Questions 1-5 are 4 points each.

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;
};
```
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

    // 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;
}