XII – IP – PT 4 (QP) (35 MARKS)

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 mark.
- 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 and 17

SECTION – A

Each question carries 1 mark

1. To display third element, you will write :
   (a) S[:3] (b) S[2] (c) S[3] (d) S[:2]
2. 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
3. What will be the output of the given code?

```
import pandas as pd
s = pd.Series([10,20,30,40,50], index=['Hyderabad', 'Tenali','Bhimavaram','Delhi','Vja'])
print(s['Vja'])
```

   (a) 4 (b) 5 (c) 40 (d) 50

4. Consider the following Series Object.

```
>>> S
0    2500
1    1200
2    1700
3    -500
4     700
dtype: int64
```

What will be the output of the Series object after executing the following command?

>>> S.sort_values(ascending=True, inplace=True)

(a)

```
0    2500
1    1200
2    1700
3    -500
4     700
dtype: int64
```

(b)

```
3    -500
4     700
1    1200
2    1700
0    2500
dtype: int64
```

(c)

```
0    2500
2    1700
1    1200
4     700
3    -500
dtype: int64
```

(d)

```
1    1200
2    1700
0    2500
dtype: int64
```

5. 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 2
      D 4
      F 6
      dtype: int64
   b. B True
      D True
      F True

dtype: bool

c.
```
A    1
B    2
C    3
D    4
E    5
F    6
dtype: int64
```

d.
```
A    False
B     True
C    False
D     True
E    False
F     True
dtype: bool
```

6. To display last five rows of a series object 'S', you may write:
(a). S.Head() (b) S.Tail(5) (c) S.Head(5) (d) S.tail( )

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

8. Which of the following can be used to specify the data while creating a DataFrame?
(a) Series (b)List of Dictionaries (c) Structured ndarray (d) All of these

9. **Q9 is ASSERTION AND REASONING based question.** Mark the correct choice as
i. Both A and R are true and R is the correct explanation for A
ii. Both A and R are true and R is not the correct explanation for A
iii. A is True but R is False
iv. A is false but R is True
Assertion (A) : You need to import or load the Pandas library first in order to use it.
Reason (R) : The "pd" is an alias or abbreviation which will be used as a shortcut to access or call pandas functions.

SECTION – B

Each question carries 2 marks

10. **Consider the following table: PRODUCT (3)**

PID	PNAME	PRICE	QUANTITY
P1001	Eraser	10.50	5
P1002	Ball Pen	15.00	2
P1003	Gel Pen	25.10	3
P1004	Ruler	5.00	1

Find the output of the following SQL queries:
(i) SELECT 10+MOD(QUANTITY,3) FROM PRODUCT WHERE PNAME="Eraser";
(ii) SELECT ROUND(PRICE,2)*QUANTITY FROM PRODUCT WHERE QUANTITY>2;

11. **Differentiate between NumPy Arrays and Series Objects.**

(Or)

Consider the following Series Object :

```
Position >>> S1
0    May      5
1    Jun      6
2    Jul      7
3    Aug      8
4    Sep      9
5    Oct     10
6    Nov     11
7    Dec     12
     dtype: int64
```

Answer the following:
(i) **>>> S1[1:9:2]** (ii) **>>> S1[::-2]**

12. Consider the following program:

```
import pandas as pd
a=[5,10,15,20]
S=pd.Series(index=a, data=a*2)
print(S)
```

(i) Will the above program executes properly? If not, say the reason clearly.

(ii) Predict the output if the Series creation statement is changed as following:

```
S=pd.Series(index=a*2,data=a*2)
```

13. What is a series? Write a program to create any series.

SECTION – C

Each question carries 3 marks

14. Differentiate between a Series and Dataframe (Write any three differences).

15. Shreya, a database administrator has designed a database for a clothing shop. Help her by writing answers of the following questions based on the given table:

TABLE: **CLOTH**

CCODE	CNAME	SIZE	COLOR	PRICE	DOP
C001	JEANS	XL	BLUE	990	2022-01-21
C002	T SHIRT	M	RED	599	2021-12-12
C003	TROUSER	M	GREY	399	2021-11-10
C004	SAREE	FREE	GREEN	1299	2019-11-12
C005	KURTI	L	WHITE	399	2021-12-07

i. Write a query to display cloth names in lower case.

ii. Write a query to display the lowest price of the cloths.

iii. Write a query to count year wise total number of cloths purchased.

(Or)

Ms Mohini is working in a school and stores the details of all student in a table SCHOOLDATA. (2)

Table : SCHOOLDATA

Admno	Name	Class	House	Percent	Gender	Dob
20150001	Aditya Das	10	Green	86	Male	2006-02-20
20140212	Harsh Sharma	11	Red	75	Male	2004-10-05
20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21
20130216	Soumen Rao	9	Red	91	Male	2006-04-10
20190227	Rahil Arora	10	Blue	70	Male	2005-05-14
20120200	Akasha Singh	11	Red	64	Female	2004-12-16

Write SQL statements from the above given table to

(i) To remove leading spaces from the column "Name"

(ii) Display the names of students who were born on Sunday

(iii) Predict the output of the following SQL queries from the given table SCHOOLDATA :

```
SELECT LEFT(Gender,1), Name FROM SCHOOLDATA WHERE YEAR(DOB)=2005;
```

16. **Consider the following program:**

```
import pandas as pd
import numpy as np
Marks=[32,33,np.NaN,31]
Exams=["RT1","RT2","RT3","RT4"]
S=pd.Series(Marks,index=Exams)
```

Write the output of the following:

(i) >>>S.index (ii) >>>S.values (iii) >>>S.dtype

(iv) >>>S.shape (v) >>>S.nbytes (vi) >>>S.hasnans

SECTION – D
It carries 4 marks

17. (a) Write a program to create the following dataframe "StudentMarks".

	RNo	SName	Marks
0	15	Rajesh	75
1	16	Pavan	95
2	17	Latha	91

(b) Write a program to create the following dataframe "Language".

	Mother Tongue	Population
AP	Telugu	6
TN	Tamil	9
Maharastra	Hindi	12

(Or)

What is a dataframe? Write any two characteristics of dataframe.
Write a program to create a dataframeObject from any 2-D ndarray.

SECTION – E
It carries 5 marks

18. Abhay is getting doubts while he is working with Table "Specialteacher".
Kindly clarify his doubts by answering the following questions.

Table : **Specialteacher**

S.No	DutyDate	TName	Subject	Gender	TPoints
1	25th Oct 2022	Prakash	Social	M	90
2	2nd Nov 2022	Naresh	ICT	M	85
3	1st Nov 2022	Sundar	Science	M	72
4	10th Nov 2022	Pradeep	Social	M	93
5	15th Nov 2022	Lalitha	English	F	92
6	22nd Nov 2022	Lakshmi	English	F	87
7	25th Nov 2022	Sumathi	ICT	F	95

Write the queries for the questions (i) to (iii) based on the above table.

(i) Write a query to display the details of all Female Teachers who are teaching English Subject.

(ii) Write a query to display Teacher Name, DutyDate and Subject whose dutydate is after 5th November 2022.

(iii) Write a query to display Teacher Name and their subject in descending order of the teacher name whose Teacher Points are more than 90.

Write the outputs for the following queries:

(iv) SELECT * FROM Specialteacher WHERE Subject Like "S%" and TPoints>80;

(v) SELECT Gender, Sum(TPoints) FROM Specialteacher GROUP BY Gender HAVING COUNT(*)<=3;