CS 101
First Exam 2010 – 2011
Form A

Multiple Choice
Identify the choice that best completes the statement or answers the question.(each one point)

_C___ **1.** The basic commands that a computer performs are _____, and performance of arithmetic and logical operations.

    a. input, file, list   c. input, output, storage
    b. output, folder, storage   d. storage, directory, log

_C___ **2.** A program called a(n) _____ translates instructions written in high-level languages into machine code.

    a. assembler   c. compiler
    b. decoder   d. linker

__A__ **3.** Suppose that `x` is an `int` variable. Which of the following expressions always evaluates to true?

    a. `(x > 0) || ( x <= 0)`   c. `(x > 0) && ( x <= 0)`
    b. `(x >= 0) || (x == 0)`   d. `(x > 0) && (x == 0)`

__C__ **4.** Which of the following expressions correctly determines that `x` is greater than `10` and less than `20`?

    a. `10 < x < 20`   c. `10 < x && x < 20`
    b. `(10 < x < 20)`   d. `10 < x || x < 20`

__B__ **5.** What is the output of the following C++ code?

```cpp
int x = 35;
int y = 45;
int z;

if (x > y)
    z = x + y;
else
    z = y - x;

cout << x << " " << y << " " << z << endl;
```
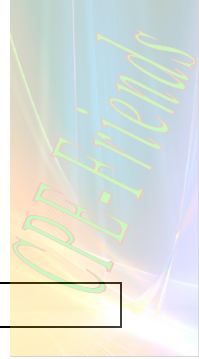
    a. `35 45 80`   c. `35 45 -10`
    b. `35 45 10`   d. `35 45 0`

Short Answer

6. Suppose that x, y, z, and w are int variables, and x = 3, y = 4, z = 7, and w = 1;
What is the output of the following statements? (5 Points)

		OUTPUT
A	cout << " x == y : " << (x == y) << endl;	x == y: 0
B	cout << " x != z : " << (x != z) << endl;	X != z : 1
C	cout << " y == z - 3 : " << (y == z - 3) << endl;	Y == z – 3: 1
D	cout << " ! (z > w) : " << ! (z > w) << endl;	! (z > w): 0

E	cout << " x + y < z : " << (x + y < z) << endl;	X + y < z : 0

7. Suppose a, b, and c are int variables and a = 5 and b = 6. What value is assigned to each variable after each statement executes? If a variable is undefined at a particular statement, report UND (undefined). (9 points)

	a	**b**	**c**
a = (b++) + 3;	9	7	und
c = 2 * a + (++b);	9	8	26
b = 4 * (++c) - (a++);	10	99	27

Problem

8. Rewrite the following statement without using *= and ++ (pre-increment and post-increment), assuming that var, a, and b are integers. (5 points)

var *= a++ - ++b;

```
var = var * a – (b+ 1);

a = a + 1;

b = b;
```

9. Rewrite the following statements using if statement: (6 points)

int x= -1;
x ? x++ : --x;
x ? cout<<x+1: cout<< x+2;

```
Int x = -1;

If(x)

        X = x++;

Else

        x = -x;

if (x)

cout << x+1;

else

        cout << x + 2
```

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10.   **Write s complete C++ program that reads a number x and then calculates and prints the value of y according to the following equations: (12 points)**

$$y = \begin{cases} x^2 - 1 & x >= 10 \\ 1 & 0 =< x < 10; \\ 1-x^3 & x < 0. \end{cases}$$

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

void main ()
{
        float x,y;
        cout << "Please Enter number x" << endl;
        cin >> x;
        if ( x >= 10)
                y = x*x -1;
        else
                if ( 0 <= x && x < 10)
                        y = 1;
                else
                        y = 1 - x * x * x;
        cout << "y = " << y << endl;
}
```

11. In the following code, correct any errors that would prevent the program from compiling or running: (rewrite the code). (12 points)

```
include <iostream>

main ( )
{
        int a, b;
        bool found;
        cout << "Enter two integers: ;
        cin >> a >> b;
        if a > a * b && 10 < b
                found = 2 * a > b;
        else
        {
                found = 2 * a < b;
                if found
                        a = 3;
                        c = 15
                        if  b
                                {
                                        b = 0;
                                        a = 1;
                                }
}
```

```cpp
#include <iostream>

using namespace std;

int main ()
{
    int a, b, c, found;
    cout << "Enter two integers: ";
    cin >> a >> b;

    if (a > a * b && 10 < b)
        found = 2 * a > b;
    else
    {
        found = 2 * a < b;
        if (found)
            a = 3;
        c = 15;
        if (b)
        {
            b = 0;
            a = 1;
        }
    }

    return 0;
}
```

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