NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

QUALIFICATION: Bachelor Of Computer Science	
QUALIFICATION CODE: 07BACS	**LEVEL:** 7
COURSE: Advanced Programming	**COURSE CODE:** APG710S
DATE: June 2016	
DURATION: 3 Hours	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Ms Ndinelago T Nashandi
MODERATOR:	Prof. Rafael Rodríguez-Puente

THIS QUESTION PAPER CONSISTS OF _4_ PAGES
(Including this front page)

INSTRUCTIONS

1. This paper consists of 2 sections; A and B.
2. Answer ALL the questions.
3. Write clearly and neatly.
4. Number the answers clearly.

SECTION A (50 Marks)

1. Define and explain the following terms:[10 marks]

    1. Smart Pointers

    2. Constructors

    3. Destructor

    4. Method Overloading

    5. Inline function

2. What are the benefits of using Java over C++?[4 marks]

3. Match the following terms with the definitions given below: [5 Marks]

    a) Argument

    b) Parameter

    c) Function call

    d) Function prototype

    e) Local variable

        I.   A function declaration without a body

        II. A variable declared in a function heading

        III. A variable or expression listed in a call to a function.

        IV. A statement that transfers control to a function.

        V.   A variable declared within a block.

4. As a software developer, variable names have several naming rules and one has to adhere to them. Identify any three of these rules.[3 marks]

5. Does the function have to be declared before it called? Explain [3 marks]

6. Write a C++ Program to illustrate how the WHILE Loop is used.[4 marks]

7. What is the difference between a function declaration and a function definition? Give examples[6 marks]

8. Explain the two types of parameters passing used in C++ functions? [4 Marks]

    1. Passed by value. [2 marks]

    2. passing by references.[2 marks]

9. Implement the following function: [2 marks]

    double mean (double x, double, double z);

    //return the mean average of x, y and z

    //Example mean (4, 4, 4) returns 4.0

10. What is the difference between a structure and an array in C++?[4 Marks]

11. Name and explain the three components of standard Template Library.[6 Marks]

SECTION B (50 Marks)

1. **Fill in the blanks in the following program** [9 marks]

//This program reads in radius of the two circles from file inData and calculates the
//circumference and the area of the two circles. The output is written to file outData in this
//format: **Radius, circumference and area**

```
#include_____
#include <fstream>
Using namespace

_____ inData;
_____ outData;
Constant float PI=3.14;
_____ >>radius;
float radius;
float circumference;
float Area;
int main()   {
             _____ ("inData.dat");
             _____ ("outData.dat");
             _____>>radius;
        Circumference =radius* 2*PI;
        Area=radius*radius*PI;
        cout<<"for   the   first   circle,   the   circumference   is"<<circumference<<"and   the
        area"<<Area<<endl;
                 _____<<radius<<" "<<circumference<<" " <<area<<endl;
                 _____>>radius;
        Circumference =radius* 2*PI;
        Area=radius*radius*PI;
        cout<<"for   the   first   circle,   the   circumference   is"<<circumference<<"and   the
        area"<<Area<<endl;
                 _____<<radius<<" "<<circumference<<" " <<area<<endl;
        return 0;
}
```

2. Why does the following if statement always output"false" regardless of the value in someInt? Fix the error.[3 marks]

```
if(someInt = 0)
Cout<<"true";
else
cout<<"false";
```

3. Write a function which accepts an integer value as input, and returns an integer which is the cube of that input.[3 marks]

4. Write a function template called Thrice that receives a parameter of any number related type and returns three times that value and write a calling code that calls Thrice two times,once with an integer argument and once with a double argument.[8 marks]

5. Write a program to read three numbers x, y and z and evaluate R given by: $R=z/(x-y)$. Use exception handling to throw an exception in case division by zero is attempted.[7 marks]

6. Define a class **Laptop** with the details given below:[20 marks]
   - ➤ **Company** of type string
   - ➤ **modelNo** of type String
   - ➤ **screenSize** of type integer
   - ➤ **Price** of type integer
   - ➤ A function setPrice() to supply value for Price as follows
     - o If screensize is **14** and company is **HP** then Price will be 43000
     - o If screensize is **15** and company is **HP** then Price will be 45000
     - o If screensize is **14** and company is **DELL** then Price will be 42000
     - o If screensize is **15** and company is **DELL** then Price will be 44000

Public members:
   - • A default constructor to supply initial values for Company, modelNo, screenSize, as "Not Assigned", "Not Assigned", 0
   - • A destructor
   - • A function setdetails() that supplies values for Company, ModelNo, Screensize and invokes setPrice() function.
   - • A function display() that returns the string representation of all the Laptop details.

****End of Examination****