

Name:

Number:

Part I (40 points) Select the correct option for each question.

1.What is the output of the following lines of code: x=1 if(x==1): print('Hello') else: print('Hi') print('Mike')

Hello Mike
Mike
Hello
Hi Mike

2. What is the output of the following few lines of code?

```
A=['1','2']
for a in A:
    print(2*A)
```

'2' '4'
['1', '2', '1', '2']
['1', '2', '1', '2']
'11' '22'
['1', '2']
['1', '2']

3. Consider the function Teste, when will the function return a value of 1?

```
def Teste(x=0):
    if x==0:
        y=1
    else:
        y=0
    return(y)
```

When the input is 0 or nothing
Never
When the input in 1
When the input is anything but 0

4. What will be the output of the following Python code?

```
t=32.00
[round((x-32)*5/9) for x in t]
```

[0]
0
[0.00]
Error



5. What is the output of the following program : Print(0.1 + 0.2 == 0.3)

True
False
Machine dependent
Error

6. What will be the output of the following Python list comprehension?

[j for i in range(2,8) for j in range(i*2, 50, i)]

a) A list of prime numbers up to 50

b) A list of numbers divisible by 2, up to 50

c) A list of non prime numbers, up to 50

d) Error

A list of prime numbers up to 50
A list of numbers divisible by 2, up to 50
A list of non prime numbers, up to 50
Error

7.what is the result of the following lines of code:

a=np.array([0,1])
b=np.array([1,0])
np.dot(a,b)

array([1,1])
0
1
array([0,0])

8.what is the result of the following lines of code:

a=np.array([1,1,1,1,1])

a*;	a**10	
	array([10,10,10,10])	
	array([11, 11, 11, 11, 11])	
	array([0,0, 0, 0, 0])	
	array([1,1,1,1,1])	

9. What is the output of the following code snippet? func = lambda x: return x print(func(2))

2
SyntaxError
2.0
0



10. What is the output of the following code snippet?

(la	mbda x: $(x + 3) * 5 / 2)(3)$
	30.0
	0
	sintaxError
	15.0

11. How many duplicate elements can you have in a set?

1
100
0, you can only have one unique element in a set
depends on the number of elements in your set.

12. What is the output of the following program : print ("Hello World"[::-1])

dlroW olleH
Hello Worl
error
d

13. Which of the following is not a complex number?

k = 2 + 3j
k = complex(2, 3)
k = 2 + 3i
k = 2 + 3J

14. When you encounter an error in Python, what should you do?

Search the course discussion forum and post a question if yours hasn't been asked.
Read the error message.
Try help() or dir().
Use Google or StackOverflow to find an answer.
All of the above.

15.
def changing(mylist):
 mylist[0] = 10/10-10
 return(mylist)
L = [1, 3, 5, 7, 9]
M = changing(L)
M is L

What is the value of the final line?

False
SintaxError.
True
ZeroDivisionError: division by zero



16.Consider the following dataframe:

	name	age	city
0	John	23	Lisbon
1	Ann	26	Coimbra
2	Mary	27	Porto

What is the result of df.iloc[1:2,1:2]?

John
26
Ann
23

17. What is the output of the following code snippet?

```
import networkx as nx
```

```
G = nx.Graph()
```

G.add_edges_from([(1,2),(2,4)])
G.number_of_nodes(), G.number_of_edges()

2,2
3,0
1,0
3, 2
This code contains an error.

18. What is the output of the following code snippet? my_list = [1, 2, 3, 4] a = (x**2 for x in my_list) print(next(a), next(a))

14
49
916
1 4 9 16

19.For a given network G, what does len(G) return?

The number of nodes
The length of the longest path
The size of the largest component
The number of edges
A list of nodes in each component

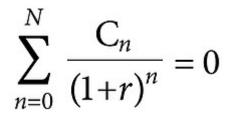
20. How to convert a list called student into a df dataframe using pandas?

df =pd.read_xls(student)
df =pd.import_csv(student)
df =pd.dataframe(student)
df =pd.series(student)



Part II (60 points)

1. Calculate IRR (Internal Rate of Return) without using NumPy package. Remember that the IRR formula is the following:



C - are cashflow n - number of periods r - rate (IRR)



2. Create a list with all prime numbers until 100. The correct solution must be efficient.



3. Create a function called profitLossAccount that has as inputs the following parameters: num, q, r, p, pr, c.

Where:

- num is the number of years
- q is the quantity sold in the first year
- p is the price in the first year
- c is the unit cost that is constant over the period
- Quantity growth rate is r per year
- price growth rate is pr per year

The result will be a vector with all the profits.



4. Create an object called bestStudent. This is an instance of a class called student, that extends another class called person. A person has a name, age, and address. A student has a graduation year and grade.