**Quiz**

**Time**: 8:00 AM - 8:45 AM

**Instructions:** Write the answers on a sheet of paper and upload the scanned sheet to Google Classroom.

**Number** of **Questions:** 50

**Date:** 21 Feb 2025

1. Which of the following statements correctly creates a NumPy array with an explicit unsigned integer data type? A) np.array([1, 2, 3], dtype=np. uint8) B) np.array([1, 2, 3], dtype='uint') C) np.array([1, 2, 3], dtype=np.int64) D) np.array([1, 2, 3], dtype=np.int8)

2. What will be the shape of arr = np.zeros((3,4,5), dtype=int)? A) (3, 4, 5) B)

(5, 4, 3) C) (4, 5, 3) D) Error due to invalid syntax

3. What does arr[arr > 10] return if arr = np.array([5, 15, 25, 35])? A)

[15, 25, 35] B) [5] C) array([15, 25, 35]) D) [25, 35]

4. What will np.sort(np.array([3, 1, 4, 1, 5, 9])) return? A) [1, 1, 3, 4,

5, 9] B) [3, 1, 4, 1, 5, 9] C) [9, 5, 4, 3, 1, 1] D) [1, 3, 4, 1, 5, 9]

5. How do you perform element-wise multiplication between two NumPy arrays a and b? A)

np.dot (a, b) B) a @b C) a b D) np. multiply (a, b)

6. What will be the output of np. floor (np.array([2.3, 3.7, -2.8, -3.1]))? A)

[2, 3, -2, -3] B) [2, 4, -3, -4] C) [2.0, 3.0, 3.0, -4.0] D) [2, 3, -3, -4]

7. What is the difference between np.cumsum(arr) and np. cumprod (arr)? A)

np.cumsum computes the sum cumulatively, np. cumprod computes the cumulative product B) np.cumsum returns the total sum, np.cumprod returns the total product C) np.cumsum finds the sum, np.cumprod finds the min D) Both return the same result for arrays containing only 1s

8. What does df.loc [1, 'Column1'] return in a Pandas DataFrame? A) The value in

row index 1 and column 'Column1' B) The entire row at index 1 C) The entire column 'Column1' D) The last row of the DataFrame

9. What does np.argmax (arr) return? A) The index of the maximum value in arr B)

The maximum value in arr C) A sorted version of arr D) The index of the minimum

value in arr

10. What does np.random.choice([10, 20, 30, 40], size=3, replace=False)

do? A) Randomly selects 3 elements from the list [10, 20, 30, 40] without replacement B) Selects the first 3 elements from the list C) Selects 3 elements with replacement D) Always returns [10, 20, 30]

11. What will np.ravel (np.array([[1, 2, 3], [4, 5, 6]])) return?

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

B) [[1, 2, 3], [4, 5, 6]]

C) (1, 2, 3, 4, 5, 6)

D) [(1, 2, 3), (4, 5, 6)]

12. What does df.pivot (index='A', columns= 'B', values='C') do?

A) Reshapes the DataFrame with unique values from 'A' as rows and 'B' as columns B) Replaces NaN values in column 'C'

C) Removes duplicates from column 'A'

D) Groups by 'A' and computes the sum of 'C'

13. What will be the shape **of** np.array([[1,2,3], [4, 5, 6]]).reshape(-1, 1)?

A) (6, 1)

B) (1, 6)

C) (2, 3)

D) (3, 2)

14. What does np.argmin (np.array([[3, 2, 1], [6, 5, 4]]), axis=1) return?

A) [2, 2]

B) [0, 1]

C) [1, 2]

D) [2, 2, 2]

15. What will np.array([1, 2, 3]) + np.array([[4], [5], [6]]) return?

A) A 3x3 matrix with element-wise broadcasting

B) A 1D array

C) A single number representing the sum

D) Error due to shape mismatch

16. Which of the following functions can be used to compute the correlation coefficient of a

NumPy array?

A) np.corrcoef()

B) np.cov()

C) np.correlation ()

D**)** np. covariance()

17. What is the correct way to find the rolling mean of a column in Pandas?

A) df['col'].rolling (3).mean()

B) df['col'].mean (rolling=3)

C) df.rolling\_mean('col', 3)

D) df['col'].window (3).mean()

18. What does np.isin (np.array([1, 2, 3, 4]), [2, 3, 5]) return?

A) [False, True, True, False]

B) [True, False, False, True]

C) [1, 2, 3]

D) [True, True, False, False]

19. What does df ['col' ].nunique () return?

A) The number of unique values in 'col'

B) The count of all values in 'col'

C) The number of NaN values in 'col'

D) The mode of 'col'

20. What does np.setdiff1d (np.array([1, 2, 3, 4]), np.array([2, 4, 6]))

return?

A) [1, 3]

B) [2, 4]

C) [1, 2, 3, 4]

D) [6]

21. What does np. flatnonzero (np.array([[0, 1], [2, 0]])) return?

A) [1, 2]

B) [0, 1, 2, 3]

C) [1, 2]

D) [1, 3]

22. What is the output of np. diag (np.array([[1, 2], [3, 4]]))?

A) [1, 4]

B) [[1, 0], [0, 4]]

C) [2, 3]

D) [[1, 2], [3, 4]]

23. What will np.repeat (np.array([1, 2, 3]), 2) return?

A) [1, 1, 2, 2, 3, 3]

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

C) [[1, 1], [2, 2], [3, 3]]

D) [1, 2, 3]

24. What does df.drop\_duplicates (subset=['A'], keep='first') do in

Pandas?

A) Removes duplicate rows based on column 'A', keeping the first occurrence B) Drops column 'A' from the DataFrame

C) Removes the first occurrence of duplicates in column 'A'

D) Returns an error if 'A' has NaN values

25. Which function in NumPy can be used to generate an array of evenly spaced values on

a logarithmic scale?

A) np.logspace()

B) np. linspace()

C**)** np.geomspace()

D) np.expspace()

26. What does df.iloc[:, [1, 3]].values return?

A) All rows from columns at index positions 1 and 3

B) The entire DataFrame

C) A list of column names

D) The first and third rows

27. What does np.random. permutation (5) return?

A) A shuffled array of [0, 1, 2, 3, 4]

B) A random integer between 0 and 5

C) A 5x5 identity matrix

D) A sorted array of [0, 1, 2, 3, 4]

28. What will be the shape of np.array([[1, 2], [3, 4]]).T**?**

A) (2, 2)

B) (4, 1)

C) (1, 4)

D) (2, 4)

29. What is the output of np. round (np.array([1.45, 2.55, 3.65]),

decimals=1)?

A) [1.4, 2.6, 3.6]

B) [1.5, 2.5, 3.6]

C) [1.5, 2.6, 3.6]

D) [1.4, 2.5, 3.6]

30. What does df.fillna (df.mean()) do?

A) Replaces NaN values with the mean of their respective columns

B) Removes all NaN values

C) Returns the mean of all columns

D) Fills NaN values with zero

31. What does np.clip (np.array([-5, 0, 10, 15]), 0, 10) return?

A) [0, 0, 10, 10]

B) [-5, 0, 10, 15]

C) [0, 0, 10, 15]

D) [0, 0, 10, 10]

32. What does df.set\_index('Column1') do in a Pandas DataFrame?

A) Sets 'Column1' as the index of the DataFrame

B) Deletes 'Column1' from the DataFrame

C) Sorts the DataFrame based on 'Column1'

D) Returns an error if 'Column1' contains NaN values

33. What does np.expand\_dims (np.array([1,2,3]), axis=0). shape return?

A) (1, 3)

B) (3, 1)

C) (1, 1, 3)

D) (3,)

34. What does df [df['Column1'].notnull()] return?

A) Rows where 'Column1' is not null

B) Rows where 'Column1' contains NaN values

C) A sorted DataFrame

D) Only the 'Column 1' column

35. What will np.concatenate([np.array([1,2]), np.array([3,4])], axis=0)

return?

A) [1, 2, 3, 4]

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

C) [1, 3, 2, 4]

D) Error due to shape mismatch

36. Which function returns the index positions of non-zero elements in a NumPy array?

A) np. nonzero()

B) np.where()

C) np. nonzero\_indices()

D) np.index\_nonzero()

37. What does np. linalg.inv (np. eye (3)) return?

A) A 3x3 identity matrix

B) A zero matrix

C) An error

D) The inverse of a randomly generated 3x3 matrix

38. Which of the following functions can be used to stack NumPy arrays vertically?

A) np.vstack()

B) np.concatenate() with axis=0

C**)** np.hstack()

D) np.column\_stack()

39. What is the output of df.sort\_values (by= [ 'Column1', 'Column2'],

ascending [True, False])?

A) The DataFrame sorted by 'Column1' in ascending order and 'Column2' in descending order

B) The DataFrame sorted by 'Column2' in ascending order and 'Column1' in descending order

C) The DataFrame sorted only by 'Column1'

D) The DataFrame sorted only by 'Column2'

40. What does np.cov (np.array([[1,2,3], [4, 5, 6]])) compute?

A) The covariance matrix of the two arrays

B) The correlation matrix of the two arrays

C) The dot product of the arrays

D) The element-wise multiplication of the arrays

41. What does np.tril(np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]]))

return?

A) A lower triangular matrix of the given array

B) An upper triangular matrix of the given array

C) A transposed version of the array

D) The determinant of the matrix

42. What does df.query("A > 5 and B < 10") do?

A) Selects rows where column A is greater than 5 and column B is less than 10

B) Creates a new column A with values greater than 5

C) Filters out NaN values from columns A and B

D) Returns an error if A or B contain strings

43. What will np.meshgrid (np.array([1,2,3]), np.array([4,5])) return?

A) Two coordinate matrices from input arrays

B) The element-wise sum of two arrays

C) A 3D array of shape (3,2)

D) A single 2D array of shape (3,2)

44. What does df.corr() compute?

A) Pearson correlation coefficients between numeric columns

B) Covariance matrix of numeric columns

C) The difference between max and min values in each column

D) The mean squared error of numeric columns

45. What is the result **of** np.diff (np.array([10, 15, 25, 40]))?

A) [5, 10, 15]

B) [10, 15, 25, 40]

C) [5, 10, 15, 25]

D) [15, 25, 40]

46. What does df.rolling (window=3). mean () do in Pandas?

A) Computes the moving average with a window size of 3

B) Shifts all values down by 3 rows

C) Computes the cumulative sum of the column

D) Returns an error if window size exceeds the DataFrame size

47. What does np.bincount (np.array([1,2,1,2,1,3])) return?

A) A count of occurrences of each integer in the array

B) A sorted version of the array

C) A boolean mask of elements greater than 2

D) The sum of all values in the array

48. What will df.iloc[:, -1] return?

A) All rows with all columns except the last one

B) The last column of the DataFrame

C) A DataFrame with every second column removed

D) Only the last row of the DataFrame

49. What is the purpose of np. cumsum(np.array([1,2,3,4]))?

A) Computes the cumulative sum of the array

B) Finds the sum of the array

C) Returns an array of ones with the same shape D) Computes the cumulative product

50. What does df.pct\_change () compute?

A) Percentage change between consecutive rows

B) The mean percentage of all values in the DataFrame

C) The percentage of missing values in the DataFrame

D) The difference between min and max values in the DataFrame