



**BK BIRLA CENTRE FOR EDUCATION**  
SARALA BIRLA GROUP OF SCHOOLS  
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL  
**MID TERM EXAMINATION 2024-25**  
**INFORMATICS PRACTICES (065)**



**Class: XII**

**Date: 25-09-2024**

**Name: .....**

**Duration: 3 hrs.**

**Max Marks: 70**

**Exam No.**

**General Instructions:**

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1. This question paper contains four sections, Section A to D.
2. All questions are compulsory.
3. Section A has 15 questions carrying 01 mark each.
4. Section B has 08 Very Short Answer type questions carrying 02 marks each.
5. Section C has 07 Short Answer type questions carrying 03 marks each.
6. Section D has 06 questions carrying 04 marks each.
7. This question paper contains – Python programming language, MySQL and Computer Network.

**SECTION-A**

1. Missing data in Pandas object is represented through : 1  
(a) Null (b) None (c) Missing (d) NaN
2. To display the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> columns from the 6<sup>th</sup> to 9<sup>th</sup> rows of a dataframe DF, we can write \_\_\_\_\_ : 1  
(a) DF.loc[6:9, 3:5] (b) DF.loc[6:10,3:6] (c) DF.iloc[6:10, 3:6] (d) DF.iloc[6:9,3:5]
3. To iterate over horizontal subsets of a dataframe, \_\_\_\_\_ function may be used. 1  
(a) iterate() (b) iterrows() (c) itercols() (d) iteritems()
4. What functions does Pandas provide to handle missing data ? 1
5. Consider the following program and answer any the questions: 1  
(a) import \_\_\_\_\_ as plt  
(b) plt. \_\_\_\_\_ ('Vertical Bar Chart')
6. Assertion: The to\_csv() function can be used to export a DataFrame to a CSV file. 1  
Reason: The to\_csv() function is a built-in function in the pandas library that can be used to export a DataFrame to a CSV file. Is the assertion true ?
7. Predict the output of this SQL query: 1  
Select Mod(11,4) "Modulus";
8. Which SQL command is used to add a new attribute in a table ? 1  
(a) Modify (b) Add (c) Alter (d) All of these
9. Write the output of the given SQL query: 1  
Select substr("Quadratically",5,6);

10. Which one of the following is not an aggregate function ? 1  
(Based on MySQL function)  
(a) ROUND() (b) SUM() (c) COUNT() (d) AVG()
11. By default, ORDER BY clause lists the results in \_\_\_\_\_ order. 1  
(a) Descending (b) Any (c) None of these (d) Ascending
12. To create summary results, \_\_\_\_\_ clause is used. 1  
(a) SORT BY (b) SUMMARY BY (c) GROUP BY (d) ORDER BY
13. A \_\_\_\_\_ is a query that retrieves rows from more than one table or view. 1  
(a) Start (b) End (c) Join (d) All of these
14. Which of the following topologies needs least cable length ? 1  
(a) Star (b) Tree (c) Bus (d) All of these
15. Switch is a \_\_\_\_\_. 1  
(a) Broadcast device (b) Unicast Device (c) Multicast device (d) All of these.

### SECTION-B

16. How is Series data structure different from a dataframe data structure ? Give example. 2
17. Write a python program to create a dataframe 'df1' of the given data: 2

	Mark1	Mark2	Mark3
Ajay	10	40	70
Sanjay	20	50	80
Shan	30	60	90

18. What is pyplot ? Is it a python library ? 2
19. Differentiate between **CHAR** and **VARCHAR** datatype. Give example. 2
20. Consider the following string : "Preoccupied". Write the SQL query to display: 2  
(a) "occupied" (b) "cup"
21. Consider the following tables ACTIVITY and COACH and answer the following parts of this question: 2

**Table : ACTIVITY**

<u>Acode</u>	<u>ActivityName</u>	<u>Stadium</u>	<u>NumofParticipants</u>	<u>PrizeMoney</u>	<u>ScheduleDate</u>
101	Football	National Stadium	22	5000.00	2024-09-15
102	Cricket	City Arena	22	7000.00	2024-09-20
103	Basketball	Central Court	10	3000.00	2024-09-18
104	Tennis	Eastside Court	2	4000.00	2024-09-22
105	Badminton	West Wing	4	2000.00	2024-09-25

**Table : COACH**

<u>Pcode</u>	Name	Acode
201	John Smith	101
202	Rajesh Kumar	102
203	Linda Brown	103
204	Amit Singh	104

Give the output of the following SQL queries:

- (a) Select count(distinct NumofParticipants) from ACTIVITY;
- (b) Select Name,ActivityName from ACTIVITY A, COACH C where A.Acode=C.Acode and A.NumofParticipants=22;

- 22. Differentiate between LAN and WAN. (Based on Computer Network) 2
- 23. You have a CSV file with data about students. The file has the following columns: 2  
**Name, age, gender, grade**  
Write a Python program to import the data from the CSV file into a DataFrame and display the complete DataFrame. [Note : separate used is '#']

**SECTION-C**

- 24. Write a python program to create the given series (M1): 3  
**[ using either list or dictionary method]**

	Marks
Term 1	45
Term 2	65
Term 3	24
Term 4	89

- 25. Consider the given dataframe 'df2'. Write a python program to solve (i), (ii) & (iii) 3

	Math	Science	English
Student1	85	88	91
Student2	90	76	82
Student3	78	95	85
Student4	92	89	87

- (i) Display minimum marks in math Subject
- (ii) Display name, subject and maximum marks in subject Science.
- (iii) Display the total marks scored in the English Subject.

26. Following code is reading from **employee.csv** as show here and inteds to use column Empno's values as the index label. Why is the given code giving error ? Suggest solution. 3

```
import pandas as pd
edf=pd.read_csv("employee.csv", index_col="Empno.")
print(edf)
```

**ValueError: Index Empno. invalid**

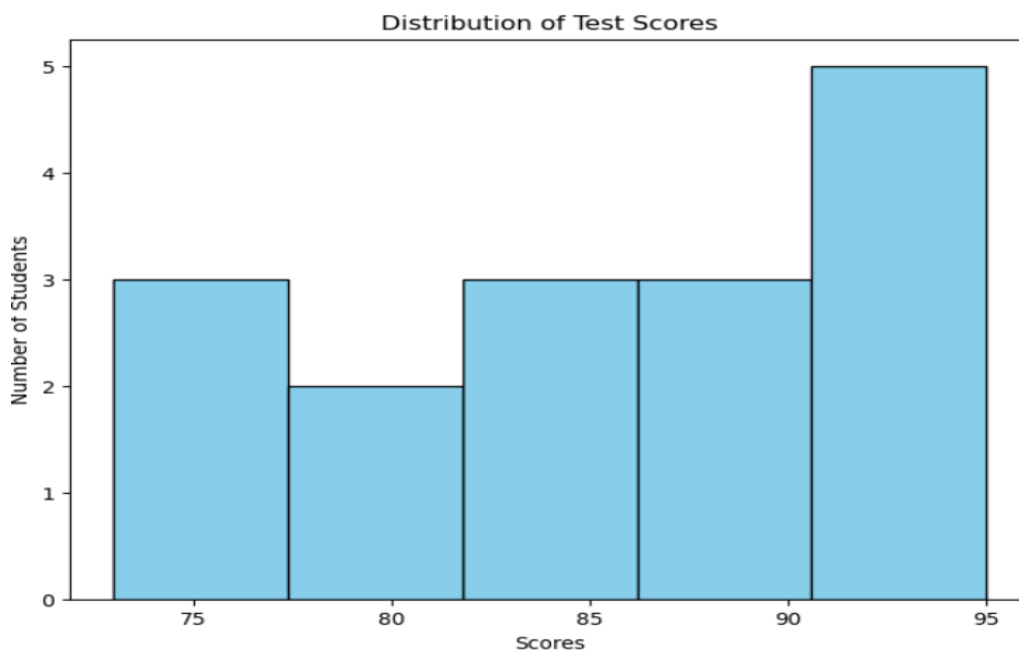
```
File Edit View

Empno, Name, Designation, Salary
1001,John Doe,Manager,70000
1002,Jane Smith, Team Leader,65000
1003,Alice Johnson,Developer,60000
1004,Bob Brown,Analyst,55000
1005,Charlie Davis,Tester,50000
```

27. Define SQL. Classify SQL commands with examples. 3
28. Predict the output of the following queries: 3
- (a) Select power(5,2);
  - (b) Select round(149.12,-2);
  - (c) Select upper(mid("Welcome to IT Lab",12));
29. What is the difference between the order by and group by clause when used along with the select statement? Explain with an example. 3
30. How is equi-join different from non-equi-join ? Give example. (Based on SQL JOINS)

### SECTION-D

31. Write a python program to create a hitogram as given below: 4  
Note: give edgecolor and color attributes



32. Write a program that reads from a csv file (employee.csv stored in data folder pf C: drive having data as shown below: Name, Age, Department, Salary) in a dataframe. Then the program should add a new column 'Incentives' storing 10% of Salary for all the employee. Print the dataframe after adding the column. 4

```
File Edit View
Alice,24,HR,50000
Bob,30,IT,60000
Charlie,22,Finance,55000
David,35,Marketing,58000
Eve,29,IT,62000
```

33. Consider the given table named 'PRODUCT', showing details of products being sold in a grocery shop. 4

<u>PCode</u>	<u>PName</u>	<u>UPrice</u>	<u>Manufacturer</u>
101	Rice	50.00	<u>Agro</u> Farms
102	Wheat	45.50	Green Fields
103	Sugar	40.00	Sweet Company
104	Salt	15.00	Oceanic Industries
105	Tea	120.00	Brew Master
106	Coffee	150.00	Bean & Co.

- (a) Create the table 'PRODUCT' with appropriate data types and constraints.  
 (b) Write SQL queries to add the above records. (At-least 2)  
 (c) Identify the primary key

34. What is mysql function ? Name the different types. Explain each type with at-least two examples for 4

35. In a database Company, there are two tables given below: 4  
**Table: SALES**

SALESMANID	NAME	SALES	LOCATIONID
1	John Doe	15000.00	101
2	Jane Smith	22000.00	102
3	Robert Brown	18000.00	103
4	Emily Davis	24000.00	101
5	Michael Johnson	13000.00	104

**Table: LOCATION**

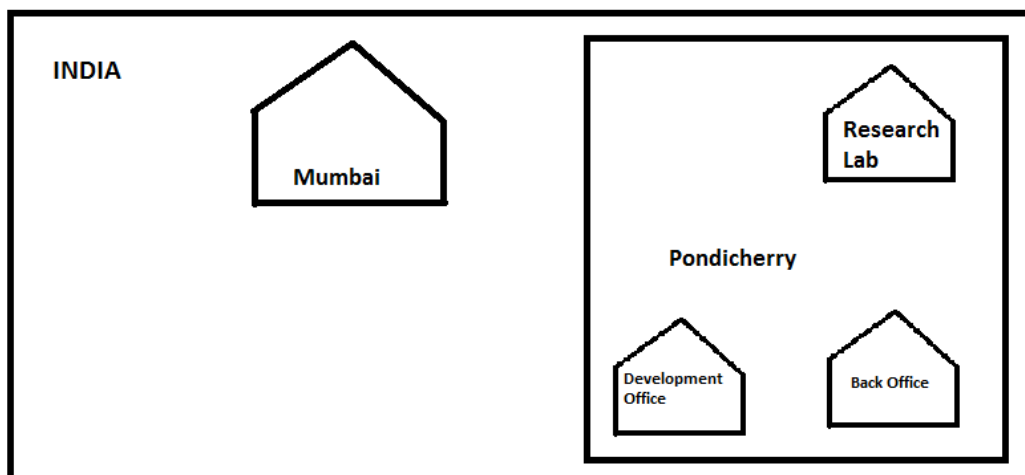
LOCATIONID	LOCATIONNAME
101	New York
102	Los Angeles
103	Chicago
104	Houston

Write SQL queries for the following:

- (a) To display salesmanid, names of salesmen, LocationID with corresponding location names.

- (b) To display names of salesmen, sales and corresponding location names who have achieved Sales more than 180000.  
 (c) Identify Primary key in the table SALES. Give reason for your choice.  
 (d) To display names of those salesmen who have 'SMITH' in their names.

36. "Bias methodologies" is planning to expand their network in India, starting with three cities in India to build infrastructure for research and development of the chemical products. The company has planned to set up their main office in Pondicherry - at three different locations and have named their offices as "Back office", "Research lab" and "Development unit". The company has one more research office namely "Corporate office" in Mumbai. A rough layout of the same is as follows.



Approximate distance between these offices is as follows :

From	To	Distance
Research Lab	Back Office	110 metre
Research Lab	Development Unit	16 Km
Research Lab	Corporate Unit	1800 Km
Back office	Development Unit	13 Km

In continuation of the above, the company experts have planned to install the following number of computers in each of their offices:

<b>Research Lab</b>	158
<b>Back office</b>	79
<b>Development Unit</b>	90
<b>Corporate Unit</b>	51

(i) Suggest the kind of network required( out of LAN, MAN ,WAN) for connecting each of the following office units: Justify it.-> Research lab and Back office

-> Research lab and Development unit

(ii) Which one of the following devices will you suggest for connecting all the computers in each of their office units ? Justify it.

-> Switch / hub

-> Modem

-> Telephone

(iii) Draw at-least two layouts and name the topology. Calculate the total distance or length of cable Required.

**\*\*\* ALL THE BEST !!! \*\*\***