**Python**

Python Module 2 Lesson 12

Name: Date:

**EtienneInstructions:**

1. Students are given 1 hour to complete this test.
2. For the duration of the test, teachers are not allowed to help the students with the answer.
3. Students are to score at least 70% on the test to pass. If they fail, they will have to redo the test again in the next lesson.

| | |
|---|---|
| Section A – MCQ | / 10 |
| Section B – Debugging | / 10 |
| Section C – Short Coding Question | / 10 |
| Section D – Open Ended Question | / 20 |
| | / 50 |

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**Section A: (10 marks)**

**This is a multiple-choice answer section.** Write your answer is the bottom right of each question.

Question 1:

What is the value of var?

| Code | |
|---|---|
| 1 | lst = [1, 3, 2, 4] |
| 2 | var = 0 |
| 3 | for num in lst: |
| 4 | var += num |
| 5 | print(var) |

A) 7

B) 9

C) 10

D) 12

Question 2:

2, 4, 8, 16, 32, 64, …

What kind of progression is the above number sequence?

A) Arithmetic Progression

B) Geometric Progression

C) Linear Progression

D) Binary Progression

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**Section A: (10 marks)**

Question 3:

How many lines of output?

| Code | |
|---|---|
| 1 | for num in range(5): |
| 2 | print(num) |

A) 5

B) 4

C) 1

D) 6

Question 4:

An Arithmetic Progression is a mathematical sequence. What is the name of the increase/decrease between each subsequent term?

A) Common Difference

B) Common Increase

C) Common Ratio

D) Common Divide

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**Section A: (10 marks)**

Question 5:

| Code | |
|---|---|
| 1 | lst = [] |
| 2 | for num in range(-2, -5, -1): |
| 3 | lst.append(num) |
| 4 | print(lst) |

A) [-2, -1, 0]

B) [-2, -1, -3, -4]

C) [-2, -3, -4]

D) [-2, -2, -2, -2, -2]

Question 6:

| Code | |
|---|---|
| 1 | lst = [] |
| 2 | for num in range(2, 5, -1): |
| 3 | lst.append(num) |
| 4 | print(lst) |

A) []

B) [2, 2, 2, 2, 2]

C) [2, 3, 4]

D) [2, 1, 0]

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**Section A: (10 marks)**

Question 7:

21, 19, 17, 15, 13, …

In the Arithmetic Progression above, what is the first term, a?

A) 21

B) 13

C) 2

D) -2

Question 8:

21, 19, 17, 15, 13, …

In the Arithmetic Progression above, what is the common difference, d?

A) 21

B) 13

C) 2

D) -2

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**Section A: (10 marks)**

Question 9:

1, 2, 4, 8, 16, 32 …

In the Arithmetic Progression above, what is the first term, a?

A) 1

B) 2

C) 4

D) 8

Question 10:

1, 2, 4, 8, 16, 32 …

In the Arithmetic Progression above, what is the first term, r?

A) 1

B) 2

C) 4

D) 8

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**Section B: (10 marks)**

**This is the debugging section.** In the next few questions, there are **bugs in the code giving an incorrect output**. **The scenarios are shown in each question. Read the requirements carefully.**

Identify the bugs and correct them in the table on the right. Each correction is worth 2 marks.

Question 11: (4 marks)

The function *multiplication()* is supposed to take in 2 arguments *n & a* and display the *n* multiplication table ranging from 1 to *a* (inclusive).

| **Sample Function Call** | **Expected Output** |
|---|---|
| multiplication(3,5) | 3 x 1 = 3<br>3 x 2 = 6<br>3 x 3 = 9<br>3 x 4 = 12<br>3 x 5 = 15 |
| multiplication(5,3) | 5 x 1 = 5<br>5 x 2 = 10<br>5 x 3 = 15 |

Find the **2 mistakes** and correct them. You may introduce more lines.

| Faulty Code | |
|---|---|
| 1 | def multiplication(n,a): |
| 2 | ans = n * a |
| 3 | print(ans) |
| 4 | |
| 5 | multiplication(3,5) |
| 6 | multiplication(5,3) |

| Corrected Code | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

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**Section B: (10 marks)**

Question 12: (6 marks)

The function sum_of_list*()* is supposed to take in 1 arguments *lst* and print the sum of all the integers in the list.

| **Sample Function Call** | **Expected Output** |
|---|---|
| sum_of_list([1,2,3]) | 6 |
| sum_of_list([4,5,6,7,8]) | 30 |

Find the **3 mistakes** and correct them. You may introduce more lines.

| Faulty Code | |
|---|---|
| 1 | def sum_of_list(lst): |
| 2 | count = 0 |
| 3 | for i in range(lst): |
| 4 | count += 1 |
| 5 | print(count) |
| 6 | |
| 7 | sum_of_list([1,2,3]) |
| 8 | sum_of_list([4,5,6,7,8]) |

| Corrected Code | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |

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**Section C: (10 marks)**

**This section is a short coding question section.** Write the **python function** as stated in the questions.

Question 13: (5 marks)

Given NumberSequence = [10,9,8,7,6,5,4,3,2,1], write a **python function** that stores every alternate item in the list starting from index 0 in a new list. Print out the new list.

The function should be called *getAlternate()* with the parameters – *lst*

| **Sample Function Calls** | **Sample Output** |
|---|---|
| getAlternate([10,9,8,7,6,5,4,3,2,1]) | [10,8,6,4,2] |

Question 14: (5 marks)

Company A predicts a yearly profit of $100 000 in their first year. Company A expects a yearly increase of profit by 5% (multiply by 1.05).

Write a **python function** that prints the final profit at the end of 10 years rounded up to 2 decimal places. You may use round(x,2) where x is your final value for rounding.

The function should be called *getYearlyProfits()* with the parameters – *name*, *initial, increase, years*

| **Sample Function Calls** | **Sample Output** |
|---|---|
| getYearlyProfits('A', 100000, 1.05, 10) | By end of **10** years, Company **A** should have a profit of $**162889.46** |

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**Section D: (20 marks)**

**This section is a long coding question section.**

Marks are allocated in the question.

Question 15: (14 marks)

Alfred is tracking the download progress of his game. He records the progress every 3 minutes and records it in the table shown below.

| Time | Progress |
|---|---|
| 3 | 20 |
| 6 | 40 |
| 9 | 60 |
| 12 | 80 |
| 15 | 100 |

He wants to create a simple progress bar that reflects the progress percentage every 3 minutes as shown below.

| Output | |
|---|---|
| 1 | ==oooooooo 20% --- 3 min |
| 2 | ====oooooo 40% --- 6 min |
| 3 | ======oooo 60% --- 9 min |
| 4 | ========oo 80% --- 12 min |
| 5 | ========== 100% --- 15 min |

Using For Loops in Range, write **python code** to get the expected output. Your code should achieve the following

(i) Progress Bar – 6 marks
(ii) Percentage – 4 marks
(iii) Minutes – 4 marks

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**Section D: (20 marks)**

Question 16: (6 marks)

Austin is deciding between 2 bank accounts to save $1000 of his money for 5 years.

Bank A: 1.0% interest compounded annually
Bank B: $20 added annually

Write **python function** to calculate the following

(i) final balance of bank A after 5 years – 3 marks
(ii) final balance of bank B after 5 years – 3 marks

The functions should be called *bankA()* with the parameters – *a, r, n* & *bankB()* with parameters – a, d, n.

| **Sample Function Call** | **Sample Output** |
|---|---|
| bankA(1000, 1.01, 5) | Bank A will have $**1051** after **5** years |
| bankB(1000, 20, 5) | Bank B will have $**1100** after **5** years |