

Programming for Analytics

MPBA G506

Total marks: 50 (Closed-book examination)

Time: 11:00 am - 12:30 pm (90 minutes)

Attempt all questions

Q1. Which of the following star patterns will be generated by the following Python code (Choose A or B or C or D)

[5]

```
n = 10
for i in range(0, n):
    for j in range(0, i+1):
        print(" ", end=" ")
    for j in range(0,n):
        print("*", end=" ")
    n = n - 1
    print("\n")
```

*****		*	*****	*
*****		**	*****	**
*****		***	*****	***
*****		****	*****	****
*****		*****	*****	*****
****		*****	****	*****
***		*****	***	*****
**		*****	**	*****
*		*****	*	*****
A	B	C	D	

Q2.1 List's element is accessed using the [] operator, whereas Tuples's element is accessed using the () operator. (True/False)

[5]

Q2.2 You can append a tuple to a list (True/False)

Q2.3 You can concatenate a list with a tuple (True/False)

Q2.4 Write the git command to delete a branch with the name 'Doxygen'

Q2.5 The [] operator is known as _____

Q3. For the following Python code, write the output of the print statement with values of variables as displayed [5]

```
Super_string = 'Super-String'  
chars = len(Super_string)  
start = Super_string.count('-')  
end = chars//2  
s1 = Super_string[start:end]  
s2 = s1 + 'son'  
print(chars, start, end, s1, s2)
```

Q4.1 Python's dill module can be used to _____ [1]

Q4.2 `from Decimal import decimal` [1]

Briefly explain (use) the above Python statement (One/Two liner explanation)

Q4.3 The execution of following Python code result into (Choose between Option A or B) [3]

```
tapal1 = ([1,2,3])  
tapal1[0] = 3  
tapal1[2] = 1  
print(tapal1)
```

- A. Will sort the elements in the reverse order
- B. Will generate an error as the code tries to mutate/change the elements

Q5.1 Write the output of following Python code [3]

```
a = 3  
b = 2.9  
a = str(a)  
b = int(b)  
print(a*b)
```

Q5.2 Write the output of following Python code [2]

```
var1 = {"0:Zero", "1:One"}  
var1.add("0:Zero")  
var1.add("2:Two")  
items = len(var1)  
for counter in range(items):  
    print(counter, end='-')
```

▼ Defining functions

```
[ ] 1 # Defining a custom function
    2 def square(number):
    3     """Calculate the square of number.""" # Defining docstring
    4     return number ** 2 # Returning a result to a function caller
```

▼ Function documentation

```
[ ] 1 square? # Function docstring
    2 square?? ## Function docstring and code
```

▼ Calling a function

```
[ ] 1 square(7) # Calling the custom function
```

Q6.1 How many cells get hidden after collapsing the 'Defining functions' cell? Briefly explain. [1]
Hint:

- 'Defining functions' is heading1.
- 'Function documentation' and 'Calling a function' are heading2

Q6.2 Docstrings can be enclosed with three single quote characters in the beginning and end (True/False) [1]

Q6.3 The definition of square function is also an example of default arguments (True/False) [1]

Q6.4 The indentation used in the definition of square functions has to be always an even value of whitespaces (True/False) [1]

Q6.5 A call to square function, as given below would yield

`square(2, 3, 4)`

[1]

Output

- 4, 9, 16
- 4
- 16
- Error

Q6.6 Match the following

[5]

A. def	a. constant
B. square	b. argument
C. 7	c. keyword
D. 2	d. variable
E. number	e. identifier

Briefly explain following Python concepts with concise executable Python code as an example

Q7.1 Short circuit evaluation

Q7.2 Dictionary comprehension

Q7.3 Lambda function

Q7.4 Recursion

Q7.5 Mutability

Q8. Match the following as per the Python concept involved in the following code snippets

[5]

A	<pre>flag = 4 flag = 0 if flag = 0 else 1</pre>	1	Tuple unpacking
B	<pre>var = ('PFA', 'DMW') var1, var2 = var print(var1, var2, sep = '-')</pre>	2	Syntax error
C	<pre>stars = ['*', '*'] print(*stars, sep = '*')</pre>	3	Semantic error
D	<pre>def square(number): # Computes the square of a number """ For a number such as 2 it shall return 4 """ return number ** 3 square(2)</pre>	4	Higher order functions
E	<pre>numbers = [1, 2, 3] list(map(lambda x: x ** 2, numbers))</pre>	5	Unpacking operator

Q9.1 Write the output for following Python code

[3]

```
Pixels = ['Red', 'Green', 'Blue', 'Green']
```

```
Pixels = set(enumerate(Pixels))
```

```
elements = len(Pixels)
```

```
print(elements, Pixels)
```

Q9.2 Write the formatted output for given below Python code snippet as per the f-string conventions for left alignment of tabular data

[2]

```
numbers = [1, 10, 100, 1000, 10000]
```

```
for number in numbers:
```

```
    print(f' {number:<5}{number}')
```