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Assesment NO-2

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Q.1 a] Explain the concept of broad casting in Numpy provide an example ?

→ i) Broadcasting in numpy is a mechanisms that allows arrays with different shapes to be used together in a arithmetic operations. When performing operations on arrays of different shapes, Numpy automatically "broadcasts" the arrays to makes their shapes compatible, without the need for explicit copying of data.

ii) This allows for efficient element-wise operations on arrays of different shapes

example :-

```
import numpy as np
arr1 = np.array([[1,2,3],
                 [4,5,6],
                 [7,8,9]])
arr2 = np.array([10,20,30])
result = arr1 + arr2
print("Array 1 :")
print(arr1)
print("\n Array 2 :")
print(arr2)
print("\n Result after broadcasting :")
print(result)
```

In this example :-

i) 'arr1' is a 3x3 array & 'arr2' is 2x3 array.

ii) Despite having different shapes, Numpy automatically broadcasts 'arr2' to match the shape of 'arr1'.

iii) The values of 'arr2' are extended along the to match the shape of 'arr1'

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iv) The addition operation is then performed element-wise between the two arrays resulting in a 3x3 array where each element is the sum of the corresponding elements in 'arr1' & 'arr2'.

Broadcasting in Numpy simplifies the syntax & improves the efficiency of operation involving array with different shapes, making it a powerful feature for working with multidimensional arrays.

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Q.13
→ a] Numpy is primarily used for data manipulation & mathematical operations on homogenous arrays. While pandas provides high level data structure & function to manipulate & analyze structure data like DataFrames.

Q.14
→ a) df.iloc[:3]

Q.15
→ a] Drops all rows with missing values

Q.16
→ a) df.apply()

Q.17
→ a) df.sort_values('column-name')

Q.18.
→ a) Returns the largest n values in a specific column

Q.19
→ c] df.to_csv('output.csv')

Q.20
→ b) converts a column to datatime format

Q.21
→ a] df.fillna()

B

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Q. 3

→ a) To display the first 5 row of Data frame sales_Data you can use the head() method

```
import pandas as pd
print (sales_data.head())
```

b) To check the display the data types of each column in the Data frame 'sales_data' you can use the "info()" method print (sales_data.info())

Q.6

→ a] Numerical python

Q.7

→ c] arr = np.array(1,2,3)

Q.8

→ a) Create an array filled with zeroes

Q.9

→ a) A two-dimensional labeled data structure

Q.10

→ c) df['column_name']

Q.11

→ b) students_data['Age']

Q.12

→ a) sales_data['price'] * Sales_data['quantity_sold']

Q.13

→