



COLLEGE OF ENGINEERING, SCIENCE & TECHNOLOGY
SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING
TRADE DIPLOMA IN ELECTRICAL ENGINEERING
FINAL EXAMINATION -TRIMESTER 1, 2017
EEE 554 COMPUTER SYSTEM

INSTRUCTIONS TO CANDIDATES

1. There are Five (5) sections (A - E). **All sections are compulsory.**
2. Write your answers legibly in the answer booklet provided.
3. A time of three (3) hours is allowed to complete this paper. Extra 10 minutes allowed to read the paper.
4. You may use blue or black ball pen to write your answers.
5. Insert all written foolscaps, graph paper, drawing paper, etc. in their correct sequence and secure with string provided.
6. Write your student identification number on each page used.
7. Begin each answer on a fresh new page and use both sides of the sheets.
8. No GSM mobiles or smartphones allowed during the examination

Section A: Multiple Choice (15 Marks)

1. The value 132.54 can be represented using which data type?
 - a) double
 - b) void
 - c) int
 - d) bool
2. How many types of returning values are present in C++?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
3. What will you use if you are not intended to get a return value?
 - a) Static
 - b) Const.
 - c) Volatile
 - d) Void
4. Where does the return statement return the execution of the program?
 - a) Main function
 - b) Caller function
 - c) Same function
 - d) None of the mentioned
5. What will be used when terminating a structure?
 - a) :
 - b) }
 - c) ;
 - d) ::
6. What will happen when the structure is declared?
 - a) It will not allocate any memory
 - b) It will allocate the memory
 - c) It will be declared and initialized
 - d) None of the mentioned

7. The declaration of structure is also called as?

- a) Structure creator
- b) Structure signifier
- c) Structure specifier
- d) None of the mentioned

8. Which value will it take when both user and default values are given?

- a) User value
- b) Default value
- c) Custom value
- d) None of the mentioned

9. How many types are there in increment/decrement operator?

- a) 1
- b) 2
- c) 3
- d) 4

10. Which one of the following is not a possible state for a pointer.

- a) Hold the address of the specific object
- b) Point one past the end of an object
- c) Zero
- d) Point to a type

11. Which of the following correctly declares an array?

- a) `int array[10];`
- b) `int array;`
- c) `array{10};`
- d) `array array[10];`

12. Which of the following accesses the seventh element stored in array?

- a) `array[6];`
- b) `array[7];`
- c) `array(7);`
- d) `array;`

13. How many sequence of statements are present in c++?

- a) 4
- b) 3
- c) 5
- d) 6

14. The if-else statement can be replaced by which operator?

- a) Bitwise operator
- b) Conditional operator
- c) Multiplicative operator
- d) None of the mentioned

15. The switch statement is also called as?

- a) Choosing structure
- b) Selective structure
- c) Certain structure
- d) None of the mentioned

Section B: Short Answers (10 Marks)

1. State what a preprocessor directive is with an example. (1 mark)
2. Provide an example of a function prototype. (1 mark)
3. What happens when the programmer tries to modify the contents of an array that is passed to a function that receives the array as a const. parameter? (1 mark)
4. What is the difference between a stream insertion and a stream extraction operator? (1 mark)
5. Write a syntax error with an example. (1 mark)
6. Define algorithm? (1 mark)
7. Describe differences between pass-by-reference and pass-by-value? (1 mark)
8. Describe how a linear search works. On average, how many comparisons must a linear search perform? (1 mark)
9. Explain the three general types of programming languages with examples? (2 mark)

Section C: Programming Output (25 Marks)

For each of the given complete programs or program segments, read the code and write the output.

1. What is the output of the program below? (1 mark)

```
1 #include <iostream >
2 using namespace std;
3
4 int main ()
5 {
6     int x;
7     int y;
8
9     x = 10;
10    y = 2;
11    cout << (x* y + 3)/ 3 << endl;
12 }
13
```

2. Decode the program below and give the output?

(2 mark)

```
1 #include <iostream >
2 using namespace std;
3
4 int main ()
5 {
6     int    q = 2;
7
8     Switch (q)
9     {
10    case    1:
11        cout << "one ";
12        break ;
13    case    2:
14        cout << "two ";
15        break ;
16    default :
17        cout << "none ";
18    }
19 }
```

3. Write the output of the program?

(2 mark)

```
1 #include <iostream >
2 using namespace std;
3
4 int main ()
5 {
6     int x  = 6;
7     for ( ; x < 11; x++ );
8     cout  << "The value of x is: " << x    <<endl ;
9 }
```


4. Read the codes of the program and write the result?

(2 mark)

```
1 #include <iostream>
2 using namespace std;
3
4 int main ()
5 {
6     int x = 2;
7     while ( x < 16 )
8     {
9         if ( x % 3 == 0)
10            cout << x << " ";
11            x++;
12     }
13 }
```

5. What is output by the following program segment when function pana1 is invoked?

(2 mark)

```
1 void pana1()
2 {
3     int x = 2;
4     pana2 ( x);
5
6     cout << x << endl;
7 }
8 void pana2( int x )
9 {     x *= 2;
10     cout << x << endl;
11
12 } //
```


6. What is output by the following program segment when function f1 is invoked? (2 mark)

```
1 void f1 ()
2 {
3     int x = 5;
4     f2( x );
5     cout << x << endl;
6 } // end function f1
7
8 void f2( int &x )
9 {
10    x *= 2;
11    cout << x << endl;
12 }
```

7. What is output by the following program segment when function sys3 is called twice? (2 mark)

```
1 void sys3 ()
2 {
3     static int x = 0;
4     ++x;
5     cout << x << endl;
6 }
```

8. What is the output of the main function? (4 mark)

```
1 #include <iostream>
2 using namespace std;
3
4 int main ()
5 {
6     int x = 5;
7     int y = 3;
8     if ( x > 4 )
9     {
10        cout << " Hi" << endl;
11        if ( y > 3 )
12        {
13            cout << " Good Morning" << endl;
14        }
15    }
16 }
```


9. What is output by the following program segment?

(4 mark)

```
1 int x;
2 for ( x = 1; x <= 10; x++ )
3 {
4     if ( x == 6 )
5     {
6         break ;
7     }
8     if ( x == 3 )
9     {
10        continue ;
11    }
12    cout << x << " " ;
13 }
14 cout << endl << " The final value of x is: " << x << endl ;
```

10. What is output by the following program?

(4 mark)

```
1 #include <iostream >
2 using namespace std;
3
4 int main ()
5 {
6     int array [ 2 ][ 4 ] = {{4, 5, 6, 7},{5, 6, 7, 8}};
7
8     for ( int i = 0; i < 4; i++ )
9     {
10        for ( int j= 0; j <2; j++ )
11        {
12            cout << array [ j ][i] << " " ;
13        }
14        cout << endl ;
15    }
16 }
```


Section D: Debug The Codes (25 Marks)

For each of the given complete programs or program segments, determine if there is one or more error in the code. Write down the line number and describe the error or write the corrected form. For program segments only, assume the code appears in main and that using directives are provided.

1. The following code should print; q is not equal to 10.

(1 mark)

```
1 int q = 10;
2
3 cout << "q is " << q << endl;
4
5 if ( q = 10 )
6 {
7     cout << "q is not equal to 10";
8 }
```

2. The program segment should display student's grade. If passed, the code should print \Passed.". Otherwise, the code should print both \Failed." and "You must take this course again."

(1 mark)

```
1 if (grade >= 60 )
2     cout << "Passed \n";
3 else
4     cout << "Failed \n";
5     cout << "You must take this course again \n";
```

3. The following code should assign 6 to the fifth element in array:

(1 mark)

```
1 array [ 5 ] = [ 6 ];
```

4. The for loop should initialize all array values to -1.

(1 mark)

```
1 int array [ 10 ];
```

```
2 for ( int i = 0; i < 9; i++ )
3     array [ i ] = -1;
```

5. An array should contain all the integers from 1 through 10, inclusive. (1 mark)

```
1 int array [ 11 ] = { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };
```

6. The for loop that follows should print array's values: (1 mark)

```
1 int array [ 10 ] = { 0 };
2 for ( int i = 0; i <= 10; i++ )
3     cout << array [ i ];
```

7. The following code should declare an integer variable and assign it the value 6. (2 mark)

```
1     int 2ndPosition
2     2ndPosition = 6;
```

8. The program segment should accept inputs and sum integers from the user until the sentinel value, -4, is entered. (2 mark)

```
1     total = 0;
2     input;
3     while ( input != -4)
4     {
5         cin >> input;
6         total += input ;
7     }
```

9. The program segment should input accept 16 integers from the user and calculate their total.

(2 mark)

```
1 int total = 0;
2 int count = 1;
3 int input ;
4
5 while ( total <= 16 )
6 {
7     cin >> input ;
8     total += input ;
9     counter ++;
10 }
```

10. The codes below should display three lines of text:

(2 mark)

```
1 #include <iostream >
2 using namespace std;
3
4 int main ()
5 {
6     cout << "Before call to q1\n";
7     q1 ();
8     cout << "After call to q1\n";
9 }
10
11 // q1 function
12 void q1 ()
13 {
14     cout << "During call to q1\n";
15 }
```

11. The while loop mentioned should compute the product of all integers between 1 and 3, inclusive. (3 mark)

```
1 int j = 1;
2 int product = 1;
3
4 while ( j <= 5 );
5     product *= j;
```

12. The following program segment defines function Largenum, which returns the largest of three integers: (3 mark)

```
1 int Largenum ( int x, int y, int z );
2 {
3     int max = x;
4
5     if ( y > max )
6         y = max;
7
8     if ( z > max )
9         max = z;
10    return max;
11
12
13
```

13. The program should display a character entered by the user:

(5 mark)

```
1 #include <iostream >
2
3
4
5 int main ()
6 {
7     char myChar ;
8
9     cout << "Enter a character: ";
10    cin >> myChar ;
11
12    q4( myChar )
13 } // end main
14
15 // end definition
16 void q4( char c )
17 {
18     cout << "You just entered the character: " << myChar << endl ;
19     return myChar ;
20 } // end definition q4
```

Section E: Programming (25 Marks)

Write a C++ program to print the greatest common divisor. The greatest common divisor (GCD) of two integers is the largest integer that evenly divides into each of the two integers. Write a function gcd that returns the greatest common divisor of two integers.

1. The program requires that two integers be input. Write a loop that allows several pairs of integers to be input during execution.
2. The program should contain one function gcd that implements the greatest-common-divisor algorithm. Every value up to and including the smallest of the two numbers must be divided into both the numbers.

The End

© 2017 School of Electrical & Electronics Eng.
All rights reserved

