

Questions 1-5 are 4 points each.

ANSWERS
specification

1. What is the first step in writing a program: a) specification b) test c) code d) design?
2. What value is assigned to x? `int x = int(double(15)/8 + 1/2);`
3. What does this print? `cout << string(8, 'x').substr(3, 4);`
4. What does this print? `cout << char('e' + 'D' - 'd');`
5. Suppose p is a `vector<int>::iterator`. What statement prints the object to which p points?

1
xxxxx
E

ANSWER: `cout << *p;`

6. Suppose v is a `vector<int>` containing some numbers in the range 1 to 100. Write code to print the smallest odd number in v, or print "none" if v does not contain any such number (20 pts).

```
// ANSWER
int smallest = 101;
for (int i=0; i<int(v.size()); ++i)
    if (v[i] < smallest && v[i] % 2 == 1)
        smallest = v[i];
if (smallest == 101)
    cout << "none\n";
else
    cout << smallest << endl;
```

7. Write a function `f(s)` that takes a string s and returns 1 if s contains at least one digit and 0 otherwise (20 pts).

```
// ANSWER
int f(string s)
{
    for (int i=0; i<int(s.size()); ++i)
        if (isdigit(s[i]))
            return 1;
    return 0;
}
```

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

```
Employee x(60000, "Joe", 25), y(30000, "Sam", 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(int s, string n, int a);
    void print();
private:
    string name;
    int age, salary;
};
```

```
Employee::Employee(int s, string n, 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 last word starting with 'a', for example (20 pts)

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

```
// ANSWER
```

```
#include <iostream>
```

```
#include <string>
```

```
using namespace std;
```

```
int main()
```

```
{  
    string word, lastword;  
    while (cin >> word)  
        if (word[0] == 'a')  
            lastword = word;  
    cout << lastword << endl;  
    return 0;  
}
```