

What follows is a few sample questions demonstrating the style of some of the questions you will see on the exam. In addition to questions in these formats, you may see questions that ask you to author full or partial C functions.

Moreover, this is *not exhaustive* in either style or subject coverage. It is intended to help orient your expectations of exam format.

Section 1: True/False

A. The X86-64 assembly command **movq (%rax), (%rbx)** moves the contents of main memory stored at the address inside **%rax** to the location in main memory stored in **%rbx**.

Section 2: Multiple choice (select all that apply)

A. Which of the following has a largest size (in terms of bytes), assuming 64-bit machine?

- (a) char*
- (b) float*
- (c) int*
- (d) double*
- (e) All are same size

Section 3: C programming

A. Identify three problems with the following code.

```

1 void foo(float* fillMe, int length)
2 {
3     float numbers[length];
4     numbers[0] = 1;
5     for ( int i = 1; i < length; i++ )
6         numbers[i] = numbers[i-1] << 1;
7
8     fillMe = numbers;
9     return fillMe;
10 }
```

Section 4: Integer & Floating Point Encodings

A. Using our 6-bit IEEE754-like floating point encoding and a 8-bit two's complement, give the bit vectors for -12_{10}

floating point _____
 two's complement _____

Section 5: Bitwise Operations

A. Initialize a, b, c so that the assertions pass.

```

1 char bits = 0xA;
2
3 char a = _____;
4 char b = _____;
5 char c = _____;
6
7 assert((a & bits) == 0x8);
8 assert((b | bits) == 0xF);
9 assert((c ^ bits) == 0xF);
```