AFRICA NAZARENE

UNIVERSITY

Instructions:

1. Answer Question **One (Compulsory)** and any other **TWO** questions.

2. Write all your answers in the answer booklet provided

3. **DO NOT** write on the question paper.

4. Time allowed: **Two** Hours

Question One (Compulsory - 30marks)

a) Differentiate between source code and object code. **[2 Marks]**

b) Briefly describe the pre-process and link phases of developing a c++ program. **[4 Marks]**

c) Differentiate between struct data type and an array. **[2 Marks]**

d) Declare and initialize a constant variable of data type double. **[2 Marks]**

e) Not providing equal number of curry braces leads to what type of c++ error? **[1Mark]**

f) What is an algorithm? And what are the 2 ways of representing an algorithm. **[3 Marks]**

g) Using appropriate examples differentiate between the 3 types of control structures.

[3Marks]

h) Why would a programmer use a switch statement over an if/else statement. **[2 Marks]**

i) What data types are supported in a c++ switch statement expression? **[2 Marks]**

j) How are array elements accessed? **[1 Mark]**

k) Declare a 2 dimensional array. **[2 Marks]**

l) In reference to pointers differentiate between address-of (&) operator and dereference operator (*) **[2 Marks]**

m) Using a single c++ statement write a function prototype of a function whose data type is an int and consists of two integers as the parameters. **[2 Marks]**

n) Differentiate between the ofstream and fstream classes as used in c++ programming.

[2 Marks]

TOTAL: 30 MARKS

Question Two

a) Write some code segment that prints out an array of doubles of size N **[3 Marks]**

b) Write some code segment that multiplies each element of an array by 2, storing it back in the array. **[3 Marks]**

c) When writing a C++ program, you think that you should design three functions to solve individual subtasks, as well as the usual int main() function to put all the pieces together in the correct order to solve the actual task completely. Which of these functions do you design first? Explain your answer. **[2 Marks]**

d) Write a *complete* program that contains a main function and a function **isPositive** that takes as input a double number and returns the integer 1 if the number is positive, and zero otherwise. The program should ask the user to enter an integer and displays the value returned by the **isPositive** function. **[7 Marks]**

TOTAL: 15 MARKS

Question Three

a) Using an if/else statement write *complete* c++ program that gets a student score (double number) from the user, determines the student grade based on the conditions provided below and display the grade on the screen.   **[8 Marks]**

Score (range)	Grade
0-40	F
41-60	C
61-80	B
81-100	A

b) Using a while loop write a *completec++* program that reads a real number as input and adds it to a running total until the user enters the number -1. At that time the program should print out the final sum (not including, of course, the number -1).   **[7 Marks]**

TOTAL: 15 MARKS

Question Four

a) Rewrite the below program using the for loop   **[5 marks]**

```
// while loop
#include <iostream>
using namespace std;
intmain (){
intx=10;
while(x>=0) {
cout<<"I am sorry"<<endl;
x--;
}
system("pause");
return0;
}
```

b) Suppose we have a pointer p. Briefly explain the difference between the two cout statements below.

```
cout<< p;
cout<< *p;
```
                                    [2 marks]

c) Write a pseudo code and draw a flow chart to show the procedure of adding integer 10 and 20. The program will take a variable sum and set it to zero. Then take the two numbers 10 and 20 as input. Next will add both the numbers and save the result in the variable sum i.e., sum = 10 + 20. Finally, print the value stored in the variable sum.
                                    [8 Marks]

TOTAL: 15 MARKS

Question Five

a) Differentiate local variable from global variable. [2 Marks]

b) Write a program using the switch statement that allows a user to input the provided characters and a message displaying the associative services shown alongside is displayed.
   a) Play game
   b) Load game
   c) Play multiplayer
   d) Exit [8 Marks]

c) Identify the errors in the bellow code segment: [5 Marks]

```
int y;
double sum;
while (Y<=10)
sum=+Y;
```

TOTAL: 15 MARKS