1. (15 points) Give the output for the following program:

```
 1 #include <iostream>
 2
 3 void f(int x) {
 4   std::cout << "x is: " << x << std::endl;
 5   int count = 0;
 6   switch (x) {
 7     case 0: count++;
 8     case 1: count++;
 9     case 2: count++;
10     case 3: count++;
11     case 4: count++;
12     case 5: count++;
13   }
14   std::cout << "count is: " << count << std::endl;
15 }
16
17 int main() {
18   int x = 55 % 5;
19   f( (x?1:2) );
20   return 0;
21 }
```

2. (35 points) Give the output for the following program:

```
 1 #include <iostream>
 2
 3 class string {
 4 public:
 5   string()              { std::cout << "default" << std::endl; }
 6   string(const char*)   { std::cout << "convert" << std::endl; }
 7   string(const string&) { std::cout << "copy" << std::endl; }
 8   ~string()             { std::cout << "destruct" << std::endl; }
 9   string& operator=(const string&) {
10     std::cout << "assign" << std::endl;
11   }
12 };
13
14 void crash(string s) { }
15
16 int main() {
17   string x("cat"), y = x;
18   crash(y);
19   string* z = new string("dog");
20 }
```

3. (10 points) What is the meaning of each **const** in the following expression:
const char* **const** author = ”Meyers”

4. (10 points) In Item # 6, Meyers says to “explicity disallow compiler generated functions that you don’t want.” Give an example of this.

5. (30 points) For class string in the program segment below, write:

   - a copy constructor,
   - an output operator,
   - an assignment operator.

```
 1 #include <iostream>
 2 #include <cstring>
 3
 4 class string {
 5   public:
 6     string(int n = 0) : buf(new char[n + 1]) { buf[0] = '\0'; }
 7     string(const char *);
 8     string(const string &);
 9     char *getBuf() const { return buf; }
10     void setBuf(const char *);
11     ~string() { delete [] buf; }
12
13   private:
14     char *buf;
15 };
16
17 int main() {
18   string a("cat");
19   std::cout << a << std::endl;
20   return 0;
21 }
```