I’ve included four examples of each of the following types of questions on the exam. Be sure to read through every question completely.

The questions on the exam are as follows:

1. Dual Choice — worth 2 points each.

2. Multiple Choice — worth 4 points each. Choose the best answer.

3. Fill-in-the-blank — each blank is worth 6 points each. Be complete.

You may not use notes or books, your neighbors, or calculators or any other electronic devices on this exam. Turn off and put away your cell phone, pager, Inspector Gadget Watch, etc. now.
A or B: Terminology

Select the option which makes the statement true.

1. When slicing an iterable using \([a:b:c]\) syntax, the value at \(b\) is the ____________. \(2\)
   - \(\text{step size}\)
   - \(\text{upper bound}\)

2. Functions are ________________ using the Python keyword \texttt{def}. \(2\)
   - \(\text{called}\)
   - \(\text{defined}\)

3. Dictionary values are accessed by _________________. \(2\)
   - \(\text{key}\)
   - \(\text{index}\)

4. A list is an example of a(n) ________________ data type. \(2\)
   - \(\text{immutable}\)
   - \(\text{mutable}\)

Multiple Choice: Reading code

5. What is the value stored in \(x\) after the following code executes? \(4\)
   \[
x = [1,1,2,3,5][-1]
   \]
   - \(1\)
   - \(5\)
   - A list with two elements, both of which are lists of ints.
   - This code causes an \texttt{IndexError}.
6. Which of the following is not a legal assignment, given that the variable `b` has been defined as follows:

\[ b = \{ "age":19,1:"favorite number"\} \]

- \[ b["favorite number"] = 1 \]
- \[ b[0] = 20 \]
- \[ b[2,3,4] = "1" \]
- \[ b[1] = [2,3,4] \]

7. What is the data type of the value returned by this function? Assume `string` and `random` have been imported.

```python
def encode( character ):
    cipher = [ ltr for ltr in string.ascii_lowercase ]
    random.shuffle(cipher)
    return cipher.index(character)
```

- int
- float
- char
- str

8. Consider the following code fragment, where `list_a`, `list_b` and `list_c` are all lists of integers. Which location for the code `num += 1` will count the number of integer elements in `big_mess` that are odd?

```python
big_mess = [ list_a, list_b, list_c ]
num = 0

for i in big_mess:
    for j in i:
        if j % 2 == 0:
            # location 1
        else:
            # location 2
            # location 3
            # location 4
```

- location 1
- location 2
- location 3
- location 4
**Fill-in-the-blank: Writing code**

The following functions are missing lines. Fill in the blanks to make the functions behave as the comments indicate. Each blank is worth **6 points**, and there are a total of 4 blanks in this practice test (question 10 counts as one blank with partial credit).

9.    def multiply( m1, m2 ):
      """ PRINTS the result of multiplying matrix m1 by matrix m2 """
      for i in range(len(m1)):
          for j in range(len(m1[i])):
              element = 0
              for k in range(len(m1[i])):
                  # add A(i,k)*B(k,j) to the tracker variable
                  element += A(i,k)*B(k,j)
                  # display the element
              print       # prints a newline after each row

10.   def get_digit():
      """ This function always returns the string ‘digit’ """
      return "prestidigitation"[ ________ : ________ ]

11.   def squares( n ):
      """ This function should return a list of squares of nonnegative integers up to AND INCLUDING n:
      squares(5) returns [0, 1, 4, 9, 16, 25]
      Hint: use list comprehension!
      """
      return [ __________________________ ]