

Student Name \_\_\_\_\_ Section \_\_\_\_ Date \_\_\_\_\_

In the space provided, enter T if the answer to the question is True, otherwise enter F for False. When using an electronic scoring sheet, use (a) for True and (b) for False.

- (1) \_\_\_\_\_ The indexes of an array always start with position number 0.
- (2) \_\_\_\_\_ The string literal " \n\n " contains exactly 2 characters.
- (3) \_\_\_\_\_ A function prototype has to specify the data types and names of all parameters.
- (4) \_\_\_\_\_ You can perform a function call before you declare the function.
- (5) \_\_\_\_\_ The ostream object named cout connects the program and the screen or monitor.
- (6) \_\_\_\_\_ A break statement inside a code block allows for immediate exit from the block.
- (7) \_\_\_\_\_ An m by n array contains m rows, n columns and  $m * n$  elements.
- (8) \_\_\_\_\_ The Modulus ( % ) operator causes an integer result.
- (9) \_\_\_\_\_ A function is a block of statements that can perform some action or calculation.
- (10) \_\_\_\_\_ Only numeric constants can be used as subscripts.
- (11) \_\_\_\_\_ The #undef command cancels the most current definition of the #define directive's name.
- (12) \_\_\_\_\_ The only way to initialize a string is to list its individual characters in single - quotation marks.
- (13) \_\_\_\_\_ The default clause of a switch statement is required.
- (14) \_\_\_\_\_ When using a post - test looping structure, the body of the loop will always be executed at least one time.
- (15) \_\_\_\_\_ A variable of type char could be assigned the value "A" .
- (16) \_\_\_\_\_ The following line of code correctly assigns the product of 8 and m to x.  
$$x = 8m;$$
- (17) \_\_\_\_\_ When declaring an array you specify the index of the very last element.
- (18) \_\_\_\_\_ When the statement `cout << setprecision(0) << 5.678;` is executed, the real number 5 will display.
- (19) \_\_\_\_\_ When using the `math.h` library, the value of the following expression is -5 .  
`floor( -5.1 )`
- (20) \_\_\_\_\_ This C++ statement triples the value in variable sum .  
`sum += sum + sum ;`



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- (31) What value will be printed given the following program?
- ```
#include <iostream>
using namespace std;

#define x 4
#undef x
#define x 4

void main()
{
    int y ;
    y = x ;
    cout << y;
}
```
- (a) 0            (b) 4            (c) nothing    (d) 8            (e) None of the above
- (32) The following `for` loop creates an infinite loop.
- ```
int t = 0;
for (int i = t; i = 1; i++)
    cout << i << endl;
```
- (a) True        (b) False
- (33) Given the following program segment, what value does the output statement display?
- ```
int count = 5;
++count;
cout << 3 * ++count + 5 << "\n";
```
- (a) 13            (b) 29            (c) 23            (d) 26            (e) 14
- (34) The result of the execution of the following three statements would be that `x` is equal to:
- ```
x = 1;
x += x + 2;
x *= x * 3;
```
- (a) 12            (b) 9            (c) 27            (d) 48            (e) 32
- (35) Which of the following would be used in a statement and between two logic comparison expressions such that the statement would return `FALSE` if one or more of the logic comparisons are `FALSE`?
- (a) `->`        (b) `||`        (c) `%`        (d) `!`        (e) `&&`
- (36) Which of the following is NOT a legal C++ identifier?
- (a) `2Day`            (b) `_blank`  
(c) `daysPerWeek`    (d) None of these
- (37) The following is a legal comment:
- ```
double salesTax = 0.06; //sales tax for the state of Ohio//
double amount = initial * (1.0 + salesTax);
```
- (a) True        (b) False
- (38) Fill in keyword that needs to appear to make this a constant declaration:
- ```
_____ int NUMBER_OF_PEOPLE = 10;
```
- (a) `double`    (b) `const`    (c) `static`    (d) `new`        (e) `char`

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(39) If  $p$  is false and  $q$  is false, then  $(p \vee \neg q) \vee q$  is true.

- (a) True      (b) False

(40) Determine the output of the following program when the user inputs 5 for  $j$ .

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

void main()
{
    int j;
    cin >> j;
    if ( j < 2 )
        cout << 2 - j << endl ;
    else if ( j > 5 )
        cout << 3 - j << endl ;
    else
        cout << 4 - j << endl ;
}
```

- (a) -10      (b) 6      (c) -4      (d) -3      (e) -1

(41) Where is the error in the following structure declaration?

```
struct {
    char *CPUSpeed;
    int RAM;
    int MegsHardDisk;
}3comp;
```

- (a) No name for the structure is included.  
(b) Structure variable `3comp` contains no initialization.  
(c) You cannot set up a pointer variable for this structure type.  
(d) `3comp` is an invalid structure variable.

(42) An object is to a class as \_\_\_\_\_ .

- (a) Euclid is to a mathematician  
(b) a president is to George W. Bush  
(c) a father is to a son  
(d) a library is to a book  
(e) All of the above

(43) This feature of object - oriented programming allows the same operations to be carried out differently depending on the object.

- (a) composition  
(b) encapsulation  
(c) multitasking  
(d) polymorphism  
(e) inheritance

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- (44) Predict the output of the following program segment.

```
#include <iostream>
#include <cmath>
using namespace std;
void main ()
{
    char *strOne = "No", *strTwo = "Yes", *strThree = "Maybe";
    int x = 3;
    if (x == 5)
        cout << strOne << " " << strThree << endl;
    else if (x < 5)
        cout << strTwo << " " << strOne << endl;
    else
        cout << strThree << " " << strTwo << endl;
}
```

- (a) No Maybe
- (b) Maybe No
- (c) Maybe Yes
- (d) No Yes
- (e) Yes No

- (45) After the following loop has been executed, the final value in `total` that will be displayed to the user is `-12`.

```
int total = 1;
for (int k = 10; k <= 20; k = k + 1)
{
    total = total - 1;
}
cout << "total = " << total << endl;
```

- (a) True
- (b) False

- (46) The program below correctly sums the squares of the integers 1, 2, 3, 4 and 5.

```
#include <iostream>
using namespace std;
void main()
{
    int sum = 0;
    int amount = 0;
    for(int j = 1; j <= 10; j += 1)
    {
        sum += j;
        amount += sum;
    }
    cout << "sum = " << sum << endl;
}
```

- (a) True
- (b) False

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- (47) After the following loop has been executed, the value in `total` that is will be displayed to the user is \_\_\_\_\_ .

```
float total = 1;
for (int i = 2; i <= 10; i = i + 2)
total = total + 1;
cout << "total = " << total << endl;
```

- (a) 16      (b) 20      (c) 15      (d) 18      (e) None of these

- (48) Consider the following program code. What is returned by the call of function `value`?

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

int value(int);

void main()
{
    cout << value(10) << endl;
}

int value(int x)
{
    return (4 + x * 3);
}
```

- (a) 34      (b) 4      (c) 10      (d) 52      (e) 42

- (49) The following program correctly calculates and prints the product of the odd integers from 1 to 15, inclusive.

```
#include <iostream>
using namespace std;
void main()
{
    int product = 1;
    for( int j = 1; j <= 15; j += 2)
    {
        product *= j;
    }
    cout << "product = " << product << endl;
}
```

- (a) True      (b) False

- (50) The following while loop will execute its body code as long as variable `j` is not 3 or less.

```
int j = 10;
while( j <= 3)
{
    j--;
}
cout << "the number is " << j << endl;
```

- (a) True      (b) False

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- (51) Given this recursive function, what value would be returned by the call of  $f(2)$ ?

```
int f(int a)
{
    if (a == 0)
        return 1;
    else
        return f(a - 1) + 1;
}
```

- (a) 5            (b) 4            (c) 3            (d) 2            (e) None of these

- (52) Given this recursive function, what value would be returned by the call of  $f(2)$ ?

```
int f(int a)
{
    if (a == 0)
        return 0;
    else
        return f(a - 1) + 1;
}
```

- (a) 5            (b) 4            (c) 3            (d) 2            (e) None of these

- (53) Given this recursive function, what value would be returned by the call of  $f(3)$ ?

```
int f(int a)
{
    if (a == 0)
        return 1;
    else
        return 2 * f(a - 1) + 1;
}
```

- (a) 15            (b) 31            (c) 8            (d) 16            (e) 7

- (54) Given this recursive function, what value would be returned by the call of  $f(3)$ ?

```
int f(int a)
{
    if (a == 0)
        return 0;
    else
        return 2 * f(a - 1) - 1;
}
```

- (a) 25            (b) 28            (c) 33            (d) -10            (e) None of these

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- (55) The following recursive function is used to compute the product of the positive integers A and B. What is the missing line of code?

```
int Prod(int A, int B)
{
    if (B == 1)
        return A;
    else if (A == 1)
        return B;
    else
        _____ // missing statement
}
```

- (a) return Prod(A - 1, B - 1) + A;
- (b) return Prod(A, B - 1) + A;
- (c) return Prod(A, B) + (B - 1);
- (d) return Prod(A, B - 1) + A - 1;
- (e) while (A > 0) { A = A - 1; return Prod(A, B);};

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**Fundamentals of C++ Programming - Coding Portion**

A fellow student of yours wants to print a diamond of stars (\*) by using a pair of nested `for` loops. The student has written the program code shown below which compiles successfully but does not display exactly a diamond of stars. Assist your fellow student by modifying the given source code such that a diamond shape can be printed (displayed).

```
#include <iostream.h>
int main ()
//Samantha Student
{
    int stars = 15;

    for (int r1 = stars; r1 >= 1; --r1)
    {
        for(int c1 = 1; c1 <= stars; ++c1)
            if(c1 < r1)
                cout << ' ';
            else
                cout << "*";
            cout << endl;
    }
    for (r1 = 1; r1 <= stars; ++r1)
    {
        for(int c1 = stars; c1 >= 1; --c1)
            if(c1 < r1)
                cout << ' ';
            else
                cout << "*";
            cout << endl;
    }
    return 0;
}
```