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. \( \frac{5}{9}f + 32 \)
   b. \( 7 \times 9 \)
   c. \( 4^2 \)
   Answer:
   a. \( (5.0 / 9.0) \times f + 32 \)
   b. \( 7 \times 9 \)
   c. \( 4 ** 2 \)

4. What does the following program print:
   \[
   \text{for i in "hello":}
   \text{ print i, "-->", chr(ord(i)+1);
   }
   \]
   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.