * c) / d is  : %d\n" ,  e );

   return 0;

}
```

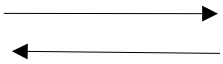
b. John is a student at PAC university. He intends to utilize a queue or a stack data structure in writing a program. Advise him on the differences in the operations between the two data structures **(5 Marks)**

Question 4:

a. Below are some of the components that can be used in the construction of a DFD diagram. Briefly explain the function of each components **(4 Marks)**

i) 

ii) 

iii) 

iv) 

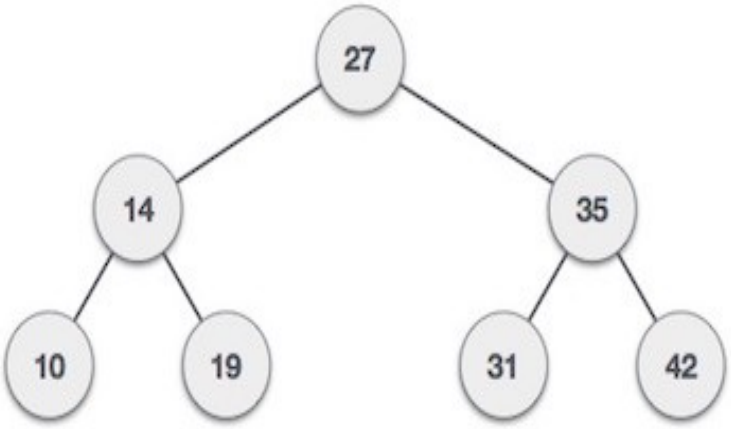
b. The following program was created by a student during a programming lesson. Use it to answer the question that follows.

```
#include <stdio.h>
Main()
{
Int a=0, int b=15; int c;
If{a && b}
{
Printf("Line 1 – condition is true\n");
}

If{a || b}
{
Printf("Line 2 – condition is true\n");
}
}
```

Interpret the program **(6 Marks)**

Question 5:

a. The figure below shows a binary tree structure, use it to answer the questions that follows **(4 Marks)**



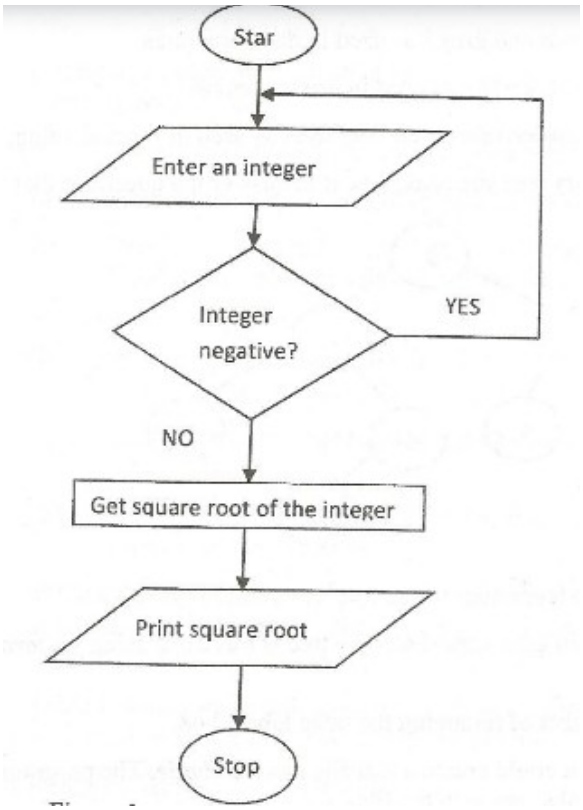
i. Identify all the leaf nodes in the tree

ii. Show how you would traverse the tree using pre-order traversal

b. The C programming language has different types of operator. Discuss any three **(6 Marks)**

Question 6:

The diagram below shows a flow chart used to solve a mathematical problem. Use it to answer the questions that follows



i. Interpret the diagram above **(4 Marks)**

ii. Write a C program to implement the program logic in the flow chart **(6 Marks)**

THE END