QUIZ

NumPy & Pandas

Python Data Science Series

STUDENT INFORMATION

FULL NAME

SIDDHARTH

CLASS / SECTION

B.Tech CSE

ROLL NUMBER

22131011151

Date: _____23-02-2026_____

Total Marks: __30__ / 30

1

ARRAY OPERATIONS

[1 Mark]

5 Questions × 1 Mark = 5 Marks

SECTION 1

NumPy Arrays & Operations

Questions 1–5 · Broadcasting, Indexing & Numerical Computing

What does the following NumPy operation return?

```
np.array([1, 2, 3]) * 3
```

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BROADCASTING

[1 Mark]

A	[3, 6, 9]
B	[1, 2, 3, 1, 2, 3, 1, 2, 3]
C	[3, 3, 3]
D	Error – cannot multiply array by scalar

Answer: __A_____

Which of the following NumPy array shapes are broadcast-compatible?

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INDEXING & SLICING

[1 Mark]

A	(3, 4) and (5, 4)
B	(3,) and (3, 3)
C	(4, 1) and (1, 4)
D	Both B and C

Answer: __D_____

Given arr = np.array([[1,2,3],[4,5,6],[7,8,9]]), what does arr[1:, ::2] return?

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NUMERICAL COMPUTATIONS

[1 Mark]

A	[[4, 6], [7, 9]]
B	[[4, 5, 6], [7, 8, 9]]
C	[[4, 6], [7, 9]]
D	[[5, 6], [8, 9]]

Answer: _A_____

Which NumPy function computes the dot product of two 1-D arrays?

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ARRAY OPERATIONS

[1 Mark]

A	np.multiply()
B	np.dot()
C	np.cross()
D	np.sum()

Answer: _B_____

What is the output of np.arange(2, 10, 3)?

A	[2, 5, 8, 11]
B	[2, 5, 8]
C	[3, 6, 9]
D	[2, 4, 6, 8]

Answer: __B_____

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SERIES & DATAFRAMES

[1 Mark]

7 Questions × 1 Mark = 7 Marks + 3 Short Answer × 2 Marks = 6 Marks

SECTION 2

Pandas — Series & DataFrames

Questions 6–12 · Data Loading, Filtering, Sorting & Wrangling

Which Pandas method is used to read a CSV file into a DataFrame?

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DATA LOADING

[1 Mark]

A pd.read_table()

B pd.read_csv()

C pd.load_csv()

D pd.import_csv()

Answer: _B_____

Which parameter in pd.read_excel() specifies which sheet to load?

8

FILTERING

[1 Mark]

A tab_name

B sheet_index

C sheet_name

D worksheet

Answer: _C_____

Given df with a column 'Age', which expression filters rows where Age > 25?

9

SORTING & GROUPING

[1 Mark]

A df[df.Age > 25]

B df.filter(Age > 25)

C df.where('Age > 25')

D df.query['Age > 25']

Answer: A_____

Which method sorts a DataFrame by the 'Score' column in descending order?

10

GROUPING

[1 Mark]

A df.sort('Score', desc=True)

B df.order_by('Score', ascending=False)

C df.sort_values('Score', ascending=False)

D df.arrange('Score', reverse=True)

Answer: ___B____

What does df.groupby('Dept')['Salary'].mean() return?

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DATA WRANGLING

[1 Mark]

A	A single mean salary value
B	Mean salary grouped by department
C	Mean salary of the 'Dept' column
D	Error – cannot group then mean

Answer: __B_____

Which method combines two DataFrames horizontally (column-wise)?

12

DATA WRANGLING

[1 Mark]

A	pd.concat([df1, df2], axis=0)
B	pd.concat([df1, df2], axis=1)
C	df1.append(df2)
D	pd.merge(df1, df2, how='outer')

Answer: _____B__

What does df.dropna() do to a DataFrame?

A	Drops all columns with NaN values
B	Fills NaN values with 0
C	Drops all rows containing NaN values
D	Replaces NaN with the column mean

Answer: ____C___

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PANDAS – GROUPBY

[2 Marks]

SHORTANSWER

Explain the split-apply-combine strategy used by groupby() in Pandas. Provide a real-world example showing how groupby() with an aggregation function is used.

Answer:

The split-apply-combine strategy is a method for data analysis where data is first split into groups based on some criteria, a function is applied to each group independently, and the results are then combined into a final data structure

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NUMPY – BROADCASTING

[2 Marks]

SHORTANSWER

What is broadcasting in NumPy? State the broadcasting rules and give an example showing how arrays of shapes (3, 1) and (1, 4) would interact.

Answer: Broadcasting in NumPy is a set of rules for performing element-wise operations on arrays with different shapes. The rules are:1. Shape compatibility: Arrays are compatible if their dimensions match or one of them is 1.2. Dimension extension: If arrays have different numbers of dimensions, the smaller array's shape is padded with 1s on the left.3. Size matching: In each dimension, the sizes

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DATA WRANGLING

[2 Marks]

must either be the same or one must be 1 (the array with size 1 is stretched to match the other).

SHORTANSWER

Describe any TWO common data-wrangling tasks in Pandas. For each task, name the method used and write a one-line code example.

Answer: 1. Handling missing values: The fillna() method is used to fill or replace missing (NaN) values in a DataFrame. 2. Removing duplicates: The drop_duplicates() method is used to remove duplicate rows from a DataFrame.Code example:

ENDOFQUIZ

Please review all answers before submitting.

Section	Topic	Questions	Marks
Section 1	NumPy Arrays & Operations	Q1–Q5	5 Marks
Section 2	Pandas MCQ	Q6–Q12	7 Marks
Section 2	Short Answer	Q13–Q15	6 Marks
	TOTAL		30 Marks