DSA 5100 Midterm - C

Name_____ 700#_____

1. What will be the output for the following code?

```
a = np.array([1, 2, 3, 5, 8])
b = np.array([0, 3, 4, 2, 1])
c = a - b
c = c * a
print(c[3])
```

A. 10
B. 15
C. 35
D. 9

2. Assume tup1 = (1, 2, 3, 4, 5, 6), which of the following statement

A. tup1 += [11]
B. tup1 += 11
C. tup1 += (11,)
D. tup1 += 'hello'

3. What will be the output for the following code?

```
a = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
b = np.eye(3, k=-1, dtype=int)
c = np.ones((3, 3), dtype=int)
d = a - b + c
print(d[2][1])
```

A. 6
B. 7
C. 8
D. 10

4. What will be the output for the following code?

```
list1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]
print(list1[3:len(list1):-2])
```

A. [4, 6, 8]
B. [4, 2]
C. Syntax error
D. []

5. What will be output for the following code?

```
data = pd.Series(['a', 'b', 'c', 'd', 'e'], index=[1, 3, 4, 6, 7])
data[3]
```

- b
- B. c
- C. d
- D. e

6. What will be output for the following code?

```
list1 = [-1, 63, 36, 100, -6, -36]
sorted(list1, reverse=True)
print(list1)
```

- A. [-36, -6, -1, 36, 63, 100]
- B. [-1, 63, 36, 100, -6, -36]
- C. [100, 63, 36, -1, -6, -36]
- D. None of the above

7. What will be output for the following code?

```
list1 = [1, 10, 3, 6]
list2 = [item * 2 for item in list1 if item < 5]
print(list2)
```

- A. [2, 20, 6, 12]
- [2, 6]
- C. [20, 12]
- D. [[1, 10, 3, 6], [1, 10, 3, 6]]

8. What will be output for the following code?

```
mystr = 'yes'
yourstr = 'no'
mystr += yourstr * 3
print(mystr)
```

- A. yes + no yes + no yes + no
- B. yes + no * 3
- C. yesnoyesnoyesno
- D. yesnonono

9. What will be output for the following code?

```
password = "I LOVE PYTHON"
if password.isalpha():
    print('Invalid, must contain one digit')
elif password.isdigit():
    print('Invalid, must contain one non-numeric character')
elif password.isupper():
    print('Invalid, cannot be all uppercase characters')
else:
    print('Your password is secure')
```

A. Invalid, must contain one digit
B. Invalid, must contain one non-numeric character
C. Invalid, cannot be all uppercase characters
D. Your password is secure

10. What will be output for the following code?

```
arr = np.arange(1, 10).reshape((3, 3))
print(arr.sum())
```

A. [6, 15, 24]
B. [12, 15, 18]
C. 36
D. 45

11. What will be output for the following code?

```
msg = '03/07/2023'
result = msg.partition('/')
print(result)
```

A. ('3', '7', '2023')
B. ('03', '07', '2023')
C. ('03/07', '/', '2023')
D. ('03', '/', '07/2023')

12. What will be output for the following code?

```
d1 = {1: 10, 2:20, 3:30}
d2 = {x:x * 3 for x, y in d1.items()}
print(d2)
```

A. {10: 1, 20: 2, 30: 3}
B. {10: 3, 20: 6, 30: 9}
C. {3: 10, 6: 20, 9: 30}
D. {3: 30, 6: 60, 9: 90}

13. What will be output for the following code?

```
cities = {'Georgia': 'Atlanta', 'CA': 'Berkeley', 'New York': 'Albany'}
if 'CA' in cities:
    del cities['CA']
    cities['CA'] = 'Sacramento'
print(cities)
```

A. {'Georgia': 'Atlanta', 'New York': 'Albany', 'CA': 'Sacramento'}
B. {'Georgia': 'Atlanta', 'CA': 'Sacramento', 'New York': 'Albany'}
C. ['Georgia': 'Atlanta', 'CA': 'Sacramento', 'New York': 'Albany']
D. ['CA': 'Sacramento']

14. What will be output for the following code?

```
arr = np.array([1, 2, 3, 4, 5, 6])
arr[2] = 3.14
print(arr)
```

A. [1 2 3 4 5 6]
B. [1 2 3.14 4 5 6]
C. [1 3.14 3 4 5 6]
D. Syntax error as Numpy array does not allow different data type wit

15. What will be output for the following code?

```
s1 = np.array([1, 2, 3, 4, 5, 6])
s1_sub = s1[1:3]
s1_sub[0] = 99
print(s1)
```

A. [1 2 3 4 5 6]
B. [1 99 3 4 5 6]
C. [99 2 3 4 5 6]
D. Syntax error

16. What will be output for the following code?

```
grid = np.array([[1, 2],
                 [3, 4]])
print(np.concatenate([grid, grid]))
```

A. [[1 2]
 [3 4]
 [1 2]
 [3 4]]

C. Syntax error

B. [[1 2 1 2]
 [3 4 3 4]]

D. [[1 2 3 4]
 [1 2 3 4]]

17. What will be output for the following code?

```
ser = pd.Series(np.arange(3.0), index = ['a', 'b', 'c'])
ser[-1]
```

A. 1.0
B. 2.0
C. 3.0
D. Syntax error

18. What will be output for the following code?

```
arr = np.arange(12).reshape((3, 4))
row = np.array([1, 2])
col = np.array([2, 3])
print(arr[row, col])
```

A. [[6 7]
[10 11]]
B. [[6 7]]
C. [6 11]
D. [[2 3]
[6 7]]

19. What will be output for the following code?

```
arr = np.array([0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9])
print(arr[arr > 0.2 & arr < 0.9])
```

A. Syntax error
B. [0.3 0.4 0.5 0.6 0.7 0.8]
C. [0.4 0.5 0.6 0.7]
D. [0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9]

20. What will be output for the following code?

```
ser = pd.Series({2:'a', 1:'b', 3:'c'}, index = [3, 2])
print(ser)
```

A. 3 c
2 a

B. 2 a
3 c

C. 2 a
1 b
3 c

D. 3 c
2 a
1 b

21. What is a correct syntax to print the number 8 from the array below

```
arr = np.array([[1, 2, 3, 4, 5], [6, 7, 8, 9, 10]])
```

A. print(arr[1, 2])

B. print(arr[3, 0])
C. print(arr[7, 2])
D. print(arr[2, 3])

22. What is a correct syntax to print the numbers [3, 4, 5] from the array below

```
arr = np.array([1, 2, 3, 4, 5, 6, 7])
```

A. print(arr[3:6])
B. print(arr[2:5])
C. print(arr[2:6])
D. print(arr[2:4])

23. Which of the following statements a), b) or c) is false?

A. Method reshape returns a deep copy of the original array with the new shape, it does not modify the original array
B. The array methods reshape and resize both enable you to change the shape of an array
C. Method resize modifies the original array's shape
D. All of the above statements are true

24. Which syntax would print every other item from the array below

```
arr = np.array([1, 2, 3, 4, 5, 6, 7])
```

A. print(arr[::2])
B. print(arr(0, step=2))
C. print(arr[1:3:5:7])
D. None of the above

25. Which of the following statement will return a two-dimensional NumPy array of data points in a DataFrame df?

A. df.values
B. df.values()
C. df.to_numpy
D. df.value

26. What will be output for the following code?

```
arr = np.array([1,2,3])
print(np.cumsum(arr))
```

A. [9]
B. [6]
C. [3 6 9]
D. [1 3 6]

```
arr = np.array([1, 2, 3, 4, 5, 6])
print(np.where(arr > 3, 0, arr))
```

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

28. What will be output for the following code?

```
arr = np.arange(6).reshape(2, 3)
flattened = arr.flatten()
flattened[0] = 99
print(arr)
```

A. [[0 1 2]
    [3 4 5]]

B. [[99 1 2]
    [3 4 5]]
C. [0 1 2 3 4 5]
D. [99 1 2 3 4 5]

29. What will be output for the following code?

```
data = pd.Series([1, np.nan, 'hello', None])
result = data[data.isnull()]
print(result)
```

A. 1 NaN
   3 None

B. 0 1
   2 'hello'

C. NaN
   None

D. 1
   'hello'

30. What will be output for the following code?

```
obj = pd.Series(range(5), index=['a', 'a', 'b', 'b', 'c'])
obj['a']
```

A. a 1
   a 2

B. a 0
   a 1

C. a 1

D. a 0