Quiz 1

Name:

Course: AI (Machine Learning & Deep Learning)

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1. What is the purpose of NumPy in Python?

A. To do numerical calculations
B. To do scientific computing
C. Both A and B
D. None of the mentioned above

2. The NumPy package is capable of doing fast operations on arrays.

A. True
B. False

3. Amongst which Python library is similar to Pandas?

A. NPy
B. RPy
C. NumPy
D. None of the mentioned above

4. NumPy arrays can be ___.

A. Indexed
B. Sliced
C. Iterated
D. All of the mentioned above

5. Observe the following code and identify what will be the outcome?

```
import numpy as np

a=np.array([1,2,3,4,5,6])
```

print(a)

A. [1 2 3 4 5]
B. [1 2 3 4 5 6]
C. [0 1 2 3 4 5 6]
D. None of the mentioned above

6. Observe the following code and identify what will be the outcome?

```
import numpy as np
a = np.array([[ 0,  1,  2,  3],
              [ 4,  5,  6,  7],
              [ 8,  9, 10, 11]])
b = a
b is a
```

A. True
B. False

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

```
from numpy import random
x = random.randint(100)
print(x)
```

A. 56
B. 26
C. 40
D. All of the mentioned above

8. Using ndim we can find -

A. We can find the dimension of the array
B. Size of array
C. Operational activities on Matrix
D. None of the mentioned above

9. What is the output of the following code?

```
Import numpy as np
a=np.arange(10)
print(a[2:5])
```

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

10. What is the output of the following code?

```
Import numpy as np
a=np.array([[1,2],[3,4]])
print(a)ndim)
```

A. 0
B. 1
C. 2
D. 3

11. Which of the following is used to reshape a NumPy array?

A. reshape()
B. resize()
C. Both A and B
D. None of the above

Answer: c) Both A and B

12. Which of the following is used to find the indices of the maximum and minimum elements in a NumPy array?

A. argmax() and argmin()
B. max() and min()
C. amax() and amin()
D. None of the above

13. What is the output of the following code?

```
import numpy as np
a=np.array([1,2,3])
b=np.array([4,5,6])
c=np.concatenate((a,b))
print(c)
```

A. [[1, 2, 3], [4, 5, 6]]

B. [[1, 4], [2, 5], [3, 6]]
C. [1, 2, 3, 4, 5, 6]
D. Error

14. What is the purpose of NumPy in Python?

A. To provide a powerful N-dimensional array object
B. To provide functions for performing mathematical operations on arrays
C. To provide tools for integrating C/C++ and Fortran code with Python
D. All of the above

15. How is the basic ndarray created in NumPy?

A. By passing a Python list or tuple to the np.array() function
B. By using the np.ndarray() constructor function
C. By converting a Python list or tuple to an ndarray using the np.asarray() function
D. By using the np.zeros() or np.ones() functions to create an array filled with zeros or ones, respectively

16. Which of the following is the correct way to initialize an empty list in Python?

a) `list1 = []`

b) `list1 = list()`

c) `list1 = empty()`

d) Both a and b

17. Consider the list: my_list = [10, 20, 30, 40, 50]. What will my_list[1:3] return?

a) [10, 20]

b) [20, 30]

c) [30, 40]

d) [20, 30, 40]

18. What does the following Python code snippet do? `nums = [1, 2, 3]; nums.append([4, 5])`

a) Adds 4 and 5 to the `nums` list

b) Creates a new list within `nums` containing 4 and 5

c) Replaces the existing elements in `nums` with 4 and 5

d) Generates an error

19. Which of the following will remove the item '20' from the list `my_list = [10, 20, 30, 40, 50]`?

a) `my_list.remove(20)`

b) `del my_list[1]`

c) `my_list.pop(1)`

d) All of the above

20. What will be the output of the following code?

```
my_list = ['a', 'b', 'c', 'd']
print("".join(my_list[::2]))
```

a) `abcd`

b) `ac`

c) `bd`

d) `dcba`

21. What is a tuple in Python?

A. A mutable sequence of elements.

B. An immutable sequence of elements.

C. A key-value pair.

D. A collection of unique elements.

22. Which of the following is the correct way to create an empty tuple in Python?

A. `tuple()`

B. `()`

C. `[ ]`

D. `{ }`

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

```
t = (1, 2, 3)
print(t[1])
```

A. 1

B. 2

C. 3

D. Error

24. Can a tuple contain mutable objects in Python?

A. Yes

B. No

25. Which method is used to concatenate two tuples in Python?

A. `join()`

B. `merge()`

C. `extend()`

D. `+`

26. What is a dictionary in Python?

A. An ordered collection of elements.

B. A mutable sequence of elements.

C. An immutable sequence of elements.

D. A key-value pair.

27. How do you access the value associated with the key 'age' in the dictionary `person`?

person = {'name': 'John', 'age': 30}

A. `person['age']`

B. `person.age`

C. `person.get('age')`

D. `person.value('age')`

28. What will be the output of the following code snippet?

d = {'a': 1, 'b': 2, 'c': 3}

del d['a']

print(d)

A. `{'a': 1, 'b': 2, 'c': 3}`

B. `{'b': 2, 'c': 3}`

C. `{'a': 1, 'c': 3}`

D. Error

29. Which of the following methods is used to remove all elements from the dictionary?

A. `clear()`

B. `popitem()`

C. `remove()`

D. `delete()`

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

d = {'a': 1, 'b': 2, 'c': 3}

print(d.keys())

A. `[1, 2, 3]`

B. `['a', 'b', 'c']`

C. `[1, 'a', 2, 'b', 3, 'c']`

D. Error

31. What is a set in Python?

A. A collection of elements with duplicate values.

B. A collection of elements with unique values.

C. An ordered collection of elements.

D. A key-value pair.

32. Which of the following is the correct way to create an empty set in Python?

A. `{}`

B. `set()`

C. `[]`

D. `()`

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

```
s1 = {1, 2, 3}
s2 = {3, 4, 5}
print(s1.intersection(s2))
```

A. `{1, 2, 3, 4, 5}`

B. `{3}`

C. `{}`

D. Error

34. Which method is used to add an element to a set in Python?

A. `add()`

B. `insert()`

C. `append()`

D. `update()`

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

```
s = {1, 2, 3}
s.add(4)
s.add(1)
print(s)
```

A. `{1, 2, 3, 4}`

B. `{1, 2, 3}`

C. `{2, 3, 4}`

D. `{1, 2, 3, 1, 4}`

36. What does a for loop in Python do?

a) Repeats a block of code a specified number of times

b) Repeats a block of code until a condition is met

c) Executes a block of code once

d) None of the above

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

```
numbers = [1, 2, 3, 4, 5]
for num in numbers:
    print(num * 2, end=' ')
```

a) 2 4 6 8 10

b) 1 2 3 4 5

c) 1 4 9 16 25

d) 1 2 3 4 5 2 4 6 8 10

38. What does the following list comprehension do?

```
squares = [x ** 2 for x in range(1, 6)]
```

a) Generates a list of squares of numbers from 1 to 5

b) Generates a list of even numbers from 1 to 5

c) Generates a list of cubes of numbers from 1 to 5

d) Generates a list of square roots of numbers from 1 to 5

39. Which of the following list comprehensions correctly creates a list of even numbers from 1 to 10?

a) `` `[x for x in range(1, 11) if x % 2 == 0]` ``

b) `` `[x if x % 2 == 0 else 0 for x in range(1, 11)]` ``

c) `` `[x * 2 for x in range(1, 11)]` ``

d) `` `[x for x in range(1, 11) if x % 2 != 0]` ``

40. In Python, what is a class?

a) A blueprint for creating objects

b) A built-in data type

c) A function

d) None of the above

41. What keyword is used to define a class in Python?

a) class

b) def

c) object

d) init

42. What is the purpose of the `__init__` method in Python classes?

a) To initialize class variables

b) To define instance methods

c) To perform cleanup actions when an object is destroyed

d) None of the above

43. Which of the following statements about inheritance in Python is true?

a) Python supports multiple inheritance

b) Python doesn't support inheritance

c) Inheritance can only occur between classes in the same module

d) Inheritance is used to create multiple instances of a class

44. What is polymorphism in Python?

a) The ability of an object to take on many forms

b) The ability to define multiple functions with the same name

c) The ability to define multiple constructors in a class

d) None of the above

45. Which of the following is an example of polymorphism in Python?

a) Operator overloading

b) Method overloading

c) Method overriding

d) All of the above

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

```
count = 0
while count < 5:
    print(count, end=' ')
    count += 1
```

a) 0 1 2 3 4 5

b) 0 1 2 3 4

c) 1 2 3 4 5

d) 1 2 3 4

47. How many times will the following loop iterate?

```
for i in range(5, 10, 2):
    print(i, end=' ')
```

a) 5

b) 6

c) 2

d) 3

48. What does the following list comprehension do?

```
words = ['hello', 'world', 'python']
lengths = [len(word) for word in words]
```

a) Generates a list of lengths of words

b) Generates a list of words reversed

c) Generates a list of uppercase words

d) None of the above

49. Which of the following list comprehensions generates a list of uppercase letters from a given list of words?

a) `[word.upper() for word in words]`

b) `[word.capitalize() for word in words]`

c) `[word.lower() for word in words]`

d) `[word.swapcase() for word in words]`

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

```
class MyClass:
    def __init__(self, x):
        self.x = x

obj = MyClass(5)
print(obj.x)
```

a) 5

b) MyClass(5)

c) None

d) Error

51. Which keyword is used to access the attributes or methods of a class from within the class definition itself?

a) self

b) class

c) object

d) this

52. What is operator overloading in Python?

a) Defining a new operator in Python

b) Overriding built-in operators for user-defined classes

c) Using operators to perform type conversion

d) None of the above

53. Which of the following operators cannot be overloaded in Python?

a) +

b) *

c) ::

d) /

54. What is method overloading in Python?

a) Defining multiple methods with the same name but different parameters in a class

b) Defining a method with the same name in multiple classes

c) Overriding a method in a subclass

d) None of the above

55. What is method overriding in Python?

a) Defining a method with the same name in multiple classes

b) Redefining a method in a subclass with the same name as in the superclass

c) Defining multiple methods with the same name but different parameters in a class

d) None of the above

Section B

1. Write a Python List comprehension program to create a list of squares of even numbers from 1 to 10.
2. Write a Python program to count the occurrences of each element in a list and store them in a dictionary.
3. Write a Python program using numpy to compute the dot product of two arrays.
4. Write a Python program to determine the grade of a student based on their score using nested if-else.
5. Write a Python program to create a list of squares of numbers from 1 to 10, excluding multiples of 3.
6. Write a Python program to concatenate two dictionaries.
7. Write a Python program using numpy to find the mean, median, and standard deviation of an array.
8. Write a Python program to determine if a given year is a leap year using nested if-else.