XII – IP – CT 2 (QP)
(PYTHON PANDAS- DATAFRAMES CONCEPT) (35 MARKS)

General Instructions:
The paper is divided into 3 Sections-A, B and C.
Section A, consists of Question 1 to 11 and student need to attempt 11 questions. Each question carries 1 Mark.
Section B, consists of Question number 12 to 17 and student need to attempt 6 questions. Each question carries 2 Marks.
Section C, consists of Question number 18 to 21 and student need to attempt 4 questions. Each question carries 3 Marks.

SECTION-A **11X1=11 Marks**

1. Which of the following command will display the number of dimensions in the DataFrame?
   a. print(std.shape)
   b. print(std.ndim)
   c. print(std.size)
   d. print(std.dimensions)
2. Pandas drop() function can be used to delete
   a. Row
   b. Column
   c. Row & Column
   d. None of the above
3. Write the equivalent expression for the given function i.e. B.sub(A)
4. Name the function to iterate over a DataFrame vertically.
5. 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 the last 4 rows get displayed.
6. Write a statement to change the value at 5th row, 6th column in a DataFrame df.
7. Given a data frame df as shown below:

	A	B	D
0	15	17	19
1	16	18	20
2	20	21	22

What will be the result of following code statements?
df[“C”]=[2,5]

8. Given a Pandas series called Srs2, the command which will display the last 5 rows is _____.
   a. print(Srs2.head(5))
   b. print(Srs2.tail())
   c. print(Srs2.tail(-5)
   d. print(Srs2.head())

9. Shape attribute gives _____ of a data frame

10. Rohan wants to print the row labels of the data frame. He should use the _____ attribute of a data frame.

11. In Pandas the function used to delete a column in a DataFrame is
   a. remove b.del c.drop d.cancel

SECTION-B **6X2=12 Marks**

12. Write a program in Python Pandas to create the following DataFrame Player from a Dictionary:

SNo	Name	Age	Score
1	Kapil	26	87
2	Amit	27	89
3	Virat	25	67
4	Rohit	24	55
5	Ajith	31	47

13. Consider the above given df1 and write Python code for the following.

	C1	C2
A	12	11
B	16	17
C	20	21

a. Add a new row D with elements 18 19
b. Delete column C2 permanently from Data frame.

14. Consider the below data frame CLASS, write commands to do the followings:

	ROLLNO	NAME	BST	ECO
0	1201	vikram	78	80
1	1202	shivani	88	89
2	1303	vivek	76	82
3	1204	jaipriya	70	84
4	1205	simran	85	67
5	1206	chitanya	78	88

a. Display rows 2 to 4(both inclusive) and columns 'BST' , 'ECO'
b. Display rows 2 to 4(both inclusive) and first 3 columns.

15. Given a data frame mdf as shown below:

	X	Y	Z
0	10	20	30
1	40	50	60

What will be the output produced by the following code?

a. print("I : ", mdf.iloc[0][0])
b. print("II : ", mdf.loc[0]["Z"])
c. print("III : ",mdf.at[1, "X"])
d. print("IV :",mdf.iat[1,2])

16. Write a program to create a data frame to store weight, age and names of 3 people. Print the data frame and its transpose.

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

```
import pandas as pd
```

```
import numpy as np
arr1=np.array([11, 12],[13,14],[15,16]], np.int32)
df2=pd.DataFrame(arr1)
print(df2)
```

SECTION-C **4X3=12 Marks**

18. Consider the following data frame ndf as shown below:

	Col1	Col2	Col3	Res
T1	62.893165	100.0	60.00	True
T2	94.734483	100.0	59.22	True
T3	49.090140	100.0	46.04	False
T4	38.487265	85.4	58.60	False

What will be the output produced by following statements:-

a. print(ndf.loc [:, 'Col3' :]) b. print(ndf.iloc[2: , : 3]) c. print(ndf.iloc [1:3 , 2:3])

19. Consider the following data frame df and answer the following questions.

SNo	Prod Name	Qtr1	Qtr2	Qtr3	Qtr4
1	LG Refrigerator	24	24	20	21
2	Samsung TV	18	17	19	22
3	LG Microwave	20	22	18	24
4	Sony TV	22	20	24	20
5	Asus Laptop	15	20	18	22
6	HP Laptop	20	15	22	24

a. 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('col'))
   iii) print(df.count) iv) print(df.count(axis='index'))
   Choose the correct option:
   a. both (i) and (ii) b. only (ii) c. both (i) and (iv) d. None of the above

b. Which of the following command will display the column labels of the data frame?
   i) print(df.columns()) ii) print(df.column())
   iii) print(df.column) iv) print(df.columns)

c. Mr. Narang, the proprietor wants to add a new column, the scores of Grade with the values,'A', 'B', 'A', 'A', 'B', 'A' ,to the data frame. Help him write the command to do so:
   i) df.column= ['A','B','A','A','B','A']
   ii) df ['Grade']=['A','B','A','A','B','A']
   iii) df.loc['Grade'] = ['A','B','A','A','B','A']
   iv) Both (b) and (c) are correct

20. Consider the following data frame named happy_df.

Country	Region	Happiness Rank	Happiness Score	Family
Switzerland	Western Europe	1	7.587	1.34951
Iceland	Western Europe	2	7.561	1.40223
Denmark	Western Europe	3	7.527	1.36058
Norway	Western Europe	4	7.522	1.33095
Canada	North America	5	7.427	1.32261
Finland	Western Europe	6	7.406	1.31826
Netherlands	Western Europe	7	7.378	1.28017
Sweden	Western Europe	8	7.364	1.28907
New Zealand	Australia and New Zealand	9	7.286	1.31967
Australia	Australia and New Zealand	10	7.284	1.30923

(i) Complete the following command to display first five rows of the above data frame.
print(happy_df.iloc[_____ : _____])

(ii) Write the command to display number of rows and columns of the above data frame.
(a) print(happy_df.row, happy_df.columns) (b) print(happy_df.shape ())
(c) print(happy_df.shape) (d) None of the above

(iii) Which command(s) of the following would display only Region column of the above data frame.
(a) print(happy_df.Region) (b) print(happy_df.iloc[,'Region'])
(c) print(happy_df.iloc[: ,1]) (d) both (a) & (c)

21. Consider the following Data Frame, sports.

	Sports_Id	Name	Student	Team
s1	1	Hockey	15	B
s2	2	Cricket	20	D
s3	3	Chess	4	C
s4	4	Carrom	4	A

i) Write a python code to change the names of the row indexes s1, s2,s3,s4 with sports1,sports2 , sports3 & sports4.

ii) Write a python statement to remove the rows s1&s4

iii) Write a python code to remove first and last columns of the data frame using indexes.