

SAMPLE PAPER

General Instruction:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. Section A have 18 questions carrying 01 mark each.
4. Section B has 07 Very Short Answer type questions carrying 02 marks each
5. Section C has 05 Short Answer type questions carrying 03 marks each.
6. Section D has 02 questions carrying 04 marks each.
7. Section E has 03 questions carrying 05 marks each.

All programming questions are to be answered using Python Language only

SECTION A – 18 MARKS

- Q1. To get Numpy representation of a dataframe, ----- attribute may be used. 1
- a) Size b) Shape
c) Values d) ndim
- Q2. A----- is summarization tool for discrete or continuous data 1
- a) Quartile b) Histogram
c) Mean d) Median
- Q3. Which argument do you specify with read_csv() to specify a separator character? 1
- a) character b) separator
c) char d) sep
- Q4. Which argument must be set with plotting function for legend() to display the legend ? 1
- a) Data b) Label
c) Name d) Sequence
- Q5. To skip first 5 rows of csv file, which argument will you give in read_csv() 1
- a) skiprows=5 b) skip=5
c) skip_rows=5 d) noread=5

- Q6. To iterate over horizontal subset of dataframe, ----- function may be used 1
- a) iterate() b) iterrows()
c) itercols() d) iteritems()
- Q7. What is returned by INSTR('JAVAT POINT','P') 1
- (a) 6 (b) 7
(c) POINT (d) JAVAT
- Q8. Which of the following commands is used to delete the column 'Grade' in the DataFrame df? 1
- (a) df.drop('Grade',axis=1,inplace=True)
(b) df.drop('Grade',axis=0,inplace=True)
(c) df.drop('Grade',axis=1,inplace=False)
(d) df.delete('Grade',axis=0,inplace=True)
- Q9. The Teacher needs to know the marks scored by the student with roll number 4. Help her to identify the correct set of statements from the given option: 1
- (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.rollno==4] print(df1)
- Q10. Which of the following command will display the total no of elements in the dataframe? (DataFrame Name: dataframe1) 1
- (a) print(dataframe1.shape) (b) print(dataframe1.num)
(c) print(dataframe1.size) (d) print(dataframe1.elements)
- Q11. Missing data in Pandas object is represented through: 1
- (a) Null (b) None
(c) Missing (d) NaN
- Q12. What values does the count(*) function ignore? 1

- | | |
|-----------------------|-----------------|
| (a) Repetitive Values | (b) Null Values |
| (c) Integers | (d) Characters |

Q13. Find out of the following query: 1

Select pow(char(98),3);

- | | |
|-------|-------|
| (a) 5 | (b) 7 |
| (c) 0 | (d) 8 |

Q14. The command used to save a plotted graph using pyplot function is----- 1

- | | |
|-------------------|-----------------------|
| (a) plt.save() | (b) plt.savepicture() |
| (c) plt.savefig() | (d) plt.saveimage() |

Q15. A Table can have _____: 1

- | | |
|---------------------------------------------|-------------------------------------------|
| (a) Many primary keys and many unique keys. | (b) One primary key and one unique key |
| (c) One primary key and many unique keys. | (d) Many primary keys and one unique key. |

Q16. To skip first 5 rows of CSV file , which argument will you give in read_csv ()? 1

- | | |
|------------------|-------------------|
| (a) skiprows = 5 | (b) skip_rows = 5 |
| (c) skip = 5 | (d) noread = 5 |

Q17 and 18 are ASSERTION AND REASONING based questions. 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

Q17. **Assertion (A):** A dict can be passed as an input to the Series 1

Reason(R): If index is passed, then corresponding values to a particular label in the index will be extracted from the dictionary.

- Q18. **Assertion(A):** Multiple row functions when applied on a column in a table, yield values which are not equal to number of rows in the table. 1

Reasoning(R): Multiple rows functions don't work with all the rows in the table.

SECTION B – 14 MARKS

- Q19. Using the below DataFrame mdf answer the questions a to b. 2

	C1	C2	C3
0	13	23	37
1	19	20	21
2	11	12	13
3	13	14	15

- Write code to create a new Dataframe n1 that stores the values of the Dataframe mdf multiplied by 3
- Write code to drop the index 2 from the above Dataframe. The Dataframe should be modified after this statement

OR

(only option a and b)

- Write the code to display the sum of rows with indexes 2 onwards from the Dataframe mdf.
- Write code to add a column C4 in the dataframe which stores the differences of column C3 with column C2.

- Q20. In the table "Student", Priya wanted to increase the Marks (Column Name, Marks) of those students by 5 who have got Marks below 33. She has entered the following statement: 2

SELECT Marks+5 FROM Student WHERE Marks<33;

Q21. Consider the given SQL string:

2

“12#All the Best!”

Write suitable SQL queries for the following:

- a) Returns the position of the first occurrence of the substring “the” in the given string.
- b) To extract last five characters from the string.

Q22. Predict the output of the given Python code:

2

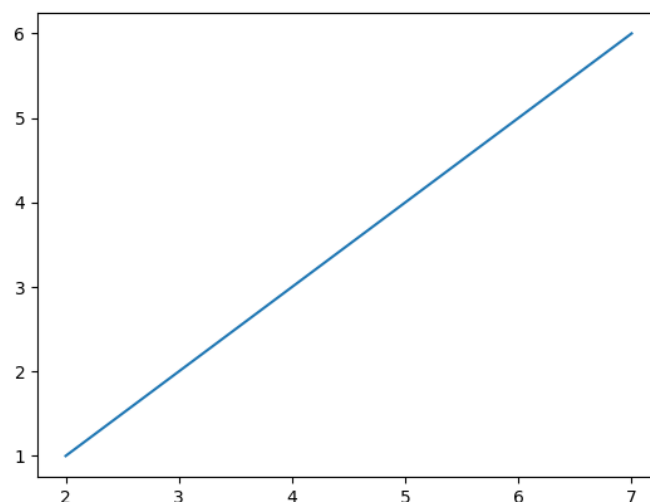
```
import pandas as pd  
  
list1=[-10,-20,-30]  
  
ser = pd.Series(list1*2)  
  
print(ser)
```

Q23. You have a DataFrame with data about students(rno,name and fees). You want to export the DataFrame to a CSV file. The file should have the same columns as the original CSV file. Write a Python program to export the DataFrame to a CSV file.

2

Q24. Consider the following line graph. Write the code to plot it.

2



Q25. What are aggregate functions in SQL? Name any two.

2

SECTION C – 15 MARKS

Q26. Based on the SQL table CAR_Sales , Write suitable queries for the following:

3

Number	Segment	Fuel	Qtr1	Qtr2
1	Compact HatchBack	Petrol	56000	70000
2	Compact HatchBack	Diesel	34000	40000
3	MUV	Petrol	33000	35000
4	MUV	Diesel	14000	15000
5	SUV	Petrol	27000	54000
6	SUV	Diesel	18000	30000
7	Sedan	Petrol	8000	10000
8	Sedan	Diesel	1000	5000

- Display fuel wise average sales in the first quarter.
- Display segment wise highest sales in the second quarter.
- Display the records in the descending order of sales in the second quarter

OR

Predict the output of the following queries based on the table CAR_SALES given above:

- SELECT LEFT(SEGMENT,2) FROM CAR_SALES WHERE FUEL= "PETROL";
- SELECT (QT2-QT1)/2 "AVG SALE" FROM CAR_SALES WHERE SEGMENT="SUV";
- SELECT SUM(QT1) "TOT SALE" FROM CAR_SALES WHERE FUEL="DIESEL";

Q27. Create the following Series and do the specified operations:

3

- EngAlph, having 26 elements with the alphabets as values and default index values.

- b. Friends, from a dictionary having roll numbers of five of your friends as data and their first name as keys.

Q28. Consider the table Flight given below, write command in SQL for (i) to (iv) and output for (v) and (vi)

3

Flight_no	Origin	Destination	Seats	FlightDate	Rate
1005	Varanasi	Nepal	275	12-Dec-07	3000
2785	Delhi	Kerala	290	17-Jan-08	5500
6587	Mumbai	Varanasi	435	19-Feb-08	5000
1265	Varanasi	Nepal	200	02-Jan-08	5400
4457	Delhi	Lucknow	150	22-Feb-08	4500
6856	Varanasi	Mumbai	180	03-Mar-08	6000

- To display Flight flying between Varanasi and Nepal.
- To display the different Origin of Flights.
- To display list of flights in descending order of Rate.
- To display flight details of the flight whose flightdate is after Jan 2008.
- SELECT Flight_No, Destination FROM Flight WHERE Destination LIKE '_u%';
- SELECT Origin, COUNT(*) FROM Flight GROUP BY Origin;

Q29. In a database there are two tables "Product" and "Client" as shown below :

3

Table: **Product**

P_ID	ProductName	Manufacture	Price
P001	Moisturizer	XYZ	40
P002	Sanitizer	LAC	35
P003	Bath Shop	COP	25
P004	Shampoo	TAP	95
P005	Lens Solutions	COP	350

Table: **Client**

C_ID	ClientName	City	P_ID
01	Dreamz Disney	New Delhi	P002
05	Life Line Inc	Mumbai	P005
12	98.4	New Delhi	P001
15	Appolo	Bangalore	P003

Write the commands in SQL queries for the following :

- To display the details of Product whose Price is in the range of 40 and 120 (Both values included)

- ii. (ii) To display the ClientName, City from table Client and ProductName and Price from table Product, with their corresponding matching P ID
- iii. To increase the Price of all the Products by 20

OR

In a Database there are two tables :

Table: ITEM

ICode	IName	Price
101	Television	75000
202	Computer	42000
303	Refrigerator	90000
404	Washing Machine	27000

Table: BRAND

ICode	Brand
101	Sony
202	HP
303	LG
404	IFB

Write MySQL queries for the following :

- (i) To display ICode, IName and corresponding Brand of those Items, whose Price is between 20000 and 45000 (both values inclusive).
- (ii) To display ICode, Price and BName, of the item which has IName as "Television".
- (iii) To increase the price of all the Items by 15%.

Q30. Write a python code for the following Dataframe Library using python pandas. Give index as 'B1', 'B2','B3','B4'

3

ItemNo	ItemName	Price
P99	SUGAR	100
P10	TEA	150
P50	COFFEE	200
P60	GREEN TEA	250

- Display Item Number and name whose price is less than 150.
- Display details of different types of Tea available in shop.
- Display the dataframe according to price in descending order.

SECTION D – 8 MARKS

Q31. Preeti manages database in a blockchain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries:

4

TABLE: BLOCKCHAIN

id	user	value	hash	transaction_date
1	Steve	900	ERTYU	2020-09-19
2	Meesha	145	@345r	2021-03-23
3	Nimisha	567	#wert5	2020-05-06
4	Pihu	678	%rtYu	2022-07-13
5	Kopal	768	rrt4%	2021-05-15
7	Palakshi	534	wer@3	2022-11-29

- Write a query to display the year of oldest transaction.
- Write a query to display the month of most recent transaction.
- Write a query to display all the transactions done in the month of May.
- Write a query to count total number of transactions in the year 2022.

Q32. Draw a double bar graph chart showing the Cities in the X axis and happiness index in the Y axis for Male and Female. Use legends as Male and Female for identifying purpose.

4

City	Happiness Index Male	Happiness Index Female
Delhi	60	30
Beijing	40	60
Washington	70	70
Tokyo	65	55
Moscow	85	75

OR

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]})
```

Plot the line graph of data of all the quarters in one chart and also gives the legends to identify the quarters.

SECTION E – 15 MARKS

Q33. Write suitable SQL queries for the following:

5

- i. To calculate the exponent for 3 raised to the power of 4.
- ii. To display current date and time.
- iii. To round off the value -34.4567 to 2 decimal place.
- iv. To remove all the probable leading and trailing spaces from the column userid of the table named user.
- v. To display the length of the string 'ASIA Cup'.

OR

Kabir has created following table named exam

Reg_no	Name	Subject	Marks
1	Sanya	Computer Science	98
2	Sanchay	IP	100

3	Vinesh	CS	90
4	Sneha	IP	99
5	Akshita	IP	100

Help him in writing SQL queries to the perform the following task:

- Insert a new record in the table having following values:
[6,'Khushi','CS',85]
- To change the value “IP” to “Informatics Practices” in subject column.
- To remove the records of those students whose marks are less than 30.
- To add a new column Grade of suitable datatype.
- To display records of “Informatics Practices” subject.

Q34. Write the code for the following questions on the basis of following DataFrame ‘Sales’

5

	2014	2015	2016	2017
Madhu	100.5	12000	20000	50000
Kusum	150.8	18000	50000	60000
Kinshuk	200.9	22000	70000	70000
Ankit	30000	30000	100000	80000
Shruti	40000	45000	125000	90000

- Display the transpose of DataFrame Sales.
- Display the sales made by Madhu and Ankit in the year 2016 and 2017
- Delete the data for sales man Kinshuk from the DataFrame Sales
- Update the sale made by Shruti in 2017 to 100000.
- Rename the index as ‘A’, ‘B’, ‘C’, ‘D’, ‘E’

Q35. Contains of dataframe **courseDF** and perform the following.

5

	Stream	No of Courses
Stream_1	Science	38

Stream_2	Commerce	18
Stream_3	Humanities	30

- i. Create the above dataframe.
- ii. Write the code to the following dataframe (coursed) in a csv file named 'course.csv' in the given file path. 'D:\IP\IP_2023-24\course.csv, but don't write the column and row headings/labels.
- iii. Read the above csv file and print the middle row
- iv. Present the data in terms of horizontal BAR chart with appropriate title and labels.
- v. Write the code to Save the chart

OR

Atul has stored some data in a DataFrame "MDF" as shown below. He wants to shift the data to CSV file. Write commands for questions that follow:

YEAR	SALES	LOSS
2001	85	42
2002	75	15
2003	64	62
2004	93	78
2005	67	52

- i. Write the code to print the top 3 rows of given above data frame
- ii. Write the code to store this above data in csv file ('**sales.csv**')
- iii. Read the above created csv file according to given below condition:
 - a. Make sure to read first row as data and not as column header
 - b. Separator character must be '#'
- iv. Write the code to represent the data of csv file in terms of Line Chart with appropriate title and labels and legend.
- v. Write the code to Save the chart