The first interrogation

Last name: **first name:** **group:**

1. What is the output of the following code? *(Choose one or more correct answers)*

```
x = 10
x = 5.4
x = 'Ten'
print(type(x))
```

   A. <class 'int'>
   B. <class 'float'>
   C. <class 'str'>
   D. <class 'bool'>

2. Which of the following is a valid Python variable name? *(Choose one or more correct answers)*
   A. 1age
   B. user name
   C. _student_score
   D. class

3. What is the output of the following code? *(Choose one or more correct answers)*

```
x = 7
y = 2
print(x // y)
```

   A. 3.5
   B. 3
   C. 1
   D. 4

4. What is the output of the following code? *(Choose one or more correct answers)*

```
age = 20
student = True
print(age >= 18 and student)
```

   A. False
   B. True
   C. 20
   D. Error

5. The following code contains an error. Identify the line with the error and the correct fix.

```
score = 75
if score >= 60:
    print('Passed')
else (score < 60):
    print('Failed')
```

   A. Line 1: score should be declared with int(75)
   B. Line 4: 'else' does not take a condition. It should simply be: else:
   C. Line 3: print must use double quotes only
   D. Line 2: >= is not a valid operator, use > only

6. What does the following for loop print? *(Choose one or more correct answers)*

```
for i in range(5):
    print(i)
```

   A. 1, 2, 3, 4, 5
   B. 0, 1, 2, 3, 4
   C. 0, 1, 2, 3, 4, 5
   D. 1, 2, 3, 4

7. Complete the while loop so it prints 1, 2, 3, 4, 5 and then stops:

```
count = 1
while ______:
    print(count)
    count = count + 1
```

   A. count < 5
   B. count <= 5
   C. count == 5
   D. count > 5

8. What keyword is used in Python to define a function? *(Choose one or more correct answers)*
   A. function
   B. define
   C. def
   D. fun

9. What is the output of the following code? *(Choose one or more correct answers)*

```
def f(x):
    result = 4*x**2 + 3*x + 7
    return result
print(f(0))
```

   A. 0
   B. 14
   C. 7
   D. 3

10. What is the output of the following code? *(Choose one or more correct answers)*

```
def power(x, n=2):
    return x**n
print(power(n=3, x=4))
```

   A. 16
   B. 12
   C. 64
   D. Error – arguments are in wrong order.

11. The following function definition contains an error. Find and fix it.

```
def circle_area(radius):
    result = 3,14159*radius**2
    return result
```

   A. 'def' should be replaced with 'function'
   B. The comma in 3,14159 is an error. It should be a decimal point: 3.14159
   C. 'return' is not a valid keyword in Python
   D. radius**2 should be written as radius^2

12. What is the output of the following code?

```
numbers = [10, 20, 30, 40]
print(numbers[-1])
```

A. 10
B. 40
C. 30
D. Error – negative indexing is not allowed

13. What does the following code print? *(Choose one or more correct answers)*

```
numbers = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
print(numbers[2:5])
```

A. [2, 3, 4, 5]
B. [2, 3, 4]
C. [3, 4, 5]
D. [1, 2, 3, 4]

14. What is the output of the following code? *(Choose one or more correct answers)*

```
list1 = [0, 1, 2, 3]
list2 = [4, 5, 6, 7, 8, 9]
list3 = list1 + list2
print(list3)
```

A. [4, 5, 6, 7, 8, 9, 0, 1, 2, 3]
B. [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
C. Error – you cannot add two lists
D. [0, 2, 4, 6, 8, 10, 12, 14, 18]

15. What does the following code print? *(Choose one or more correct answers)*

```
numbers = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
print(numbers[::2])
```

A. [0, 1, 2, 3, 4]
B. [1, 3, 5, 7, 9]
C. [0, 2, 4, 6, 8]
D. [2, 4, 6, 8]

16. Which TWO of the following are correct properties of a Python set? *(Choose one or more correct answers)*
A. A set maintains the insertion order of elements.
B. A set automatically removes duplicate elements.
C. A set supports mathematical operations like union (|) and intersection (&).
D. A set can be indexed like a list using set[0].

17. What does the following list comprehension produce? *(Choose one or more correct answers)*

```
numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
evens = [x for x in numbers if x % 2 == 0]
print(evens)
```

A. [1, 3, 5, 7, 9]
B. [2, 4, 6, 8, 10]
C. [0, 2, 4, 6, 8, 10]
D. [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

18. Which statement correctly imports NumPy using the standard alias? *(Choose one or more correct answers)*
A. import NumPy as numpy
B. include NumPy as np
C. import NumPy as np
D. from numpy import *

19. What does the 'ndim' attribute of a NumPy array return? *(Choose one or more correct answers)*

```
import numpy as np
array_2d = np.empty((3, 4))
print(array_2d.ndim)
```

A. The total number of elements in the array (3 x 4 = 12)
B. The number of dimensions of the array (2 for a matrix)
C. The data type of the array elements
D. The size of each row

20. Which TWO NumPy functions create arrays filled with a constant value? *(Choose one or more correct answers)*
A. np.zeros(5) — creates an array of five 0.0 values
B. np.empty(5) — creates an array of five 0.0 values
C. np.ones(5) — creates an array of five 1.0 values
D. np.array(5) — creates an array of five 5.0 values

21. What does the following NumPy code create? *(Choose one or more correct answers)*

```
import numpy as np
array_2d = np.empty((3, 4))
print(array_2d.ndim)
```

A. A 1-D array with 7 elements (3+4=7)
B. A 2-D array with 3 rows and 4 columns (like a 3x4 matrix)
C. A 3-D array with depth 3 and width 4
D. A Python list of shape (3, 4)

22. What is the output of the following code? *(Choose one or more correct answers)*

```
import numpy as np
A = np.array([[1, 2, 3], [4, 5, 6]])
B = np.array([[6, 5, 4], [3, 2, 1]])
D = A * B
print(D)
```

A. Matrix product [[14, 14], [14, 14]]
B. Element-wise product [[6 10 12] [12 10 6]]
C. Error — cannot multiply 2-D arrays with *
D. [[7 7 7] [7 7 7]] (element-wise sum)

23. Complete the NumPy code to create a 2-D array (matrix) of ones with 3 rows and 4 columns:

```
import numpy as np
matrix = np.____((3, 4))
print(matrix)
```

A. np.empty((3, 4))
B. np.ones((3, 4))
C. np.zeros((3, 4))
D. np.array((3, 4))

24. The following NumPy code contains an error. Identify the problem and the correct fix.

```
import numpy as np
list_2d = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
array_2d = numpy.array(list_2d)
print(array_2d)
```

A. list_2d is written incorrectly — nested lists are not allowed.
B. 'numpy.array' should be 'np.array' because NumPy was imported as 'np'.
C. print() cannot display 2-D arrays.
D. The list must first be converted to a tuple before calling np.array().