Review Problems for Midterm Exam

1. Which of the following are not valid assignment statements?
   a) char letter;
   b) letter = w;
   c) letter = 'w';
   d) letter ="w";

2. Which of the following are not valid C++ statements?
   a) cout<<"Hello"<<endl;
   b) cout<<"Hello"<<\n;
   c) cout<<\nHello\n;
   d) cout<<\nHello\n"<<endl;

3. Write the value of result to the right of each assignment statement:
   int x=4, y=7, z=2, result;
   result = x+y;
   result *= 2;
   result = y+z;
   result /= y;

4. What is the exact output of the following program?
   #include <iostream>
   using namespace std;

   int main()
   {
       cout<<"Be careful!\n";
       cout<<"This might/n be a trick ";
       cout<<"question.\n";
       return 0;
   }

5. What is the output of the following program?
   #include <iostream>
   using namespace std;

   int main()
   {
       int a, x=23;
       a=x%2;
       cout<<x<<endl<<a<<endl;
       return 0;
   }
6. Find as many errors as you can in the following program.

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

int main()
{
    int a, b, c; // Three integers
    a = 3;
    b = 4;
    c = a + b;
    cout << "The value of c is \%d\" << c;

    return 0;
}
```

7. Write C++ expressions for the following algebraic expressions:

   a) \( a = 12x \)
   
   b) \( b = 15x + 14y + 6k \)
   
   c) \( f = \frac{h + 12}{4k} \)
   
   d) \( g = \frac{a^{55}}{b^{13}k^{2}} \)

8. Complete the following table by writing the values of each expression in the Value column.

<table>
<thead>
<tr>
<th>Expression</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 / 4 - 2</td>
<td></td>
</tr>
<tr>
<td>6 + 12 * 2 - 8</td>
<td></td>
</tr>
<tr>
<td>4 + 8 * 2</td>
<td></td>
</tr>
<tr>
<td>6 + 17 % 3 - 2</td>
<td></td>
</tr>
<tr>
<td>2 + 22 * (9 - 7)</td>
<td></td>
</tr>
<tr>
<td>(8 + 7) * 2</td>
<td></td>
</tr>
<tr>
<td>(16 + 7) % 2 - 1</td>
<td></td>
</tr>
<tr>
<td>12 / (10 - 6)</td>
<td></td>
</tr>
<tr>
<td>(19 - 3) * (2 + 2) / 4</td>
<td></td>
</tr>
</tbody>
</table>

9. What is output of the following program?

```cpp
#include <iostream>
using namespace std;
#define WHO "Columbus"
#define DID "sailed"
#define WHAT "the ocean blue"

int main()
{
    const int WHEN = 1492;
    cout << "In " << WHEN << " " << WHO << " " << DID << " " << WHAT << endl;
    return 0;
}
```
10. Assume the user enters “I like C++ Programming.”, what is the output of the following program?

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

int main()
{
    string str;
    char ch;
    cout << "Enter a line => ";
    cin.get(ch);
    cin >> str;
    cout << "We " << str;
    getline(cin, str);
    cout << " " << str << endl;
    return 0;
}
```

11. Find as many errors as you can in the following program.

```cpp
using namespace std;
int main()
{
    Double number1, number2, number3;
    Cout << “Enter a number: ";
    Cin >> number1;
    cout >> “Enter another number: ;”
    cin >> number2,
    number1 + number2 = sum;
    cout << ‘The sum of the two numbers is “ << sum;
}
```

12. Find as many errors as you can in the following program.

```cpp
#include <iostream>
using namespace std
int main()
{
    const int number1, number2, product;
    cout << “Enter to numbers and I will multiply\n”;
    cout << “them for you.\n”;
    cin>>number1, number2;
    product = number1 * number2;
    cout << product;
    return 0;
}
```
13. Convert the following switch statement into if-else statement:

```
switch (grade)
{
    case 'A':
    case 'a':
        cout<<"Great!"<<endl;
        break;
    case 'B':
        cout<<"very good"<<endl;
        break;
    case 'C':
        cout<<"also very good"<<endl;
        break;
    default:
        cout<<"That's not my grade."<<endl;
}
```

14. Convert the following if-else statement to a switch statement:

```
int x;
cout<<"Give me an int and I tell you whether is even of odd ";
cin>>x;
if (x%2==0)
    cout<<x<<" is even."<<endl;
else
    cout<<x<<" is odd."<<endl;
```

15. Write a segment of code to ask the user to enter two integers. The code shall use if-else statement to find the larger of the two integers.

16. What will the following code print?

```
int num;
um = 8;
cout << --num << " ";
cout << num++ << " ";
cout << num;
```

17. Convert the following while loop into a for loop:

```
int i = 5, n = 10;
while (i<=n)
{
    cout<<i;
    i++;
}
```

18. What is the output of the following code?

```
int sum = 0;
for (int j=0; j<10; j+=2)
    sum +=j;
cout <<sum<<endl;
```
19. What is the output of the following code?

```cpp
int i = 5;
cout<"i="<<i<<endl;
do
{
    if (i > 0) break;
cout<i<<" ";
}while (i>0);
cout<"i="<<i<<endl;
```

20. What is the output of the following code?

```cpp
int i = 0, sum = 0;
do
{
i++;
    if (i % 2 == 0 || i % 3 == 0) continue;
    sum += i;
}
while (i<10);
cout<sum;
```

21. Find as many errors as you can in the following code.

```cpp
for(int i = 1, i<=5; i++) {
    for(int j = 1; j<=5 && j>0; ++j;
        cout<"*
    cout<"n;
}
```

22. Write a program that computes a product of even integers from 1 to 100, i.e., 2 x 4 x 6 x 8 x ... x 98 x 100.

23. Write a program that prints a 100x100 square, where odd columns contain values `O' and even columns contain values `E'. For example, the 6x6 square looks prints as

```
OEOEOE
OEOEOE
OEOEOE
OEOEOE
OEOEOE
OEOEOE
```