Due date: 31st May 2020

SECTION A:

(ANSWER ALL)

PROVIDE SHORT ANSWER(S) TO THE FOLLOWING QUESTIONS

1. What will the following code display?

```
cout << "Monday";
cout << "Tuesday";
cout << "Wednesday";
```

Ans: **MondayTuesdayWednesday**

2. What will the following code display?

```
int number = 23;
cout << "The number is " << "number" << endl;
```

Ans: **The number is number**

3. What will the following code display?

```
cout << "Four\n" << "score\n";
cout << "and" << "\nseven";
cout << "\nyears" << " ago" << endl;
```

Ans: **Four**
score
and
seven
years ago

4. What will be the output after the following lines of code execute?

```
bool choice;
choice = true;
cout << "Your choice is " << choice << endl;
```

Ans: **Your choice is 1**

5. What is the value stored in the variable **myNum** after the following assignment statement executes?

```
myNum = 23 % 5
```

Ans: **3**

6. What is the value of **cookies** after the following statements execute?

```
int number = 38, children = 4, cookies;
cookies = number % children;
```

Ans: 2

7. What is the value of **number** after the following statements execute?

```
int number;
number = 18 / 4;
```

Ans: 4

8. Given the following program, which line(s) cause(s) output to be displayed on the screen?

```
1       // This program displays my gross wages.
2       // I worked 40 hours and I make $20.00 per hour.
3       #include <iostream>
4       using namespace std;
5
6       int main()
7       {
8          int hours;
9          double payRate, grossPay;
10
11          hours = 40;
12          payRate = 20.0;
13          grossPay = hours * payRate;
14          cout << "My gross pay is $" << grossPay << endl;
15          return 0;
16      }
```

Ans: Line 14

9. What is the value of **number** after the following statements execute?

```
int number = 10;
number += 5;
number -= 2;
number *= 3;
```

Ans: 39

10. Which line in the following program will cause a compiler error?

```
1 #include <iostream>
```

```
2 using namespace std;
3
4 int main()
5 {
6    const int MY_VAL = 77;
7    MY_VAL = 99;
8    cout << MY_VAL << endl;
9    return 0;
10 }
```

Ans: **Line 7**

11. After the following code executes, what is the value of **`my_value`** if the user enters **`0`**?

```
cin >> my_value;
if (my_value > 5)
    my_value = my_value + 5;
else if (my_value > 2)
    my_value = my_value + 10;
else
    my_value = my_value + 15;
```

Ans: **15**

12. After the following code executes, what is the output if user enters **`0`**?

```
int x = -1;
cout << "Enter a 0 or 1: ";
cin >> x;
if (x)
    cout << "true" << endl;
else
    cout << "false" << endl;
```

Ans: **false**

13. What is assigned to the variable **`result`** given the statement below with the following assumptions: **`x = 10, y = 7`**, and **`x`**, **`result`**, and **`y`** are all **`int`** variables.

```
result = x >= y;
```

Ans: **1**

14. What is the output of the following code segment?

```
int x = 5;
```

```
if (x = 2)
    cout << "This is true!" << endl;
else
    cout << "This is false!" << endl;
    cout << "That's all, folks!" << endl;
```

Ans: This is true!
That's all, folks!

15. What is the output of the following code segment if the user enters **90** for the score?

```
cout << "Enter your test score: ";
cin >> test_score;
if (test_score < 60)
    cout << "You failed the test." << endl;
if (test_score > 60)
    cout << "You passed the test."
else
    cout << "You need to study harder next time." << endl;
```

Ans: You passed the test

16. What is the output of the following code segment if the user enters **23**?

```
int number;
cout << "Enter a number: ";
cin >> number;
if (number > 0)
    cout << "Hi, there!" << endl;
else
    cout << "Good-bye." << endl;
```

Ans: Hi, there!

17. What will be displayed after the following statements execute?

```
int funny = 7, serious = 15;
funny = serious % 2;
if (funny != 1)
{
    funny = 0;
    serious = 0;
}
else if (funny == 2)
{
    funny = 10;
    serious = 10;
}
else
```

```
{
    funny = 1;
    serious = 1;
}
cout << funny << "    " << serious << endl;
```

Ans: **1 1**

18. What is the value of **donuts** after the following statement executes?

```
int donuts = 10;
if (donuts != 10)
    donuts = 0;
else
    donuts += 2;
```

Ans: **12**

19. What is the value of **donuts** after the following statement executes?

```
int donuts = 10;
if (donuts = 1)
    donuts = 0;
else
    donuts += 2;
```

Ans: **0**

20. What is the value of **result** after the following code executes?

```
int a = 60;
int b = 15;
int result = 10;
if (a = b)
     result *= 2;
```

Ans: **20**

21. What is the output of the following code?

```
int w = 98;
int x = 99;
int y = 0;
int z = 1;
if (x >= 99)
{
    if (x < 99)
```

```
        cout << y << endl;
    else
        cout << z << endl;
}
else
{
    if (x == 99)
        cout << x << endl;
    else
        cout << w << endl;
}
```

Ans: **1**

22. Which line in the following program will cause a compiler error?

```
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5     int number = 5;
6     if (number >= 0 && <= 100)
7         cout << "passed.\n";
8      else
9         cout << "failed.\n";
10     return 0;
11  }
```

Ans: **Line 6**

23. What is the output of the following segment of code if the value **4** is input by the user?

```
int num;
int total = 0;
cout << "Enter a number from 1 to 10: ";
cin >> num;
switch (num)
{
    case 1:
    case 2:   total = 5;
    case 3:   total = 10;
    case 4:   total = total + 3;
    case 8:   total = total + 6;
    default:  total = total + 4;
}
cout << total << endl;
```

Ans: 13

24. How many times will the following loop display "**Hello world!**"?

```
for (int i = 0; i < 20; i++)
     cout << "Hello world!" << endl;
```

Ans: 20 times

25. How many times will the following loop display "**Looping again!**"?

```
for (int i = 0; i <= 20; i++)
     cout << "Looping again!" << endl;
```

Ans: 21 times

26. Given the following function:

```
void calc (int a, int& b)
{
   int c;
   c = a + 2;
   a = a * 3;
   b = c + a;
}
```

What is the output of the following code segment that invokes **calc()**:

```
int x = 1;
int y = 2;
int z = 3;
calc(x, y);
cout << x << "  " << y << "  "  << z << endl;
```

Ans: 1 6 3

27. What will the following code display?

```
#include <iostream>
using namespace std;
void doSomething(int);
int main()
{
   int x = 2;
   cout << x << endl;
   doSomething(x);
```

```
    cout << x << endl;
    return 0;
}
void doSomething(int num)
{
    num = 0;
    cout << num << endl;
}
```

Ans: **2**

0

2

28. Which line in the following program contains the prototype **showDub** function?

```
1  #include <iostream>
2  using namespace std;
3  void showDub(int);
4  int main()
5  {
6       int x = 2;
7       showDub(x);
8       cout << x << endl;
9       return 0;
10  }
11  void showDub(int num)
12  {
13       cout << (num * 2) << endl;
14  }
```

Ans: **Line 3**

29. Which line in the following program contains the header for the **showDub** function?

```
1  #include <iostream>
2  using namespace std;
3  void showDub(int);
4  int main()
5  {
6       int x = 2;
7       showDub(x);
8       cout << x << endl;
9       return 0;
10  }
```

```
11  void showDub(int num)
12  {
13      cout << (num * 2) << endl;
14  }
```

Ans: **Line 11**

30. Which line in the following program contains a call to the **showDub** function?

```
1   #include <iostream>
2   using namespace std;
3   void showDub(int);
4   int main()
5   {
6       int x = 2;
7       showDub(x);
8       cout << x << endl;
9       return 0;
10  }
11  void showDub(int num)
12  {
13      cout << (num * 2) << endl;
14  }
```

Ans: **Line 7**

SECTION B:

Answer the question below

Question

Write a program that calculates volumes of cones and spheres from user-entered values.

Ask your user to enter the pertinent values for one sphere and one cone object. Calculate the volume for both the sphere and cone and show the results to 4 decimal places.

You need to write the code that calculates the volume of a sphere and a cone. The formula for calculating the volume of a sphere is:

$$SphereVolume = \frac{4}{3}\pi r^3$$

where pi is 3.14159265 and r is the radius of the sphere.

The formula for calculating the volume of a cone is:

$$ConeVolume = \frac{1}{3}\pi r^2 h$$

where r is the radius of the cone and h is the height of the cone.

ANSWER:

SOURCE CODE

```
#include <iostream>
#include <iomanip>
#include <cmath>
#include <string>
using namespace std;

const long double PI = 3.14159265;
int main(){
      //calculating the volume of a sphere
    string line(70,'-');
    double sphereRadius,sphereVolume;
    cout<<"VOLUME OF A SPHERE CALCULATOR"<<endl;
    cout << "============================"<<endl;
    cout<<"Enter the radius for the sphere: ";
    cin>>sphereRadius;
    sphereVolume = (4.0/3.0)* PI * pow(sphereRadius,3);
    cout<<"The volume of the sphere is
"<<fixed<<setprecision(4)<<sphereVolume<<endl<<endl;
    cout<<line<<endl<<endl;

    //calculating the volume of a cone
    double coneRadius,coneHeight;
    long double coneVolume;
    cout<<"VOLUME OF A CONE CALCULATOR"<<endl;
    cout << "============================="<<endl;
    cout<<"Enter the radius of the cone: ";
    cin>>coneRadius;
    cout<<endl<<"Enter the height of the cone: ";
    cin>>coneHeight;
    coneVolume = (1.0/3.0)* PI * pow(coneRadius,2) * coneHeight;
```

```
    cout<<endl<<"The volume of the cone is
"<<setprecision(4)<<coneVolume<<endl;

return 0;
}
```

OUTPUT

The program ran successfully