SHORT ANSWER

1. A variable that can hold a whole number is called a(n) _____.
   Answer: integer

1. What is the opposite of (x < 20 && x > 12)? _____
   ANSWER: (x >=20 || x <= 12)

2. The stream that is used for input from the keyboard is called _____.
   ANSWER: cin

3. The stream that is used for output to the screen is called _____.
   ANSWER: cout

4. When must we use braces to define the body of a conditional expression?
   _____
   ANSWER: When there are multiple statements in the body.

5. In a compound logical and (&&) expression, the evaluation of the expression
   stops once one of the terms of the expression is false. This is known as
   _____ evaluation.
   ANSWER: short-circuit evaluation

6. The compiler always pairs an else with _____
   ANSWER: the nearest previous if not already paired with an else.

7. Variables defined inside a set of braces are said to be _____ to that block of
   code.
   ANSWER: local

8. Write the code to declare an array of 10 doubles named list;
   ANSWER: double list[10];

9. The modifier that guarantees that an array argument will not be changed is called
   _____.
   ANSWER: const

10. How many indexed variables does the following array have?
    int myArray[]={1,2,3,6,5,4,7,1,2};
    ANSWER: 9

MULTIPLE CHOICE

1. A memory address is
   a. Where a variable is stored
   b. Where the computer is located
   c. A step in the program.
   d. Where the CPU is stored.
   Answer: A

2. int number;
   a. is an output statement
   b. is an input statement
   c. is a variable declaration
   d. is a program
   Answer: C

3. cin >> number;
   a. is an output statement
   b. is an input statement
   c. is a variable declaration
   d. is a program
   Answer: B

4. #include <iostream>
   a. is a variable declaration
   b. an executable statement
   c. an include directive
   d. illegal code
   Answer: C

5. What is wrong with the following statement?
   cout << "Hello to everyone\n"
   a. cout should be count
   b. missing a semicolon
   c. missing a "
   d. missing a (
   Answer: B

6. Which of the following is a valid identifier?
   a. 3com
   b. three_com
   c. 3_com
   d. 3-com
   e. dollar$
   ANSWER: B

7. What is the value of x after the following statements?

```
int x, y, z;
y = 10;
z = 3;
x = y * z + 3;
```

a. Garbage
b. 60
c. 30
d. 33

ANSWER: D

8. What is the value of x after the following statements?

```
int x;
x = 0;
x = x + 30;
```

a. 0
b. 30
c. 33
d. garbage

ANSWER: B

9. What is the value of x after the following statements?

```
int x;
x = x + 30;
```

a. 0
b. 30
c. 33
d. garbage

ANSWER: D

10. What is the output of the following code?

```
float value;
value = 33.5;
cout << value << endl;
```

a. 33.5
b. 33
c. value
d. garbage

ANSWER: A

11. What is the output of the following code?

    float value;
    value = 33.5;
    cout << "value" << endl;

    a. 33.5
    b. 33
    c. value
    d. garbage
    ANSWER: C

12. Which of the following lines correctly reads a value from the keyboard and stores it in the variable named myFloat?

    a. cin >> myFloat;
    b. cin << myFloat;
    c. cin >> "myFloat";
    d. cin >> myFloat >> endl;
    ANSWER: A

13. What is the value of x after the following statements?

    int x;
    x = 15/4;

    a. 15
    b. 3
    c. 4
    d. 3.75
    ANSWER: B

14. What is the value of x after the following statements?

    int x;
    x = 15 % 4;

    a. 15
    b. 4
    c. 3
    d. 3.75
    ANSWER: C

15. What is the value of x after the following statement?

    float x;
    x = 3.0 / 4.0 + 3 + 2 / 5

    a. 5.75
    b. 5.75
    c. 1.75
    d. 3.75
    ANSWER: D

16. What is the value of x after the following statement?

    float x;
    x = 3.0 / 4.0 + (3 + 2)/ 5
    a. 5.75
    b. 5.75
    c. 1.75
    d. 3.75
ANSWER: C

17. What is the value of x after the following statements?

    double x;
    x = 0;
    x += 3.0 * 4.0;
    x -= 2.0;
    a. 22.0
    b. 12.0
    c. 10.0
    d. 14.0
ANSWER: C

18. Given the following code fragment and the input value of 2.0, what output is generated?

    float tax;
    float total;

    cout << "enter the cost of the item\n";
    cin >> total;

    if (total >= 3.0)
    {
            tax = 0.10;
            cout << total + (total * tax) << endl;
    }
    else
    {
            cout << total << endl;
    }
    a. 2.2
    b. 2.0
    c. 3.1
    d. 4.4
ANSWER: B

19. What is the correct way to write the condition $y < x < z$?
    a. $(y < x < z)$
    b. $((y < x) \&\& z)$
    c. $((y > x) \,||\, (y < z))$
    d. $((y < x) \&\& (x < z))$
    ANSWER: D

20. Given the following code fragment, what is the output?
```
int x=5;
if( x > 5)
    cout << "x is bigger than 5. ";
    cout <<"That is all. ";
cout << "Goodbye\n";
```
    a. x is bigger than 5. That is all
    b. x is bigger than 5
    c. That is all. Goodbye
    d. Goodbye
    ANSWER: C

21. What is the final value of x after the following fragment of code executes?
```
int x=0;
do
{
    x++;
}while(x > 0);
```
    a. 8
    b. 9
    c. 10
    d. 11
    e. infinite loop.
    ANSWER: E

22. Which of the following boolean expressions tests to see if x is between 2 and 15 (including 2 and 15)?
    a. $(x<=15 \,||\, x>=2)$
    b. $(2 <=x \,||\, x <=15)$
    c. $(x >=2 \&\& x <=15)$
    d. $(2 <= x <= 15)$
    ANSWER: C

23. Which of the following are allowed in the third section of the for loop statement?
    a. i++
    b. i--
    c. i +=2
    d. cout << "Hello\n"
    e. all of the above

f. none of the above
ANSWER: E

24. What is wrong with the following for loop?
```
for(int i=0;i<10;i--)
{
        cout << "Hello\n";
}
```
   a. can not use a for-loop for this
   b. i is not initialized
   c. infinite loop
   d. off-by-one error
ANSWER: C

25. What is the value of x after the following code fragment executes?
```
float x = 36.0;
x = sqrt(x);
```
   a. 36.0
   b. 6.0
   c. 3.0
   d. 2.456
ANSWER: B

26. What is the output of the following program fragment?
```
cout << pow(4,2) << endl;
```
   a. 4
   b. 2
   c. 8
   d. 16
ANSWER: D

27. What is the output of the following program fragment?
```
cout << static_cast<double>(3)/4 << endl;
```
   a. 3
   b. 0.5
   c. 0
   d. 0.75
ANSWER: D

28. What is the value returned by the following function?
```
int function()
{
    int value = 35;
    return value + 5;
    value += 10;
```

}
        a.   35
        b.   40
        c.   50
        d.   10
    ANSWER: B

29. What is the output of the following code fragment?

    double size, volume=16.0;
    size = sqrt(sqrt(volume)) / 3;
    cout.setf(ios::fixed)
    cout.setf(ios::showpoint);
    cout.precision(2);
    cout << size;
        a.   0.67
        b.   0.6666667
        c.   0.00
        d.   0
    ANSWER: A

30. Which of the following is true for a void function?
        a.   There cannot be a return statement.
        b.   The value of void should be returned.
        c.   The value of 0 should be returned.
        d.   Nothing is returned.
    ANSWER: D

31. If you need a function to get both the number of items and the cost per item from
    a user, which would be a good function declaration to use?
        a.   int,float getData();
        b.   int getData(float cost);
        c.   void getData(int count, float cost);
        d.   void getData(int& count, float& cost);
    ANSWER: D

32. What is the output of the following function and function call?
        void calculateCost(int count, float& subTotal, float taxCost);

        float tax = 0.0,
            subtotal = 0.0;

```
calculateCost(15, subtotal,tax);
cout << "The cost for 15 items is " << subtotal
    << ", and the tax for " << subtotal << " is " << tax << endl;
//end of fragment

void calculateCost(int count, float& subTotal, float taxCost)
{
    if ( count < 10)
    {
        subTotal = count * 0.50;
    }
    else
    {
        subTotal = count * 0.20;
    }
    taxCost = 0.1 * subTotal;
}
```
    a. The cost for 15 items is 3.00, and the tax for 3.00 is 0.30;
    b. The cost for 15 items is 0.00, and the tax for 3.00 is 0.00;
    c. The cost for 15 items is 0.00, and the tax for 3.00 is 0.30;
    d. The cost for 15 items is 3.00, and the tax for 3.00 is 0.00;
ANSWER: D

33. Which statement correctly opens an input stream named in_file and attaches it to a file name project.txt?
    a. in_file=project.txt
    b. in_file="project.txt"
    c. in_file.open("project.txt");
    d. in_file.open(project.txt);
ANSWER: C

34. Which of the following is the correct way to determine if a file stream named inFile opened correctly?
    a. if(inFile.open())
    b. if(inFile.fail())
    c. if(inFile.opened())
    d. if(inFile.failed())
ANSWER: B

35. Which boolean operation is described by the following table?

A	B	Operation
True	True	True
True	False	True
False	True	True
False	False	False

a. or
b. and
c. not
d. none of the above
ANSWER: A

36. Which boolean operation is described by the following table?

A	B	Operation
True	True	True
True	False	False
False	True	False
False	False	False

a. or
b. and
c. not
d. none of the above
ANSWER: B

37. Which of the following symbols has the highest precedence?
a. ++
b. ||
c. &&
d. -
ANSWER: A

38. Which of the following declare an array of 5 characters, and initializes them to some known values?
a. char array[5]={'a','b','c','d','e'};
b. char array[4]={'a','b','c','d','e'};
c. char array[5]={''};
d. char array[]={'a','b','d','e'};
e. A and C
f. B and D
g. all of the above
ANSWER: E

39. Which of the following will correctly assign all the values in one array to the other array? (Assume both arrays are of the same type and have SIZE elements)
a. array1=array2;
b. array1[]=array2;
c. for(i=0;i<SIZE;i++)
            array1[i]=array2[i];

      d. for(i=0;i<SIZE;i++)

             array1[]=array2[];

ANSWER: C

40. To declare a c-string and initialize it to the value of "phonebook",
    a. char s1=phonebook;
    b. char s1[10]="phonebook";
    c. c-string phonebook;
    d. char s1[10]=phonebook;

ANSWER: B

TRUE/FALSE

1. The following statement is legal:
    cout >> "Hello, my name is Bill\n";
   Answer: FALSE

2. The opposite of (x >3 && x < 10) is (x < 3 && x > 10)
   ANSWER: FALSE

3. Loops are used when we need our program to make a choice between two or more things.
   ANSWER: FALSE

4. A boolean expression may evaluate to more than 2 values
   ANSWER: FALSE

5. A function may return a boolean value.
   ANSWER: TRUE

6. The break statement causes all loops to exit.
   ANSWER: FALSE (it only causes execution to exist from inner most loop)

7. Functions may have multiple return statements.
    ANSWER: TRUE (only one is actually executed, but in the code the programmer
   might put multiple returns in the code, e.g. if (X < 5) return 1 else return 0;

8. A function may return more than one item
   ANSWER: False

9. function naming rules follow variable naming rules
   ANSWER: TRUE

10. The following array declaration is legal
    double scores[]={0.1,0.2,0.3};
    ANSWER: true

11. Using the == operator on a string variable results in the same value as using strcmp on two c-strings.
    ANSWER: FALSE

12. The following declares a c-string and initializes it to "speaker"
    char str[]="speaker";
    ANSWER: TRUE