Cycle Test - I (2024-25) (Set 2) KEY

Name of the student: **Date: 12.04.24**

Grade: XII **Time: 1 hr 30 mts**

Subject: INFORMATICS PRACTICES (065) **Marks: 35**

General Instructions:

The Question paper is divided into 5 sections – A, B, C, D and E.

- Section A, consists of 9 questions (1 – 9). Each question carries 1 marks.
- Section B, consists of 4 questions (10 – 13). Each question carries 2 marks.
- Section C, consists of 3 questions (14 – 16). Each question carries 3 marks.
- Section D, consists of 1 question (17). It carries 4 marks.
- Section E, consists of 1 question (18). It carries 5 marks.

Internal choices have been given for question numbers – 11,15,17(d) and 18

Section – A

1. To display first three elements of a Series object S, you may write _____

(a) S[:3] (b) S[3] (c) S[3rd] (d) all of these

2. To get the number of dimensions of a Series object, _____ attribute is displayed.

(a) index (b) size (c) itemsize **(d) ndim**

3. Which of the following statement is wrong?

(a) We can't change the index of the series.

(b) We can easily convert the list, tuple, and dictionary into a Series.

(c) A series represents a single column in memory.

(d) We can create empty Series.

4. What type of error is returned by the following statement?

```
import pandas as pa
pa.Series([1,2,3,4], index=['a','b','c'])
```

(a) Value Error (b) Syntax Error (c) Name Error (d) Logical Error

5. To get the transpose of a dataframe D1, you can write _____

(a) D1.T (b) D1.Transpose (c) D1.Swap (d) All of these

6. Which among the following options can be used to create a DataFrame in Pandas?

(a) A scalar value (b) An ndarray (c) A python dict **(d)** All of these

7. Identify the correct option to select first four rows and second to fourth columns from a DataFrame : "Data" :

(a) display(Data.iloc[1:4,2:4]) (b) display (Data.iloc[1:5,2:5])

(c) print(Data.iloc[0:4,1:4]) (d) print(Data.iloc[1:4,2:4])

8. The axis 0 identifies a dataframe's _____

(a) rows (b) columns (c) values (d) datatypes

9. To change the 5th column's value at 3rd row as 35 in dataframe DF, you can wirte _____

(a) DF[4,6]=35 (b) DF[3,5]=35 (c) DF.iat[4,6]=35 **(d)** DF.iat[3,5]=35

SECTION – B

10. Write a program to create a Series object using the Python sequence [1101, 1301, 1501, 1701, 1901]. Assume that Pandas is imported as alias name (your name).

Ans: import pandas as raju

```
ser = raju.Series([1101,1301,1501,1701,1901])
print(ser)
```

11. Create a Series "MyWord" with the individual characters of the word "Bhimavaram"

Ans: MyWord=pd.Series(['B','h','i','m','a','v','a','r','a','m'])

OR

Write a program to create a Series object using a string: 'very good'. Assume that Pandas is imported as alias name pd.

Ans:

```
import pandas as pd
ser2 = pd.Series(['very good'])
print(ser2)
```

12. Find the output of the following Python code:

```
import pandas as pd
com=pd.Series([45,12,15,200],index=['mouse','printer','webcam','keyboard'])
print(com[1:3])
```

Ans:

```
printer    12
webcam     15
dtype: int64
```

13. Find the output of the following code:

```
import pandas as pd
lst1=[5,10,15]
ser1=pd.Series([2,3,4])
print(lst1+lst1)
print(ser1+ser1)
```

Ans:

```
[5, 10, 15, 5, 10, 15]
0  4
1  6
2  8
dtype: int64
```

SECTION – C

14. Consider the given DataFrame 'password':

	CodeName	Category	Frequency
0	aaaaaa	alpha	6.91
1	dragon	animal	18.52
2	baseball	sport	1.29
3	football	sport	11.11
4	monkey	animal	3.72
5	qwerty	alpha	1.85
6	abcde	alpha	3.19

Write suitable python statements for the following:

(i) To add a new row with following values:

CodeName – 'abc123'

Category - alphanumeric

Frequency - 12.8

(ii) To delete the row with the row label 2

(iii) To delete the column having column label as Frequency.

15. Write the differences between Series and Lists

Series	Lists
It is essentially a 1D data structure	It can be 1D and even multi-dimensional with nested lists in it.
It can have numeric indexes as well as labels	It can take numeric indexes only
It supports explicit indexing, i.e., we can programmatically choose, provide and change indexes in terms of numbers or labels	It does not support explicit indexing; only supports implicit indexing whereby the indexes are implicitly given 0 onwards in forward indexing and -1 onwards in backward indexing.
Indexes can be duplicate	Indexes cannot be duplicate
Homogeneous elements. Series objects store elements of same data type (values may be different but their datatype is the same for each element)	Heterogeneous elements: Lists can store elements of different data types.

OR

Write the differences between Series and Dataframes

Property	Series	DataFrame
Dimensions	**1 Dimensional**	**2-Dimensional**
Type of Data	**Homegeneous**, i.e., all the elements must be of same type in a Series object	**Heterogeneous**, i.e., a DataFrame object can have elements of different data types
Mutability	**Value mutable**, i.e., their elements value can change	**Value mutable**, i.e., their elements value can change
	Size-immutable, i.e., size of a Series object, once created, cannot change. If we want to add/drop an element, internally a new Series object will be created	**Size-mutable**,i.e., size of a Dataframe object, once created, can change in place. That is, you can add/drop elements in an existing dataframe object.

16. Write a program to create a DataFrame Teachers as shown below:

```
    Private  Aided  Govt  ZP
AP      100     75   125  89
TN       98     92   130  92
TS      110     85   110  91
```

Section – D

(17) Consider the given Series object **obj** and do the following actions

a 101

b 102

c 103

d 104

a. Write the statement to display the number of bytes in the underlying data.

Obj.nbytes

b. Write the statement to assign new name to index.
Obj.index=[‘aa’,’bb’,’cc’,’dd’]

c. Write the statement to assign name to Series object
Obj.name = ‘newname’

d. Write the statement to find if there are any NaN values.
Obj.hasnans

OR

Write the statement to return a tuple of the shape of the underlying data.
Obj.shape

Section – E

	Population	*Hospitals*	*Schools*
Delhi	10927986	189	7916
Mumbai	12691836	208	8508
Kolkata	4631392	149	7226
Chennai	4328063	157	7617

(18) Write the answers for the following questions based on the above output **(dataframe df)**

a. Write a statement to display only Hospitals column.
Df[‘Hospitals’]

b. Write a statement to display only Mumbai row
Df.loc[‘Mumbai’,:]

c. Write a statement to display only 208 element from the above dataframe
Df.at[‘Mumbai’,’Hospitals’]

d. Write the output for the following 2 statements. (2M)

i. df.iloc[0:2,1:2]

	hospitals
delhi	189
mumbai	208

ii. df.iloc[:,:]

```
         population  hospitals  schools
delhi      10927986        189     7916
mumbai     12691836        208     8508
kolkata     4631392        149     7226
chennai     4328063        157     7617
```

OR

Consider the given DataFrame 'health'.

	Diseasename	**Agent**
0	Common cold	Virus
1	Chickenpox	Virus
2	Cholera	Bacteria
3	Tuberculosis	Bacteria

Write suitable Python statements for the following:
(i) Remove the row containing details of disease

named Tuberculosis.

(ii) Add a new disease named 'Malaria' caused by 'Protozoa'

(iii) Display the last 2 rows.

(iv) Change the column heading ‘Agent’ to ‘NewAgent’

(v) Add a new column Sno with values 10,20,30,40,50

Ans:

i)

```
I = DF[ DF['Diseasename'] == 'Tuberculosis' ].index
DF.drop(I, inplace = True)
```

OR

```
DF.drop('Tuberculosis',axis=0)
```

OR

```
DF=DF[(DF.diseasename!='Tuberculosis')]
```

ii)

```
DF.loc[4]=['Malaria','Protozoa']
```

OR

```
DF.loc[4,:] = ['Malaria','Protozoa']
```

OR

```
DF = DF.append({'Diseasename':'Malaria','Agent':
                'Protozoa'}, ignore_index=True)
```

(iii)

```
print(DF.iloc[3:5])
```

OR

```
print(DF.tail(2))
```

OR

```
print(DF.iloc[-2::])
```