**EXAMINATION INSTRUCTIONS**

This examination has 9 pages. Check that you have a complete paper.
Each candidate should be prepared to produce, upon request, his or her SUNY/UB card.

This examination has 8 questions. Answer all questions.

**You have 60 minutes to complete this examination. Use your time accordingly.**

READ AND OBSERVE THE FOLLOWING RULES:

► Names are pre-printed on the exam booklets. Ensure that you have YOUR exam.
► Sign, using your usual signature, in the space provided on the back cover.
► All of your writing must be handed in. This booklet must not be torn or mutilated in any way, and must not be taken from the examination room.
► Show all of your work in arriving at an answer, unless instructed otherwise. Partial credit will be awarded as appropriate.
► Candidates are not permitted to ask questions of the invigilators, except in cases of supposed errors or ambiguities in examination questions.
► **CAUTION** – Candidates guilty of any of the following, or similar, dishonest practices shall be immediately dismissed from the examination and shall be liable to disciplinary action.
  ♦ Making use of any books, papers or memoranda, calculators or computers, audio or visual cassette players, or other memory aid devices, other than those explicitly authorised by the examiners.
  ♦ Speaking or communicating with other candidates.
  ♦ Purposely exposing written papers to the view of other candidates. The plea of accident or forgetfulness shall not be received.

--------------------------- DO NOT WRITE BELOW THIS LINE! ---------------------------

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<th>MODULE 1</th>
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<th>Q3</th>
<th>Q4</th>
<th>Subtotal</th>
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<tr>
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<table>
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<th>MODULE 2</th>
<th>Q1</th>
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TOTAL /160
Module 1 - Question 1 [20 points, 4 points each]
The code given below is syntactically correct.

Circle, and identify by number, one \textit{and only one} example of each of the following items in the code below. If you believe no example exists, write “no example” next to that item in the list. To show you how I want the question answered, \textit{the first one is done for you}.

0. numeric literal
1. keyword
2. variable
3. assignment statement
4. a function call
5. a parameter list

```python
def overspent(budget):
    over = {}
    months = list(budget.keys())
    months.pop(0)
    for key in months:
        data = budget[key]
        diff = int(data[0]) - int(data[1])
        if (diff < 0):
            over[key] = diff
    return over
```

0. numeric literal
1. keyword
2. variable
3. assignment statement
4. a function call
5. a parameter list
Module 1 - Question 2 [20 points total, 10 each part]

10 points: perfect
3 points: clearly wrong, some correct elements
7 points: essentially correct but with small mistakes
0 points: for anything else

Study the following code, then answer the question which follows.

```javascript
function whatDoesThisDo(x) {
  result = "";
  if (x < 55) {
    return "Zoo";
  }
  else if (x < 70) {
    result = "Walk";
    x = x - 55;
  }
  else if (x < 85) {
    result = "Talk";
    x = x - 70;
  }
  else {
    result = "Hawk";
    x = x - 85;
  }
  if (x < 5) {
    result = result + "??";
  }
  else if (x < 10) {
    result = result + "!!";
  }
  else if (x < 15) {
    result = result + "**";
  }
  return result;
}
```

[10 points] What does the following statement print?
```javascript
console.log("Answer is " + whatDoesThisDo(71));
```
Write your answer below:

*Answer is Talk??*

[10 points] Give a value of x which which whatDoesThisDo(x) returns "Hawk**".
Write your answer below:

95, 96, 97, 98, or 99.
Any one of these is OK – they don’t need to give all.
Module 1 - Question 3 [20 points total]

Read this description of how to convert a temperature from Fahrenheit to Kelvin:

Fahrenheit and Kelvin are two common temperature scales. The Fahrenheit scale is used in the United States, while Kelvin is an absolute temperature scale, used worldwide for scientific calculations. While you might think this conversion wouldn’t occur much, it turns out there is a lot of scientific and engineering equipment that uses the Fahrenheit scale! Fortunately, it is easy to convert Fahrenheit to Kelvin.

**Fahrenheit to Kelvin Method #1**

1. Subtract 32 from the Fahrenheit temperature.
2. Multiply this number by 5.
3. Divide this number by 9.
4. Add 273.15 to this number.

The answer will be the temperature in Kelvin.

Source: https://www.thoughtco.com/convert-fahrenheit-to-kelvin-609231

Define a Python function named ‘f_to_k’ which converts a temperature expressed in degrees Fahrenheit to the equivalent in Kelvin, according to the above method. The function must accept a temperature in Fahrenheit as an argument and return the corresponding temperature in Kelvin.

Write your answer below:

Here’s one possible solution – there are others. Any code that solves the problem in the general case is fine:

```python
def f_to_k(v):
    return (v - 32) * 5 / 9 + 273.15
```
Module 1 - Question 4 [20 points total]

Consider a function named ‘postage’ which will be called with one argument (you can assume that it will be called only with an integer value representing the weight of a package, in grams) that computes an integer value representing the postage needed to mail a letter based on its weight, according to the following table:

<table>
<thead>
<tr>
<th>Weight (in grams)</th>
<th>Postage (in cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to and including 20 grams</td>
<td>10</td>
</tr>
<tr>
<td>More than 20 grams, but less than or equal to 40 grams</td>
<td>$10 + 2$ cents per gram of weight over 20 grams</td>
</tr>
<tr>
<td>More than 40 grams</td>
<td>$50 + 3$ cents per gram of weight over 40 grams</td>
</tr>
</tbody>
</table>

Describe briefly what a test case is:

A test case is a set of possible inputs together with the corresponding correct output.

Give two distinct test cases:

Test case #1:

Input: 21, Output: 12  
This is one way to write a test case.

Test case #2:

postage(41) → 53  
This is another.
Module 2 - Question 1 [20 points, 4 points each]
The code given below is correct; it compiles without errors. I have added some extra
spacing to make this question easier to answer.

Circle, and identify by number, one and only one example of each of the following
items in the code below. If you believe no example exists, write “no example” next to
that item in the list. To show you how I want the question answered, the first one is done
for you.

0. numeric literal
1. conditional statement (entire statement)
2. looping statement (entire statement)
3. an empty dictionary literal
4. a dictionary lookup

def overspent(budget):
    over = {}
    months = list(budget.keys())
    months.pop(0)
    for key in months:
        data = budget[key]
        diff = int(data[0]) - int(data[1])
        if (diff < 0):
            over[key] = diff
    return over
Module 2 - Question 2  [20 points total]

Consider a Python function named ‘sumOfNumbersInList’ which has one parameter. The function will be called with a list of numbers and will return the sum of all the numbers in the list.

Part 1 [1 point]
What value does sumOfNumbersInList([0]) return?

0

Part 2 [1 point]
What value does sumOfNumbersInList([17,3,-5]) return?

15

Part 3 [1 point]
What value does sumOfNumbersInList([]) return?

0

Part 4 [17 points]

17 points: perfect
6 points: clearly wrong, some correct elements
12 points: essentially correct but with small mistakes
0 points: for anything else

Define, in Python, the function sumOfNumbersInList:

One possible solution:

```python
def sumOfNumbersInList(x):
    sum = 0
    for v in x:
        sum = sum + v
    return sum
```
Module 2 - Question 3 [20 points total]
- 20 points: perfect
- 7 points: clearly wrong, some correct elements
- 14 points: essentially correct but with small mistakes
- 0 points: for anything else

Define a JavaScript function named `printArray` with two parameters. Assume the function will be called with an array of strings and an integer. Define the function so it prints (using `console.log`) all the strings from the array whose length is greater than or equal to the integer.

For example,

```javascript
printArray(["sue", "amy", "bob"], 4)
```

must print nothing, whereas

```javascript
printArray(["foo", "fluffy", "pi", "cake", "rho"], 4)
```

must print the following:

```
fluffy
cake
```

Write your answer below:

Here's one possible solution – there are others. Any code that solves the problem in the general case is fine:

```javascript
function printArray(a, x) {
    for (var s of list) {
        if (s.length >= x) {
            console.log(s);
        }
    }
}
```
Module 2 - Question 4 [20 points total]

[ ] 20 points: perfect  
[ ] 7 points: clearly wrong, some correct elements  
[ ] 14 points: essentially correct but with small mistakes  
[ ] 0 points: for anything else

Study the following code:

```python
import csv

def mystery(filename):
    with open(filename, "r", newline='') as f:
        reader = csv.reader(f)
        for line in reader:
            print(line[1])
        print("Done")

mystery("f.csv")
```

Give possible contents for the file f.csv which would cause the above to print:

```plaintext
2
5
8
Done
```

Give your answer below:

One possible answer (any with the second column 2, 5, and 8 is OK):

1,2,3
4,5,6
7,8,9