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OF SCIENCE & TECHNOLOGY

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University Examinations 2012/2013

FIRST YEAR, SECOND SEMESTER, EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN COMPUTER SCIENCE
AND
SECOND YEAR, FIRST SEMESTER, EXAMINATION FOR THE DEGREE OF BACHELOR OF
BUSINESS INFORMATION TECHNOLOGY

ICS 2104: OBJECT ORIENTED PROGRAMMING I

DATE: DECEMBER 2012   **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE – 30 MARKS

a. Differentiate between the following:
    i.   Interpreter and compile   (2 Marks)
    ii.   Global and local variables.   (2 Marks)
b. State four unique features of a constructor.   (4 Marks)
c. Consider the following fragment code:
    Int temp, a=1;b=2;
    temp=a;
    b=a;
    a=temp;
    What will be the values contained by the variables 'a' and 'b' after the above code runs?   (4 Marks)

d. Suppose X, Y, Z are simple Boolean expressions and all currently have the value FALSE. How should
    the following expression evaluate? Show all your working.   (3 Marks)
    NOT X OR Y AND Z

e. Using appropriate examples explain the following errors:
    i.   Run time error   (2 Marks)
    ii.   Syntax error   (2 Marks)
    iii. Logical error   (2 Marks)

f. Suppose that the input is 38, 45, 71, 4, -1. What is the output of the following code? Assume all variables are properly declared. (3 Marks)

```
Sum=0;
C;in>>num;
While (num!=-1)
{
Sum=sum+num;
Cin>>num;
}
Cout<<"sum="<<sum<<endl;
```

g. Write a C++ program using switch statement that displays: (6 Marks)

4.0 when A is entered
3.0When B is entered
2.0 when C is entered
1.0 when D is entered
0.0 when E is entered
Invalid when any other grade is entered

QUESTION TWO – 20 MARKS

a. Define the following terms: (3 Marks)
   i. Object
   ii. Encapsulation
   iii. Modularity
b. Explain the concept of polymorphism as used in C++ (2 Marks)
c. State four programming styles that are used to make a programs source code user friendly. (4 Marks)
d. Explain two advantages of inheritance. (2 Marks)
e. Given

```
For i=12; i<=25; i++)
cout<<i;
```

Required:
   i. What will be the seventh integer printed? (2 Marks)
   ii. How many lines of output will the above code display? (2 Marks)
   iii. If i++ were changed to i--, a compilation error would result, true or false? (2 Marks)

f. What is the output of the following C++ code? (3 Marks)

```
x=100;
y=200;
If (x>100&&y<=200)
Cout<<x<<" "<<y<<" "<<x+y<<endl;
Else
Cout<<x<<""<<y<<" "<<2*x-y<<endl;
```

QUESTION FOUR – 20 MARKS

a. Define the following terms: (3 Marks)
  i. Infinite loop
  ii. Class
  iii. Data abstraction
b. Write the syntax of a value returning function. (2 Marks)
c. Explain information hiding in OOP. (3 Marks)
d. Explain constructors and destructors as used in OOP. (4 Marks)
e. Differentiate between hierarchical and multi level inheritance. (2 Marks)
f. Write C++ statement to do the following: (6 Marks)
  Declare int variable num 1 and num 2
  Prompt the user to input two numbers
  Input the first number in num 1 and the second number in num 2
  Output num 1, num 2 and 2 times 1 minus num 2. Your output must identify each number and the expression.

QUESTION FIVE – 20 MARKS

a. State four advantages of using functions in programming. (4 Marks)
b. Explain the role of #include directive in C++. (2 Marks)
c. Explain the effect of absence of break in a case/switch statement in C++ (3 Marks)
d. Explain three advantages of Object Oriented Programming. (6 Marks)
e. Write a C++ program using while loop to display the first 20 odd numbers. (5 Marks)