UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2015

COURSE NO : **CE 174**
COURSE NAME: **PROGRAMMING IN C++**
CLASS : **CE I** TIME: **3 HOURS**

Name: ……Index Number: ……..

Section A. Answer all questions.

1. Suggest the outputs of each of the following C++ programs: [2 marks each]

int main()
{
int i,p=1,n=6;
for (i = 1; i <= n; i++)
p = p*i;
cout << "p=" << p;
system("pause");
return 0;
}
	(ii)
	int main()
	{
	int i,p=0,n=5;
	for (i = 1; i <= n; i++)
	p = p+i;
	cout << "p=" <<p;
	system("pause");
	return 0;
	}

(iii)
 	
int main()
{
int i,p,n=10;
int A[5] = {0};
for (i = 1; i<=n; i++)
{
if (i % 2 == 0)
A[i] = i;
}
for (i = 0; i < n; i++)
{
if (A[i]>0)
cout << "Values are: " << A[i] <<"\n"
}
system("pause");
return 0;
}
	(iv)
	int main()
	{
	int i,p=1,n=5;
	while (n>0)
	{
	p= p*n;
	n = n - 1;
	
	}
	cout << "p=" <<p;
	system("pause");
	return 0;
	}

(v) int main( ) {	(vi) int main( ) {

```
int  i = 0, x = 0;
while (i <= 20) {
   if (i % 5 == 0) {
      x += i;
      cout<<x;
     }
i++ ;
}
cout<<x;
}
```

```
int i = 0, x = 0;

do {
    if (i % 5 == 0) {
          x ++;
           cout<<x;
       }
 ++i ;
 }while(i < =20);
cout<<x;
}
```

(vii)

```
int main()
        {
         int i, x=0;
         for(i=1;i<10;i*=2)
            {
               x++;
               cout<<x;
             }
           cout<<x;
          }
```

(viii)

```
int main()
{
int i=0, x=0;
for(i=1; i<10; i++)
{
 if(i%2==1)
      x++;
 else
    x--;
 cout<<"x= "<<x;
}
 cout<<"x= "<<x;
}
```

2. There is something wrong with each of the listings below. Rewrite each; correcting the mistake.

[2 marks each]

(i)

```
if ( age >= 65 );
cout << "Age is greater than or
equal to 65" << endl;
  else
cout << "Age is less than 65 <<
endl";
```

(ii)

```
if ( age >= 65 )
  cout << "Age is greater than or equal to
65" << endl;
  else;
  cout << "Age is less than 65 << endl";
```

Section B. Answer all questions.

[1 mark each]

1. What's wrong with the statement: while((i < 10) && (i > 24))
   a) the logical operator && cannot be used in a test
   b) the while loop is an exit-condition loop

c) the test condition is always false
d) the test condition is always true

2. What's wrong? for (int k = 2, k <=12, k++)
   a) the increment should always be ++k
   b) the variable must always be the letter i
   c) there should be semicolon at the end of that statement
   d) the commas in the given statement should have been semicolons.

3. Which looping process is best used when the number of iterations is known?

   a) for b) while c) do-while

   d) for any looping process, the number of iterations must be known.

4. In a group of nested loops, which loop is executed the most number of times?

   a) the outermost loop b) the innermost loop

   c) all loops are executed the number of times
   d) cannot be determine without knowing the size of the loop.

5. Which looping process checks the test condition at the end of the loop?
   a) for b) while c) do-while d) non of the above

6. A user defined function declared as void func() will return _____
   a) An integer b) A float c) No value d) A character

7. Which of following is not a logical operator?
   a) && b) || c) ! d) >

8. Which of the following is a valid construction of a variable name?
   a) 174ce b) ce 174 c) ce_174 d) 174_ce

9. All the following are rules to observe in naming variables in C++ except ……..
   a) The first character in the variable name must be an alphabet or underscore.
   b) Variable names are case-sensitive.
   c) No commas or blanks are allowed within a variable name.
   d) Other special symbols aside the underscore can be used in a variable name.

10. Which of the following is false about pseudo codes?
    a) Pseudo code is text based
    b) Pseudo codes can neither be compiled
    c) nor executed
    d) Pseudo codes are language dependent
    e) Pseudo codes are language are independent

Section C. Answer 2 questions

[30 Marks]

Question Two

A software system works as follow: It prompts a user to enter a 2-digit number. If the number entered by the user is a member of **an array A**, then a function **fact()** is invoked to find and display the factors of that number on the screen. If the number entered is a member of **an array B**, then a function **multi()** is invoked to find and display the **first five** multiples of that number on the screen. If the number entered is neither a member of **array A** nor **B**, the program simply displays a message telling the user that, the number entered could not be found. (**Arrays A** and **B** are given as follows: **A={10,20,30,40,50,60}, B={15,25,35,45,55,65})**

a) Draw a flow chart to illustrate the work of the software system described above (5 marks)

b) ***Write a program in c++ which function in exactly the same way as the software system described above*** [10 marks]

Question Three

a) Write a program in C++ which finds and returns the row (s) and column(s) of all the negative integers in a two dimensional array. The program must require the array elements to be entered through the keyboard at runtime. [10 marks]

b) Write pseudo codes to illustrate the process in (a) above. [15 marks]

For example, given the two dimensional array in fig. 2, the program should give the following output:

-4 is found on row 1 and column 3

-10 is found on row 2 and column 1

-30 is found on row 3 and column 4

1	2	-4	5
-10	7	18	0
20	15	11	-30

Question Four

A computer system works by prompting a user to enter a number. If the number is even, the system calculates the square of the number and prints it on the screen, and asks for another number. If the number is odd, the system calculates the cube of the number and prints it on the screen, and then asks for another number. The system continues this way until the user enters the number 0 (zero).

a) Draw a flow chart to illustrate the work of the system described above. [5 marks]

b) Using an appropriate loop structure and branching statements, write a C++ program that works in the same manner as the system above. [10 marks]

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