



PAN AFRICA CHRISTIAN UNIVERSITY

CERTIFICATE IN INFORMATION COMMUNICATION TECHNOLOGY

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: CICT 0113

CAMPUS: ROYSAMBU

**COURSE TITLE: INTRODUCTION TO PROGRAMMING
CONCEPTS**

EXAM DATE:

TIME:

INSTRUCTIONS

- This exam paper has **six** questions

- Read all questions carefully before attempting.
- Answer all questions in Section A and any other **three** questions in Section B.

SECTION A (COMPULSORY)

Question one

a) Define the following terms as used in C++ programming

- i) Computer program
- ii) Source code
- iii) Algorithm
- iv) Data types
- v) Programming language

[5Marks]

b) Write a C++ program that reads two integers numbers and calculates it's sum

[5 Marks]

SECTION B (ATTEMPT ANY THREE QUESTIONS)

Question two

a) Identify any **FOUR** data types in the program below.

[4 Marks]

```
#include<iostream>
using namespace std;

int main()
{
    cout<<"Primitive datatypes sizes: "<<endl;
    cout << " short int: " << sizeof(short int)
    << " bytes" << endl;
    cout << " unsigned short int: " << sizeof(unsigned short int)
    << " bytes" << endl;
    cout << " int: " << sizeof(int)
    << " bytes" << endl;
    cout << " unsigned int: " << sizeof(unsigned int)
    << " bytes" << endl;
    cout << " long int: " << sizeof(long int)
```

```

<< " bytes" << endl;
    cout << " unsigned long int: " << sizeof(unsigned long int)
<< " bytes" << endl;
    cout << " long long int: " << sizeof(long long int)
<< " bytes" << endl;
    cout << " unsigned long long int: " << sizeof(unsigned long long int)
<< " bytes" << endl;
    cout << " char: " << sizeof(char)
<< " byte" << endl;
    cout << " signed char: " << sizeof(signed char)
<< " byte" << endl;
    cout << " unsigned char: " << sizeof(unsigned char)
<< " byte" << endl;
    cout << " float: " << sizeof(float)
<< " bytes" << endl;
    cout << " double: " << sizeof(double)
<< " bytes" << endl;
    cout << " long double: " << sizeof(long double)
<< " bytes" << endl;
    cout << " wchar_t: " << sizeof(wchar_t)
<< " bytes" << endl;

return 0;
}

```

- b) Identify any **THREE** programming errors types that are displayed in the program [6 Marks]

```

#include <iostream>

int main
{
    assigning an int value to num int
    Int nu mint = 9;
    //declaring a double type variable
    double num_double;
    //implicit conversation
    //assigning int value to a double variable
    num_double= num_int;
    cout<<"num_int="<<num_int<<endl;
}

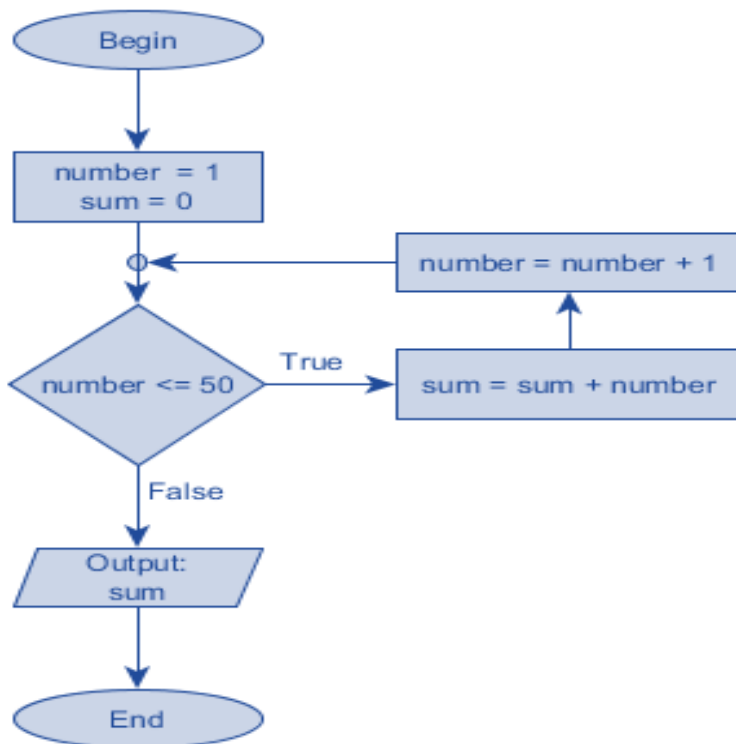
```

```

        cout<<"num_double="<<num_double<<endl;
    return ;
}

```

Question three



a) Explain the flow chart below

[6Marks]

b) Write the algorithm of the above Flowchart

[4 Marks]

Question four

a) Write a C++ program that checks if the number is Even or Odd

[5 marks]

b) Write a C++ program that prints “ Hello world” [5 Marks]

Question five

a) Identify any **THREE** parts of a C++ program in the code below

[6 Marks]

```
#include<iostream>
using namespace std;
#define MAX_SIZE 101 //maximum size of the array that will store Queue.

// Creating a class named Queue.
class Queue
{
private:
    int A[MAX_SIZE];
    int front, rear;
public:

    Queue()
    {
        front = -1;
        rear = -1;
    }

    // To check wheter Queue is empty or not
    bool IsEmpty()
    {
        return (front == -1 && rear == -1);
    }

    // To check whether Queue is full or not
    bool IsFull()
    {
        return (rear+1)%MAX_SIZE == front ? true : false;
    }

    // Inserts an element in queue at rear end
    void Enqueue(int x)
    {
        cout<<"Enqueuing "<<x<<" \n";
        if(IsFull())
        {
            cout<<"Error: Queue is Full\n";
            return;
        }
        if (IsEmpty())
```

```

        {
            front = rear = 0;
        }
        else
        {
            rear = (rear+1)%MAX_SIZE;
        }
        A[rear] = x;
    }

// Removes an element in Queue from front end.
void Dequeue()
{
    cout<<"Dequeuing \n";
    if(IsEmpty())
    {
        cout<<"Error: Queue is Empty\n";
        return;
    }
    else if(front == rear )
    {
        rear = front = -1;
    }
    else
    {
        front = (front+1)%MAX_SIZE;
    }
}

// Returns element at front of queue.
int Front()
{
    if(front == -1)
    {
        cout<<"Error: cannot return front from empty queue\n";
        return -1;
    }
    return A[front];
}

```

b) Write a program to demonstrate how comments are used in C++ [4 Marks]

Question six

You're called upon for an interview in an ICT Company for a programming and software engineering job, the interviewer asks you to develop a C++ program for the Company. Discuss all the stages /structure of the C++ program. **[10**

Marks]