XII – IP – PYTHON – CBSE OLD QUESTIONS

2021.22 TERM 1 (Questions)

1. Which of the following statement is wrong?
(a) 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

2. 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

3. Which is incorrect statement for the python package Numpy?
a) It is a general purpose array processing package.
b) Numpy arrays are faster and more compact
c) It is multi-dimensional arrays
d) It is proprietary software

4) The data of any CSV file can be shown in which of the following software?
a) MS Word b) Notepad
c) Spreadsheet d) All of the above

5) Which python library is not used for data science?
a) Panda b) Numpy
c)Matplotlib d)Tkinter

6) Which method is used to Delete row(s) from DataFrame?
a) .drop( ) method b) .del( ) method
c) .remove( ) method d) .delete( ) method

7. Consider the following code:
import numpy as np
import pandas as pd
L=np.array([10,20])
x=pd.Series(_____) # statement 1
print(x)

output of the above code is :
0 1000
1 8000
dtype:int64

What is the correct statement for the above output in the following statement 1?
a) d=L*3 b) data=L**3
c)L*3 d) [10,20]**3

8. Which library is imported to draw charts in Python?
a) csv b) matplotlib c)numpy d) pandas

9. Which of the following would give the same output as DF/DF1 where DF and DF1 are DataFrames.
a) DF.div(DF1) b)DF1.div(DF)
c) Divide(DF,DF1) d) Div(DF,DF1)

10. Which of the following statement is wrong in context of DataFrame?
a) Two dimensional size is Mutable
b) Can perform Arithmetic operations on rows and columns.
c) Homogenous tabular data structure.
d) Create DataFrame from numpy ndarray.

11. Which attribute is not used with DataFrames.
a) size b) type c) empty d) columns

17. When we create a DataFrame from a list of Dictionaries, the columns labels are formed by the
a) Union of the keys of the dictionaries
b) Intersection of the keys of the dictionaries
c) Union of the values of the dictionaries
d) Intersection of the values of the dictionaries

18. To change the width of bars in a bar chart, which of the following arguments with a float value is used?
a) hwidth b) width c) breadth d)barwidth .

19. 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])

20. Which of the following command is used to import matplotlib for coding?
a) import matplotlib.pyplot as plt
b) import plt.matplotlib as plt
c) import py.matplotlib as plt
d) import pyplot.matplotlib as plt

21. Consider the following statements with reference to Line charts.
Statement A: Line graphs is a tool for comparison and is created by plotting a series of several points and connecting them with a straight line.
Statement B: You should never use line chart when the chart is in a continuous data set.
a) Statement A is correct. B) Statement B is correct
c) Statement A is correct but statement B is incorrect
d) Statement A is incorrect, but statement B is correct

22. What is not true about Data Visualization?
a) Graphical representation of information and data.
b) Helps users in analyzing a large amount of data in a simpler way.
c) Data Visualization makes complex data more accessible, understandable, and usable.
d) No library needs to be imported to create charts in Python language.

23. Which attribute is used with Series to count the total number of NaN values
a) size b) len c) count d)count total

24. Consider the following Series in Python:
data=pd.Series([10,15,20,25,30,35],
index=['a','b','c','d','e','f'])
Which statement will display all odd values
(a) print(data%2==0) b)print(data(data%2!=0)
c) print(data mod 2!=0) d) print(data[data%3=0])

SECTION – B

26. What will be the output of the following code?

```
import pandas as pd
import numpy
s=pd.Series(data=[31,54,34,89,12,23],dtype=numpy.int)
print(s>50)
```

(a)	(b)	(c)	(d)
0 False 1 True 2 False 3 True 4 False 5 False dtype:bool	1 54 3 89 dtype:int64.	0 31 1 54 2 34 3 89 4 12 5 23 dtype:int64	1 True 3 True dtype:bool

29. Consider a following DataFrame:

```
import pandas as pd
s=pd.Series(data=[31,54,34,89,12,23])
df=pd.DataFrame(s)
```

Which statement will be used to get the output as 2?

a) print(df.index) b) print(df.shape( ))
c) print(df.ndim) d) print(df.values)

30. Sandhya wants to display the last four rows of the dataframe df and she has written the following command: df.tail( )

But the first 5 rows are being displayed. To rectify this problem, which of the following statements should be written.

a) df.head( ) b) df.last(4) c) df.tail(4) d) df.rows(4)

33. Consider the following series

```
ser=pd.Series(['C','O','M','F','O','R','T','A','B','L','E'],
                    index=[1,2,3,4,5,6,7,8,9,10,11])
print(ser[4: ])
```

(a)	(b)	(c)	(d)
4 F 5 O 6 R 7 T 8 A 9 B 10 L 11 E dtype:object	4 F 5 O 6 R 7 T 8 A dtype:object	4 F 5 O 6 R 7 T 8 A 9 B dtype:object	5 O 6 R 7 T 8 A 9 B 10 L 11 E dtype:object

34. Nowadays for developing Machine learning projects programmers rely on CSV files rather than databases. Why?

a) csv can be used with proprietary softwares only.
b) csv files can be downloaded from open source websites free of cost
c) csv files need not be imported while creating the projects
d) csv is a simple and well formatted mode for data storage

36. DataFrames can be created from?

a) Lists b) Dictionaries
c) Series d) All of the above

38. Consider the following statements

Statement A: .loc( ) is a label based data selecting method to select a specific row(s) or column(s) which we want to select.

Statement B: .loc( ) can not be used with default indices if customized indices are provided.

(a) Statement A is True but Statement B is False
(b) Statement A is False but Statement B is True
(c) Statement A and Statement B both are False
(d) Statement A and Statement B both are True

39. Abhay is a student of class 'XII', and he is aware of some concepts of python. He has created the DataFrame, but he is getting errors after executing the code. Help him by identifying the correct statement that will create the DataFrame:

Code:

```
import pandas as pd
stuname=['Muskan','Radhika','Gopar','Pihu']
term1=[70,63,74,90]
term2=[67,70,86,95]
```

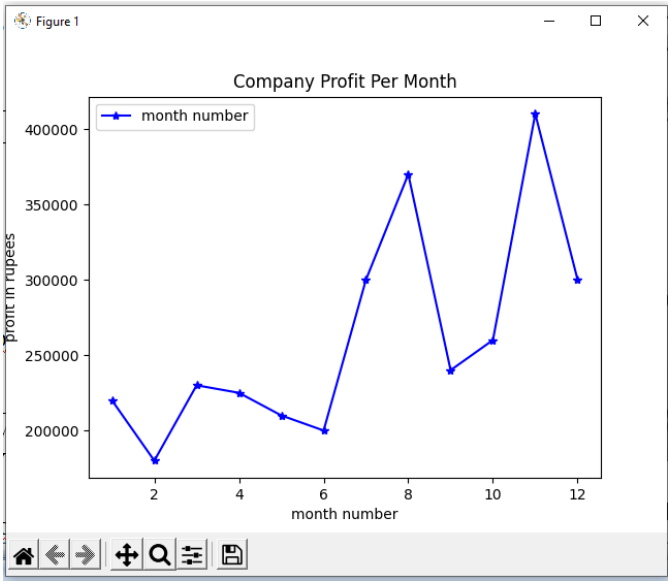
(a) df=pd.DataFrame({"Name":stuname,
"marks1":term1,"marks2":term2})

(b) df=pd.dataframe([stuname,term1,term2],
columns=['stuName',"marks1","marks2"])

(c)df=pd.DataFrame({stuname,term1,term2})

(d) df=PD.dataframe({stuname,term1,term2})

40. Ms.Kalpana is working with an IT company, and she wants to create charts from the data provided to her. She generates the following graph:



(**Program:**

```
import matplotlib.pyplot as pl
a=[1,2,3,4,5,6,7,8,9,10,11,12]
b=[220000,180000,230000,225000,210000,200000,300
000,370000,240000,260000,410000,300000]
pl.plot(a,b,'b',marker='*')
pl.legend(["month number"],loc="upper left")
pl.xlabel("month number")
pl.ylabel("profit in rupees")
pl.title("Company Profit Per Month")
pl.show()                                    )
```

Which statement is used to mark the line as given in the above fig.:

(a) plt.plot(x,y,marker='#',markersize=10,color='red', linestyle='dashdot')

(b)plt.plot(x,y,marker='star',markersize=10,color='red')

(c) plt.plot(x,y,marker='@',markersize=10,color='red', linestyle='dashdot')

(d) plt.plot(x,y,marker='*',markersize=10,color='red')

41. Mr.Raman created a DataFrame from a Numpy array:

```
arr=np.array([[2,4,8],[3,9,27],[4,16,64]])
df=pd.DataFrame(arr,index=['one','two','three'],_____)
print(df)
```

Help him to add a customized column labels to the above DataFrame

(a) columns='no','sq','cube'

(b)column=['no','sq','cube']

(c) columns=['no','sq','cube']

(d) columns=[['no','sq','cube']]

42. What will be the output of the following program:

```
import pandas as pd
dic={'Name':['Sapna','Anmol','Rishul','Sameep'],
     'Agg':[56,67,75,76],'Age':[16,18,16,19])
df=pd.DataFrame(dic,columns=['Name','Age'])
print(df)
```

(a)	(b)	(c)	(d)
Name Agg Age	Name Agg Age	Name	Name Age
101 Sapna 56 16	0 Sapna 56 16	0 Sapna	0 Sapna 16
102 Anmol 67 18	1 Anmol 67 18	1 Anmol	1 Anmol 18
103 Rishul 75 16	2 Rishul 75 16	2 Rishul	2 Rishul 16
104 Sameep76 19	3 Sameep 76 19	3 Sameep	3 Sameep 19

43. Consider the following code:

```
import pandas as pd
S1=pd.Series([23,24,35,56],index=['a','b','c','d'])
S2=pd.Series([27,12,14,15],index=['b','y','c','ab'])
df=pd.DataFrame(S1+S2)
print(df)
```

Output for the above code will be:

(a)	(b)	(c)	(d)
0	0	0	0
a NaN	a 50	b 50	a NaN
ab NaN	b 36	y 36	ab NaN
b 51.0	c 49	c 49	b NaN
c 49.0	d 71	ab 71	c NaN
d NaN			d NaN
y NaN			y NaN

44. Sudhanshu has written the following code to create a DataFrame with Boolean index:

```
import numpy as np
import pandas as pd
df=pd.DataFrame(data=[[5,6,7]],index=[true,false,true])
print(df)
```

While executing the code, she is getting an error, help her to rectify the code:

(a) df=pd.DataFrame([True,False,True],data=[5,6,7])

(b) df=pd.DataFrame(data=[5,6,7], index=[True,False,True])

(c) df=pd.DataFrame([true,false,true],data=[5,6,7])

(d) df=pd.DataFrame(index=[true,false,true],data=[[5,6,7]])

49. Sushila has created a DataFrame with the help of the following code:

```
import pandas
EMP={'EMPID':['E01','E02','E03','E04','E05'],'EMPNAME':
     ['KISHORI','PRIYA','DAMODAR','REEMA','MANOJ'],
     'EMP_SALARY':[67000,34000,68000,90000,43000]}
df=pandas.DataFrame(EMP,index=['001','002','003','004','005'])
print(df.loc[0:3, :])
```

and she wants to get the following output:

EMPID	EMPNAME	EMP_SALARY
001	E01 KISHORI	67000
002	E02 PRIYA	34000
003	E03 DAMODAR	68000

Help her to correct the code

(a) print(df.iloc['001':'003', :])

(b) print(df.loc['001':'003', :])

(c) print(EMP[loc[0:3,:]])

(d) print(df.loc['001':'004',:])

SECTION-C

Section C consists of 6 questions (50-55). Attempt any five questions.

Case Study

Ms Ramdeep kaur maintains the records of all students of her class. She wants to perform some operations on the data:

Code:

```
import pandas as pd
t={'Rollno':[101,102,103,104,105,106,107],
'Name':[Shubrato''Krishna','Pranshu','Gurpreet','Arpit',
'Sanidhya','Aruobindo'],'Age':[15,14,14,15,16,15,16],
'Marks':[77.9,70.4,60.9,80.3,86.5,67.7,85.0],'Grade':
['11B','11A','11B','11C','11E','11A','11C']}
df=pd.DataFrame(t,index=[10,20,30,40,50,60,70])
print(df)
```

Output of the above code:

	Rollno	Name	Age	Marks	Grade
10	101	Shubrato	15	79.9	11B
20	102	Krishna	14	70.4	11A
30	103	Pranshu	14	60.9	11B
40	104	Gurpreet	15	80.3	11C
50	105	Arpit	16	86.5	11E
60	106	Sanidhya	15	67.7	11A
70	107	Aurobindo	16	85.0	11C

Based on the given information, answer questions No.50-55.

50. Select the correct statement for the below output:

Name	**Krishna**
Age	14
Marks	70.4
Grade	11A
Name:20,	dtype:object

(a) print(df.iloc[2]) (b) print(df.loc[2])

(c) print(df.iloc[20]) (d) print(df.loc[20])

51. The teacher wants to know the marks secured by the second last student only. Which statement would help her to get the correct answer?

(a) print(df.loc[60:70,'Marks'])
(b) print(df.loc[60:60,'Marks'])
(c) print(df.iloc[-2:-2],['Marks'])
(d) print(df[-2:-2]['Marks'])

52. Which of the following statement(s) will add a new column 'fee' at second position with values [3200,3400,4500,3100,3200,4000,3700] in DataFrame df?

(a) df.insert(loc=2,column='fee',
value=[3200,3400,4500,3100,3200,4000,3700])
(b) df.add(2,column='fee',
[3200,3400,4500,3100,3200,4000,3700])
(c) df.append(loc=2,'
fee'=[3200,3400,4500,3100,3200,4000,3700])
(d) df.insert(loc=2,'fee',
[3200,3400,4500,3100,3200,4000,3700])

53. Which of the following commands is used to delete the column 'Grade' in the DataFrame df?

(a) df.drop('Grade',axis=1,inplace=True)
(b) df.drop('Grade',axis=0,inplace=True)
(c) df.drop['Grade',axis=1,inplace=True]
(d) df.delete('Grade',axis=1,inplace=True)

54. Which of the following commands would rename the column 'Marks' to 'Halfyearly' in the DataFrame df?

(a) df.rename(['Marks','Halfyearly'],inplace=True)
(b) df.rename({'Marks','Halfyearly'},inplace=True)
(c) df.rename(columns={'Marks':'Halfyearly'},inplace=True)
(d) df.rename(['Marks':'Halfyearly'],inplace=True)

55. Which of the following commands will display the Names and Marks of a students getting more than 80 marks?

(a) print(df.loc['Marks'>80,['Name','Marks']])
(b) print(df.loc[df['Marks']<80,'Name','Marks'])
(c) print(df.loc[df['Marks']<80,['Name','Marks']])
(d) print(df.loc[df['Marks']>80,['Name','Marks']])

2021.22 TERM 1 (Answers)

1.a	2.a	3.d	4.d	5.d
6.a	7.b	8b	9a	10c
11b	17a	18b	19c	20a
21c	22d	23a	24d	26a
29c	30c	33d	34d	36d
38a	39a	40d	41c	42d
43a	44b	49b	50d	51b
52a	53a	54c	55d	

CBSE Sample Paper ::Term1 (2021.22)

1. The name "Pandas" is derived from the term:
a. Panel Data b. Panel Series
c. Python Document d. Panel Data Frame

2. The command to install the pandas is:
a. install pip pandas b. install pandas
c. pip pandas d. pip install pandas

3. Python pandas was developed by:
a. Guido van Rossum b. Travis Oliphant
c. Wes McKinney d. Brendan Eich

4. Pandas Series is:
a. 2 Dimensional b. 3 Dimensional
c. 1 Dimensional d. Multidimensional

5. Pandas is a:
a. Package b. Language
c. Library d. Software

6. We can analyse the data in pandas with
a. Series b. Data Frame
c. Both of the above d. None of the above

7. Out of the following, which function cannot be used for customization of charts in Python?
a. xlabel() b. colour()
c. title() d. xticks()

8. What is the minimum number of arguments required for plot() function in matplotlib?
a. 1 b. 2 c. 3 d. 4

9. Method or function to add a new row in a data frame is:
a. .loc() b. .iloc() c. join d. add()

10. _____ is the function to save the graph.
a. Savefig() b. Savefigure()
c. Savegraph() d. Savechart()

14. Which of the following import statement is not correct?
a. import pandas as class12
b. import pandas as 1pd
c. import pandas as pd1
d. import pandas as pd

17. While accessing the column from the data frame, we can specify the column name. In case column does not exist, which type of error it will raise:
a. Key Error b. Syntax Error
c. Name Error d. Runtime Error

18. _____is the practice of taking someone else's work or ideas and passing them off as one's own:
a. Plagiarism b. Copyright
c. Patent d. All of the above

19. Function to display the first n rows in the DataFrame:
a. tail (n) b. head (n) c. top (n) d. first (n)

23. Pandas data frame cannot be created using:
a. Dictionary of tuples b. Series

c. Dictionary of List d. List of Dictionaries

24. Which function will be used to read data from a CSV file into pandas data frame?

a. readcsv() b. to_csv()
c. read_csv() d. csv_read()

25. Which of the following is not an attribute of pandas data frame?

a. length b. T c. Size d. shape

26. What will be the output of the given code?

```
import pandas as pd
s = pd.Series([1,2,3,4,5], index=['akram',
          'brijesh','charu','deepika','era'])
print(s['charu'])
```

a. 1 b. 2 c. 3 d. 4

27. Assuming the given series, named **stud**, which command will be used to print 5 as output?

```
Amit      90
Ramesh    100
Mahesh    50
john      67
Abdul     89
Name: Student, dtype: int64
```

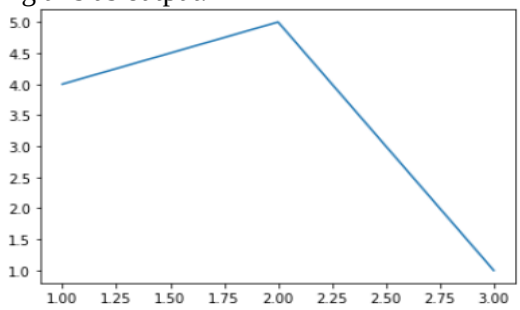
a. stud.index b. stud.length
c. stud.values d. stud.size

28. A social science teacher wants to use a pandas series to teach about Indian historical monuments and its states. The series should have the monument names as values and state names as indexes which are stored in the given lists, as shown in the code. Choose the statement which will create the series:

```
import pandas as pd
Monument=['QutubMinar','Gateway of India',
          'Red Fort','Taj Mahal']
State=['Delhi','Maharashtra','Delhi','Uttar Pradesh']
```

a. S=df.Series(Monument,index=State)
b. S=pd.Series(State,Monument)
c. S=pd.Series(Monument,index=State)
d. S=pd.series(Monument,index=State)

30. Observe the following figure. Identify the coding for obtaining this as output.



a. import matplotlib.pyplot as plt
plt.plot([1,2],[4,5])
plt.show()

b. import matplotlib.pyplot as plt
plt.plot([1,2,3],[4,5,1])
plt.show()

c. import matplotlib.pyplot as plt
plt.plot([2,3],[5,1])
plt.show()

d. import matplotlib.pyplot as plt
plt.plot([1,3],[4,1])
plt.show()

31. Read the statements given below and identify the right option to draw a histogram.

Statement A: To make a Histogram with Matplotlib, we can use the plt.hist() function.

Statement B: The bin parameter is compulsory to create histogram.

a. Statement A is correct
b. Statement B is correct
c. Statement A is correct, but Statement B is incorrect
d. Statement A is incorrect, but Statement B is correct

32. Which graph should be used where each column represents a range of values, and the height of a column corresponds to how many values are in that range?

a. plot b. line c. bar d. histogram

35. Consider the following series named animal:

```
L      Lion
B      Bear
E   Elephant
T      Tiger
W      Wolf
dtype:object
```

Write the output of the command:
print(**animal[::-3]**)

a.
```
L      Lion
T      Tiger
dtype:object
```

b.
```
B      Bear
E   Elephant
dtype:object
```

c.
```
W      Wolf
B      Bear
dtype:object
```

d.
```
W      Wolf
T      Tiger
dtype:object
```

37. What is a correct syntax to return the values of first row of a Pandas DataFrame? Assuming the name of the DataFrame is dfRent.

a. dfRent[0] b. dfRent.loc[1]
c. dfRent.loc[0] d. dfRent.iloc[1]

39. Difference between loc() and iloc().:

a. Both are Label indexed based functions.
b. Both are Integer position-based functions.
c. loc() is label based function and iloc() integer position based function.
d. loc() is integer position based function and iloc() index position based function.

40. Write the output of the given program:

```
import pandas as pd
S1=pd.Series([5,6,7,8,10],index=['v','w','x','y','z'])
l=[2,6,1,4,6]
S2=pd.Series(l,index=['z','y','a','w','v'])
print(S1-S2)
```

a.
```
a     0
v    -1.0
w     2.0
```

x NaN
y 2.0
z 8.0
dtype: float64

b.

a NaN
v -1.0
w 2.0
x NaN
y 2.0
z 8.0
dtype: float64

c.

v -1.0
w 2.0
y 2.0
z 8.0
dtype: float64

d.

a NaN
v -1.0
w 2.0
x 3.0
y 2.0
z 8.0
dtype: float64

42. Which command will be used to delete 3 and 5 rows of the data frame. Assuming the data frame name as DF.

a. DF.drop([2,4],axis=0) b. DF.drop([2,4],axis=1)
c. DF.drop([3,5],axis=1) d. DF.drop([3,5])

43. Write the output of the given command:

```
import pandas as pd
s=pd.Series([1,2,3,4,5,6],index=['A','B','C','D','E','F'])
print(s[s%2= =0])
```

a.

B 0
D 0
F 0
dtype: int64

b.

A 1
B 2
C 5
dtype: int64

c.

B 2
D 4
F 6
dtype: int64

d.

B 1
D 2
F 3
dtype: int64

44. Ritika is a new learner for the python pandas, and she is aware of some concepts of python. She has created some lists, but is unable to create the data frame from the same. Help her by identifying the statement which will create the data frame.

```
import pandas as pd
Name=['Manpreet','Kavil','Manu','Ria']
Phy=[70,60,76,89]
Chem=[30,70,50,65]
```

a. df=pd.DataFrame({"Name":Name,"Phy":Phy, "Chem":Chem})

b. d=("Name":Name,"Phy":Phy,"Chem":Chem)
df=pd.DataFrame(d)

c.
df=pd.DataFrame([Name,Phy,Chem],columns=['Name', "Phy","Chem","Total"])

d. df=pd.DataFrame({Name:"Name", Phy :"Phy", Chem: "Chem"})

46. Assuming the given structure, which command will give us the given output:

	Flight No	Airline	Passenger
0	1	Indigo	230000
1	2	SpiceJet	12000
2	3	Indian Airlines	240000
3	4	Lufthansa	245000
4	5	Air Asia	210000

Output Required: (3,5)

a. print(df.shape()) b. print(df.shape)
c. print(df.size) d. print(df.size())

47. Write the output of the given command:
df1.loc[:0,'Sal']
Consider the given dataframe.

	EName	Sal	Bonus
0	Kavita	50000	3000
1	Sudha	60000	4000
2	Garima	55000	5000

a. 0 Kavita 50000 3000 b. 50000
c. 3000 d. 50000

48. Consider the following data frame name **df**

	Name	Age	Marks
0	Amit	15	90.0
1	Bhavdeep	16	NaN
2	Reema	17	87.0

Write the output of the given command:
print(df.marks/2)

a 0 45.0
1 NaN
2 43.5
Name: Marks, dtype:float64

b 0 45.0
1 NaN
2 43
Name: Marks, dtype:float64

c 0 45
1 NaN
2 43.5
Name: Marks, dtype:float64
d 0 45.0
1 0
2 43.5
Name: Marks, dtype:float64

49. Read the statements given below. Identify the right option from the following for Attribute and method/function.

Statement A: Attribute always ends without parenthesis.

Statement B: Function/Method cannot work without arguments.

a. Both statements are correct.
b. Both statements are incorrect.
c. Statement A is correct, but Statement B is incorrect
d. Statement A is incorrect, but Statement B is correct

Case Study Questions

Mr. Sharma is working with an IT company, and he has provided some data. On which he wants to do some operations, but he is facing some problem, help him:

Code:

```
import pandas as pd
ResultSheet={'Naveen': pd.Series([90, 91, 97],
               index=['Maths','Science','Hindi']),
             'Rehana': pd.Series([92, 81, 96],
             index=['Maths','Science','Hindi']),
             'John': pd.Series([89, 91, 88],
             index=['Maths','Science','Hindi']),
            'Roja': pd.Series([81, 71, 67],
             index=['Maths','Science','Hindi']),
            'Mannat': pd.Series([94, 95, 99],
            index=['Maths','Science','Hindi'])}
DF = pd.DataFrame(ResultSheet)
print(DF)
```

Output of the above code:

	Naveen	Rehana	John	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

Based on the given information, answer the questions NO. 50-55.

50. He wants to add a new column with name of student 'Prem' in above data frame choose the right command to do so:
a. DF['Prem']=[89,78,76] b. df['Prem']=[89,78,76]
c. DF['Prem']=[89,78,76,67] d. DF['Name']=[89,78,76]

51. He wants to set all the values to zero in data frame, choose the right command to do so:
a. DF=0 b. DF[]=0 c. DF[:]=0 d. DF[:]==0

52. He wants to delete the row of science marks:
a. DF.drop('Science', axis=1)
b. DF.drop('Science', axis=0)
c. DF.drop('Science', axis=-1)
d. DF.drop('Science', axis= =0)

53. The following code is to create another data frame, which he wants to add to the existing Data frame. Choose the right command to do so:

```
Sheet1={ 'Aaradhya': pd.Series([90, 91, 97],
          index=['Maths','Science','Hindi'])}
S1=pd.DataFrame(Sheet1)
```

a. DF.append(S1,axis=0) b. DF.append(S1)
c. DF.insert(S1) d. DF.join(S1)

54. What will be the output of the given command?
DF.index=['A','B','C']

a.

		Naveen	Rehana	John	Roja	Mannat
A	Maths	90	92	89	81	94
B	Science	91	81	91	71	95
C	Hindi	97	96	88	67	99

b.

	Naveen	Rehana	John	Roja	Mannat
A	90	92	89	81	94
B	91	81	91	71	95
C	97	96	88	67	99

c.

	A	B	C	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

d. Error, Index already exists and cannot be overwritten.

55. What will be the output of the given command?

	Naveen	Rehana	John	Roja	Mannat
Maths	90	92	89	81	94
Science	91	81	91	71	95
Hindi	97	96	88	67	99

print(DF.size)
a. 15 b. 18 c. 21 d. 23

CBSE SP::ANSWERS (TERM 1: 2021.22)

1. a. Panel Data
2. d. pip install pandas
3. c. Wes McKinney
4. c. 1 Dimensional
5. c. Library
6. C. Both of the above
7. b colour()
8. a. 1
9. a. loc()
10. a. Savefig()
14. b. import pandas as 1pd
17. a. Key Error
18. a. Plagiarism
19. b. head (n)
23. a. dictionary of tuples
24. c. read_csv()
25. a. length
26. c. 3
27. d. stud.size
28. c. S=pd.Series(Monument,index=State)
30. b

31. c. Statement A is correct, but Statement B is incorrect
32. d. histogram
35. c. 37. c. dfRent.loc[0]
39. c. loc() is label based function and iloc() integer position based function.
40. b42. aDF.drop([2,4],axis=0)
43. c 44. a.
46. b. print(df.shape) 47. b. 50000
48. a.
49. c. Statement A is correct, but Statement B is incorrect
50. a. DF['Prem']=[89,78,76] 51. c DF[:]=0
52. b. DF.drop('Science', axis=0) 53. b. DF.append(S1)
54. b. 55. a. 15

CBSE Sample Paper ::(2020.21)

2. Fill in the blanks :
The command used to give a heading to a graph is _____
a. plt.show() b. plt.plot()
c. plt.xlabel() d. plt.title()

4.Given a Pandas series called Sequences, the command which will display the first 4 rows is _____.
a. print(Sequences.head(4))
b. print(Sequences.Head(4))
c. print(Sequences.heads(4)
d. print(Sequences.Heads(4))

5. Given the following Series S1 and S2:

S1

A	10
B	40
C	34
D	60

S2

A	80
B	20
C	74
D	90

Write the command to find the sum of series S1 and S2.

6. Using Python Matplotlib _____ can be used to count how many values fall into each interval
a. line plot b.bar graph c.histogram

8. In a DataFrame, Axis= 1 represents the_____ elements.

13. In Pandas the function used to check for null values in a DataFrame is _____

22. Consider the following DataFramedfand answer any four questions from (i)-(v)

rollno	name	UT1	UT2	UT3	UT4
1	Prerna Singh	24	24	20	22
2	Manish Arora	18	17	19	22
3	Tanish Goel	20	22	18	24
4	Falguni Jain	22	20	24	20
5	Kanika Bhatnagar	15	20	18	22
6	Ramandeep Kaur	20	15	22	24

(i) Write down the command that will give the following output.

```
rollno              6
name       Tanish Goel
UT1                24
UT2                24
UT3                24
UT4                24
dtype: object
```

a. print(df.max) b. print(df.max())
c. print(df.max(axis=1)) d. print(df.max, axis=1)

(ii) The teacher needs to know the marks scored by the student with roll number 4. Help her to identify the correct set of statement/s from the given options :
a. df1=df[df['rollno']= =4]
print(df1)
b. df1=df[rollno= =4]
print(df1)
c. df1=df[df.rollno=4]
print(df1)
d. df1=df[df.rollno= =4]
print(df1)

(iii) Which of the following statement/s will give the exact number of values in each column of the dataframe?
i. print(df.count()) ii. print(df.count(0))
iii. print(df.count) iv. print(df.count(axis='index'))
Choose the correct option:
a. both (i) and (ii) b. only (ii)
c. (i), (ii) and (iii) d. (i), (ii) and (iv)

(iv) Which of the following command will display the column labels of the DataFrame?
a. print(df.columns()) b. print(df.column())
c. print(df.column) d. print(df.columns)

(v) Ms. Sharma, the class teacher wants to add a new column, the scores of Grade with the values,
' A', 'B', 'A', 'A', 'B', 'A' ,to the DataFrame.
Help her choose the command to do so:
a. df.column=['A','B','A','A','B','A']
b. df ['Grade']=['A','B','A','A','B','A']
c. df.loc['Grade']= ['A','B','A','A','B','A']
d. Both (b) and (c) are correct

(24) Consider a given Series , M1:

index	Marks
Term1	45
Term2	65
Term3	24
Term4	89

Write a program in Python Pandas to create the series.

(27) Consider the following Series object, S_amt

Table	350
Chair	200
Sofa	800
Stool	150

i) Write the command which will display the name of the furniture having rent>250.
ii) Write the command to name the series as Furniture.

30. Consider the following DataFrame, classframe

	Rollno	Name	Class	Section	CGPA	Stream
St1	1	Aman	IX	E	8.7	Science
St2	2	Preeti	X	F	8.9	Arts
St3	3	Kartikey	IX	D	9.2	Science
St4	4	Lakshay	X	A	9.4	Commerce

Write commands to :

i. Add a new column 'Activity' to the Dataframe

ii. Add a new row with values (5 , Mridula ,X, F , 9.8, Science)

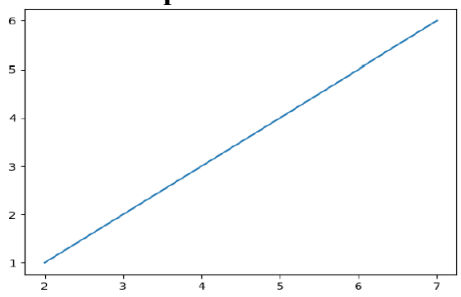
34. Consider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40,90, 110.

What will be the output of the following two statements considering that the above objects have been created already. a. print (x*2) b. print(y*2)

Justify your answer.

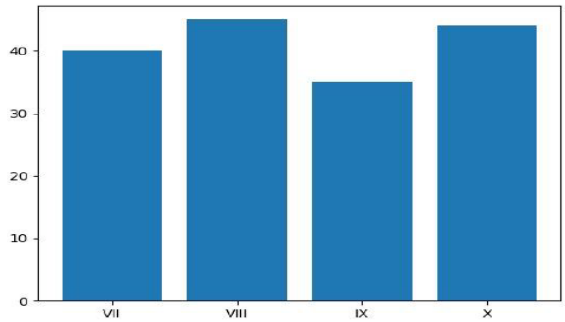
36. Consider the following graph.

Write the code to plot it.



OR

Draw the following bar graph representing the number of students in each class.



38. Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary:

B_NO	Name	Score1	Score2
1	Sunil Pillai	90	80
2	Gaurav Sharma	65	45
3	Piyush Goel	70	90
4	Kartik Thakur	80	76

Perform the following operations on the DataFrame :

1) Add both the scores of a batsman and assign to column "Total"

2) Display the highest score in both Score1 and Score2 of the DataFrame.

3) Display the DataFrame

CBSE SP::ANSWERS (2020.21)

2. plt.title( )

4. print(Sequences.head(4))

5. print(S1+S2)

6. histogram

8. column

13. isnull( )

22.i) b. print(df.max())

ii) a. df1=df[df['rollno']==4]
print(df1)

d. df1=df[df.rollno==4]
print(df1)

iii) a. both (i) and (ii)

iv) **a.** d. print(df.columns)

v) b. df ['Grade']=['A','B','A','A','B','A']

24. import pandas as pd
m1=pd.Series([45,65,24,89],index=[
'term1','term2','term3','term4'])

27. i. print(S_amt[S_amt>250])

ii. S_amt.name= 'Furniture'

30.

i.classframe['Activity']=['Swimming',
'Dancing','Cricket', 'Singing']

ii. classframe.loc['St5']=[1,
'Mridula', 'X', 'F', 9.8, 'Science']

34.

a. will give the output as:
[20,40,90,110,20,40,90,110]

b. will give the output as

0	40
1	80
2	180
3	220

Justification: In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times.

The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.

36.
```
import matplotlib.pyplot as plt
plt.plot([2,7],[1,6])
plt.show()
```

alternative answer
```
import matplotlib.pyplot as plt
a = [1,2,3,4,5,6]
b = [2,3,4,5,6,7]
plt.plot (a,b)
```

OR
```
import matplotlib.pyplot as plt
Classes = ['VII','VIII','IX','X']
Students = [40,45,35,44]
plt.bar(classes, students)
plt.show()
```

38.
```
import pandas as pd
d1={'B_NO':[1,2,3,4],
    'Name':["Sunil Pillai","Gaurav Sharma",
    "Piyush Goel","Kartik Thakur"],
    'Score1':[90,65,70,80], 'Score2':[80,45,95,76] }
df=pd.DataFrame(d1)
print(df)
df['Total'] = df['Score1']+ df['Score2']
```

Alternative Answer
```
Scheme
df['Total'] = sum(df['Score1'], df['Score2'])
```

```
print(df)
print("Maximum scores are : " , max(df['Score1']),
      max(df['Score2']))
```

CBSE Sample Paper ::(2019.20)

1.a) Find the output of following program:

```
import numpy as np
d=np.array([10,20,30,40,50,60,70])
print(d[-4])
```

1.b) Fill in the blank with appropriate numpy method to calculate or the covariance of an array

```
import numpy as  np
data=np.array([1,2,3,4,5,6])
print(np._____(data,ddof=0))
```

1.c) Write a suitable Python code to create an empty dataframe.

OR

Consider the following dataframe : student_df

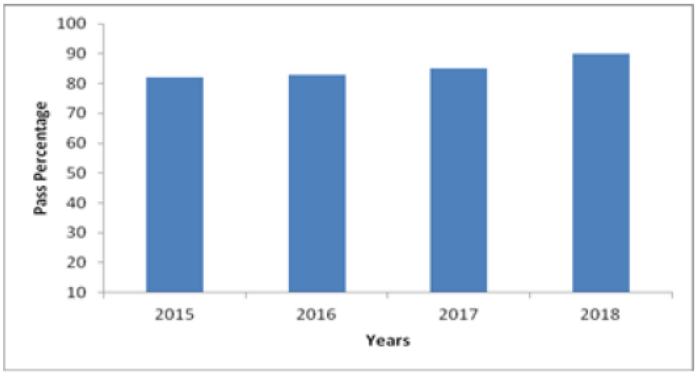
Name	class	marks
Anamay	XI	95
Aditi	XI	82
Mehak	XI	65
Kriti	XI	45

Write a statement to get the minimum value of the column marks.

1.d) Write the output of the following code :

```
import numpy as np
array1=np.array([10,12,14,16,18,20,22])
print(array1[1:5:2])
```

1.e) Write a code to plot a bar chart to depict the pass percentage of students in CBSE exams for the years 2015 to 2018 as shown below-



1.f) What is series? Explain with the help of an example.

1.g) Write a code in Python to search for a given value in a list of elements(Without using in-built function)

Example:

If the List contains: [20,30,40,50,60,80,120]
and the element to be searched is:60
Then the output should be: Found at position 4

OR

Write a code in python to find the minimum value in a list.

Example:

If the List contains: [100,150,90,65,180,200]
Then the output should be: Minimum Value is 65

2.a) _____ method in Pandas can be used to change the index of rows and columns of a Series or Dataframe :

(i) rename() (ii) reindex()
(iii) reframe() (iv) none of the above

2.b) Hitesh wants to display the last four rows of the data frame df and has written the following code :

df.tail()

But last 5 rows are being displayed. Identify the error and rewrite the correct code so that last 4 rows get displayed.

OR

A dataframe studdf stores data about the students stream, marks. A part of it is shown below:

Class	Stream	Marks
11	Science	95
11	Commerce	80
11	Arts	75
11	Vocational	65

Using the above dataframe, write the command to compute Average marks stream wise.

2.c) Consider the following python code and write the output for statement S1

```
import pandas as pd
K=pd.Series([2,4,6,8,10,12,14])
K.quantile([0.50,0.75]) ---------- S1
```

2.d) Write a small python code to drop a row from dataframe labeled as 0.

2.e) What is Pivoting? Name any two functions of Pandas which support pivoting.

2.f) Write a python code to create a dataframe with appropriate headings from the list given below :
['S101', 'Amy', 70], ['S102', 'Bandhi', 69], ['S104', 'Cathy', 75], ['S105', 'Gundaho', 82]

OR

Write a small python code to create a dataframe with headings(a and b) from the list given below :
[[1,2],[3,4],[5,6],[7,8]]

2.g) Consider the following dataframe, and answer the questions given below:

```
import pandas as pd
df = pd.DataFrame({"Quarter1":[2000, 4000, 5000,
4400,
    10000], "Quarter2":[5800, 2500, 5400, 3000, 2900],
     "Quarter3":[20000, 16000, 7000, 3600, 8200],
     "Quarter4":[1400, 3700, 1700, 2000, 6000]})
```

(i) Write the code to find mean value from above dataframe df over the index and column axis.

(ii) Use sum() function to find the sum of all the values over the index axis.

(iii) Find the median of the dataframe df.

OR

Given a data frame df1 as shown below:

City	Maxtemp	MinTemp	RainFall
Delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
Kolkata	39	23	41.8

(i) Write command to compute sum of every column of the data frame.

(ii) Write command to compute mean of column Rainfall.
(iii) Write command to compute Median of the Maxtemp Column.

2.h) Find the output of the following code:

```
import pandas as pd
data = [{'a': 10, 'b': 20},{'a': 6, 'b': 32, 'c': 22}]
#with two column indices, values same as dictionary keys
df1 = pd.DataFrame(data, index=['first', 'second'],
        columns=['a', 'b'])
#With two column indices with one index with other name
df2 = pd.DataFrame(data, index=['first', 'second'],
        columns=['a', 'b1'])
print(df1)
print(df2)
```

2.i) Write the code in pandas to create the following dataframes :

	df1			df2	
	mark1	mark2		mark1	mark2
0	10	15	0	30	20
1	40	45	1	20	25
2	15	30	2	20	30
3	40	70	3	50	30

Write the commands to do the following operations on the dataframes given above :
(i) To add dataframes df1 and df2.
(ii) To subtract df2 from df1
(iii) To rename column mark1 as marks1in both the dataframes df1 and df2.
(iv) To change index label of df1 from 0 to zero and from
1 to one.

CBSE SP::ANSWERS (2019.20)

1.a) [40 50 60 70]
1.b) print(np.cov(data,ddof=0))
1.c)

```
import pandas as pd
df=pd.DataFrame()
print(df)
```

OR

```
Student_df[‘marks’.min()]
```

1.d) [12 16]
1.e)

```
import matplotlib.pyplot as plt
import numpy as np
objects=(‘2015’, 2016’, ‘2017’, ‘2018’)
y_pos=np.arrange(len(objects))
percentage=[82,83,85,90]
plt.bar(y_pos, percentage, align=’Centre’,
        color=’Blue’)
plt.xticks(y_pos,objects)
plt.ylabel(“Pass Percentage”)
plt.xlabel(‘Years’)
plt.show()
```

1.f) Pandas Series is a one-dimensional labeled array capable of holding data of any type (integer, string, float, python objects, etc.). The axis labels are collectively called index.
Example:

```
import pandas as pd
# simple array
data =pd.Series([1,2,3,4,5])
print(data)
```

1.g)

```
List=[20,30,40,60,80,120]
  Flag=0
  No=int(Input(“Enter a value”))
  pos=0
  for I in List:
   if no==i:
      prnt(“Found at position=”, pos+1)
      Flag=1
      break
   pos=pos+1
 if Flag= =0:
   print(“value not found”)
```

OR

```
List=[100,150,90,65,180,200]
min=List[0]
for i in List:
   if i<min:
      min=i
print(“Minimum Value is”, min)
```

2.a) (ii)reindex
2.b) df.tail (4)

OR

```
Studdf.pivot_table(index=’Stream’
                   Values=’marks’, aggfunc=’mean’)
```

2.c) 0.50 8.0
0.75 11.0
2.d)

```
# Drop rows with label 0
df = df.drop(0)
print(df )
```

2.e) Pivoting means to use unique values from specified index/columns to form apex of the resulting dataframe. Pivot() and pivot_table() methods
2.f)

```
import pandas as pd
# initialize list of lists
data = [['S101', 'Amy', 70], ['S102', 'Bandhi', 69], ['S104',
        'Cathy', 75], ['S105', 'Gundaho', 82]]
# Create the pandas DataFrame
df = pd.DataFrame(data, columns = ['ID', 'Name',
'Marks'])
# printdataframe.
print(df )
```

OR

```
import pandas as pd
df = pd.DataFrame([[1, 2], [3, 4]], columns = ['a','b'])
df2 = pd.DataFrame([[5, 6], [7, 8]], columns = ['a','b'])
df = df.append(df2)
```

2.g) (i)

```
print(df.mean(axis = 1))
print(df.mean(axis = 0))
```

(ii)

```
print(df.sum(axis = 1))
```

(iii) print(df.median())

OR

(i) df1.sum()
(ii) df1['Rainfall'].mean()
(iii) df1.loc[:, 'Maxtemp'].median( )

2.h)

	a	b
first	10	20
second	6	32

	a	b1
first	10	NaN
second	6	NaN

2 i)

```
import numpy as np
import pandas as pd
df1 = pd.DataFrame({'mark1':[30,40,15,40],
            'mark2':[20,45,30,70]});
df2 = pd.DataFrame({'mark1':[10,20,20,50],
            'mark2':[15,25,30,30]});
print(df1)
print(df2)
```

(i) print(df1.add(df2))
(ii) print(df1.subtract(df2))
(iii) df1.rename(columns={'mark1':'marks1'},
inplace=True)
print(df1)
(iv) df1.rename(index = {0: "zero", 1:"one"},
inplace=True)
print(df1)