Questions 1-5 are 4 points each.   **ANSWERS**
1. What is the first step in writing a program: a) code b) design c) specification d) test?   **specification**
2. What value is assigned to x? `int x = int(double(23)/6 + 1/2);`   **3**
3. What does this print? `cout << string(8, 'x').substr(3, 2);`   **xx**
4. What does this print? `cout << char('a' + 'B' – 'b');`   **A**
5. Suppose p is a `vector<int>::iterator`. What statement assigns 0 to the object to which p points?
       ANSWER: *p = 0;
6. Suppose v is a `vector<int>` containing some numbers in the range 1 to 100. Write code to print the largest even number in v, or print "none" if v does not contain any such number (20 pts).

```
// ANSWER
int largest = 0;
for (int i=0; i<int(v.size()); ++i)
  if (v[i] > largest && v[i] % 2 == 0)
    largest = v[i];
if (largest > 0)
  cout << largest << endl;
else
  cout << "none\n";
```

7. Write a function `f(s)` that takes a string s and returns `true` if s contains at least one digit and `false` otherwise (20 pts).

```
// ANSWER
bool f(string s)
{
  for (int i=0; i<int(s.size()); ++i)
    if (isdigit(s[i]))
       return true;
  return false;
}
```

8. Write class Employee so that it works as in the example below (20 pts).

```
  Employee x("Joe", 60000, 25), y("Sam", 30000, 32);
  x.print();  // prints "Joe's age is 25 and salary is 60000"
  y.print();  // prints "Sam's age is 32 and salary is 30000"
```

```
// ANSWER
class Employee
{
public:
  Employee(string n, int s, int a);
  void print();
private:
  string name;
  int age, salary;
};
```

```cpp
Employee::Employee(string n, int s, int a)
{
  name = n;
  age = a;
  salary = s;
}

void Employee::print()
{
  cout << name << "'s age is " << age << " and salary is " << salary
       << endl;
}
```

9. On the back, write a program to read in words (separated by white space) up to EOF, then print the longest word, for example (20 pts)

```
this is another test
^Z
another
```

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

int main()
{
  string word, longest = "";
  while (cin >> word)
    if (int(word.size()) > int(longest.size()))
      longest = word;
  cout << longest << endl;
  return 0;
}
```