Sample Midterm Answers

1. Which of the following Python identifiers are legal variable names? For those that are not, say why not.
    a. x
    b. Celsius
    c. spam3
    d. <hello>
    e. question?

    Answer: Choices a, b, and c are legal variable names. Choice d is not because the characters "<" and ">" are not allowed in variable names; neither is "?", so choice e is not.

2. What is the data type (int, long int, float, string, list) of the following:
    a. 3
    b. 3.0
    c. 3L
    d. "hello"
    e. 'x'
    f. [1, 2, 3]

    Answer:
    a. int
    b. float
    c. long int
    d. string
    e. string
    f. list

3. Write the following formulas in Python:
    a. $\dfrac{5}{9}f + 32$
    b. 7×9
    c. 4^2

    Answer:
    a. (5.0 / 9.0) * f + 32
    b. 7 * 9
    c. 4 ** 2

4. What does the following program print:

    ```
    for i in "hello":
        print i, "-->", chr(ord(i)+1);
    ```

    Answer:
    ```
    h --> i
    e --> f
    l --> m
    l --> m
    o --> p
    ```

5. What does the following program print?

```
for i in [1, 7, 4]:
   x = (-1) ** i * i;
   print i, x;
```

Answer:
```
1 -1
7 -7
4 4
```

6. (*15 points*) When I ran the following program:

```
x = input("Enter a number: ");
y = 1 / x;
print "The reciprocal of", x, "is", y;
```

I got the following error message:

```
Traceback (most recent call last):
  File "test.py", line 2, in <module>
    y = 1 / x;
ZeroDivisionError: integer division or modulo by zero
```

What caused the error? Please be specific.

Answer: The problem is that there was an attempt to divide by 0. This occurred on line 2. As there is a division by **x** there, and I entered the value of **x** in response to the prompt (see line 1), I obviously entered 0.