MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION

SCHOOL OF SCIENCE AND INFORMATION SCIENCES

UNIVERSITY EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE (STATISTICS WITH COMPUTER SCIENCE)

COURSE CODE: COM 400
COURSE TITLE: COMPUTER PROGRAMMING II

DATE: 17ᵀᴴ APRIL 2018   **IME: 11:00AM-1:00PM**

INSTRUCTIONS

1. Answer Question ONE and any other TWO Questions From Section II
2. Question 1 is compulsory.
3. Time 2HRS.
4. ***Mobile phones are not allowed in the exam room***.

This paper consists of 6 printed pages. Please turn over.

Section I, Compulsory (30 marks)

Question One

a) Give 3 reasons why it's important to comment your code. What are the two different ways to comment code in C++ and how are they different?

(5 marks)

b) Write the output of the following segments of code. **(6 marks)**

```
a.)
int x = 3;
cout << x << 2*x;
b.) cout << "\"Hello\\\n Gandalf!";
c.) int x = 7;
int y = 3;
cout << x/y << " and " << x%y;
```

c) Briefly explain and correct the error(s) in each of the code segments below. **(15 marks)**

```
(i)      string word;
         cout << "Enter a word: ";
         cin << word;
```

(ii)
```
cout << "Two plus two is " 2+2;
```

iii)
```
if ( x = 1 );
cout << x;
```

iv)
```
if ( x = 1 or 2 )
cout << x;
```

v)
```
//This code is supposed to compute 10!
int N = 10;
int factorial = 1;
while ( N >= 1 ) {
```

```
        factorial = factorial * N;
        N--;
        cout << "10! is " << factorial << ".\n";
        }
```

d) What is the value of n after each of the following C++ statements are
   executed?   **(4 marks)**

a)   int n = 0;
      if(!n)
         n = n + 2;
      if(n)
         n = -n;
      n = n + 2000;

b)   int n=1, a=4, b=6, c=8;
      if(a < 3 || b>5 && c<9)

            n = n + 15;

c)   int m=4, n=5, i=0, k=3;
      if(m>=0) if(k<=10) if(i>0) n=2; else if(n<4) n=3;
    else n=113; else n=105; else n=102;

d)   int n = 1;
      while (n < 11)
         if(n%3)
            n = n+2;
         else
            n = n+4;

Question Two

a) What is the output of the following program? Explain   **(12 marks)**

```cpp
#include <iostream.h>
void Test (int&, int, int&);
int main()
{
        int d = 12;
        int e = 14;
        int f = 10;

        Test(d, e, f);
        cout << d << ' ' << e << ' ' << f << endl;

        d = 15;
        e = 18;
        f = 20;
        Test (f, e, d);
        cout << d << ' ' << e << ' '<< f << endl;

        return 0;
}
void Test( int& s, int t, int& x)
{
        s = s + 2;
        t = 4 * s;
        x ++;
   cout << s << ' ' << t << ' ' << x << endl;
}
```

b) What is the output of the following program?   **(8 marks)**

```cpp
#include <iostream.h>
int Test(int&, int, int&);
int a = 2;
int b = 3;
int main()
{
        int b = 4;
        int c = 5;
```

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```cpp
    int d ;

    d = Test(a, b, c);
    b = b + 3;
    cout << a << ' ' << b << ' ' << c << ' ' << d << endl;

    return 0;
}

int Test(int& z, int x, int& y)
{
    z = 3;
    x = b;
    a = y + a;

    cout << z << ' '<< --x << ' ' << y++ <<' ' << a << endl;
  return (y - x);
}
```

Question Three

a) The program below is supposed to compute the average of two numbers. The program compiles without error, but does not correctly compute the average. Describe the logic error(s) and write the corrected lines. You do not need to rewrite the entire program. The line numbers are written along the left column to help you write your answer; they are not part of the program code. Make all appropriate changes to errors identified.

(12 marks)

```
1    # include <iostream>
2    using namespace std;
3    int main ( )  {
4            int total;
5            cout << "Enter a number: ";
6            int a;
7            cin >> a;
8            total = total + a;
9            cout << "Enter another number: ";
10           int b;
11           cin >> b;
12           total = total + a;
13           double average = total / 2;
14           cout << "The average is " << average << ".\n";
15           return 0;
16   }
```

b) Consider the following enum definition and C++ statements: **(8 marks)**
     enum weekdays {sun,mon,tue,wed,thur,fri,sat};
     weekdays day;

For each of the following statement, mark it with "True" if it is correct or "False" if it is incorrect.   (Please notice that compile warning is treated as correct.)
  (a) day = fri;
  (b) day = 3;
  (c) day = (weekdays)1;
  (d) int i = day;

Question Four

(a) Write a program (starting from #include) that repeatedly collects positive integers from the user, stopping when the user enters a negative number or zero. After that, output the product of all positive entries. A sample run should appear on the screen like the text below.   **(20 marks)**

```
Enter a number: 3
Enter a number: 10
Enter a number: 2
Enter a number: -213
The product of all your positive numbers is 60.
```

END//