Instructions:

**KEEP TEST BOOKLET CLOSED UNTIL YOU ARE INSTRUCTED TO BEGIN.**

No calculators, notes, textbooks, or any other aids are allowed except a pen or pencil (or other writing utensils). If you need extra scratch paper, please pickup a blue book from the front of the class.

All answers must be submitted on this exam sheet. All answers must be legible.
Example True or False:
Instructions: Circle either True or False

1. Interpreted and/or Byte-Code languages add a level of abstraction from your traditional compiled languages that makes interpreted/byte-code languages more portable between platforms, but also causes a slight performance hit.
   True                False

Example Multiple Choice:
Instructions: Circle the letter of the best answer.

1. Which of the following is not a Python boolean operator?
   A. and
   B. or
   C. not
   D. if
   E. None of the above (All of these are boolean operators)

Example Short Answer:
Instructions: In your own words, answer the questions as best as possible.

1. What is the difference between a global and local variable?
Example Entomology - Study of Bugs:

Instructions: Find 3 bugs in the following program (there are more than three):

1) Specify the line number of the bug.
2) Check the box next to the type of error; either "Logic" for logic errors or "Other" for (syntax, type, etc.).
3) Write a short explanation or fix for the error.

Note: There can be more than one bug per line.

```python
1  '''
2  '''Description: Calculates tip to provide on a bill
3  '''
4  DEFAULT_TIP == 15
5  # Get user input
total = str(input("What is the pre-tax total (in dollars)? "))
tip_percent = input("What percent tip do you want to leave [defaults to 15]? "))
6  # Use either default or user given value
7  if (tip_percent != 
8    tip_amount = total * (float(tip_percent)/100)
9  else
10    tip_amount = total x DEFAULT_TIP/100
11  print("Your tip amount is:" tip_amount)
12  ```

<table>
<thead>
<tr>
<th>Bug</th>
<th>Line #</th>
<th>Type of Error</th>
<th>Explanation/Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[ ]</td>
<td>Logic, Other</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>[ ]</td>
<td>Logic, Other</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>[ ]</td>
<td>Logic, Other</td>
<td></td>
</tr>
</tbody>
</table>
Example: What is the Output:

Instructions: What is the output if the following code is run?

```python
# Global answer variable
answer = 0

def print_addition(x, y):
    # Local answer variable
    answer = x + y
    print("print_addition():answer =", answer)
    return answer

def subtraction(x, y):
    return x - y

def main():
    # Using the global answer variable
    global answer
    answer = 21
    print_addition(5, 6)
    print("main():subtraction(5, 2) =", subtraction(5, 2))
    print("main():answer =", answer)

    # Check contents of global answer
    print("global answer =", answer)

    # Run our program
    main()

Answer:
```

Answer:

4
Example: Fill in the Code:

Instructions: Fill in the missing code so that the program will print a rectangle of **height equal to 5** and **width equal to 6** using the "*" character.

```python
def isEven(number):
    '''
    returns True if number is even, otherwise False
    '''
    if ( ________________________ % 2 == ________________________):
        return True
    __________________________ Flase

def main():
    '''
    asks the user for a number and tells them if it's even or odd
    '''
    num = ________________________(input('Enter a number to check'))
    if (________________________(num)):
        print('The number', num, 'is even.')
    else:
        print('The number', num, 'is odd.')
main()
```
Example Write the Code

Instructions: Write the function “sumNFactorial” that takes the parameter n and returns the sum of the first n factorial numbers. As in:
   1 factorial + 2 factorial + ... + n factorial
An example would be:
   sumNFactorial(4) would equal (1! + 2! + 3! + 4!)