

BRAIN INTERNATIONAL SCHOOL

Session 2025-26

PRACTICE PAPER 1

Class XII

Subject – Informatics Practices (065)

SECTION A

(1 Mark each) [1 × 18 = 18 Marks]

1. Define Series in Pandas.
2. Write one difference between `iloc[]` and `loc[]`.
3. Name any two aggregate functions used in SQL.
4. What is the purpose of `groupby()` in Pandas?
5. Which method is used to read data from a CSV file into a DataFrame?
6. Expand the term URL.
7. What does the HAVING clause do in SQL?
8. Mention any two measures to protect data from malware.
9. What type of chart is suitable to show the composition of a dataset?
10. Write a Python statement to create a DataFrame `df` from dictionary data.
11. Write the output of the following code:

```
s = pd.Series([10, 20, 30])  
print(s.mean())
```
12. Write any one difference between DataFrame and Series.
13. What do you mean by data visualization?
14. Write SQL query to display current date from a table Orders.
15. Mention any two types of cybercrimes.
16. Define bandwidth.
17. What is the default index in a Pandas Series?
18. Write one point of difference between WHERE and HAVING clause in SQL.

SECTION B

(2 Marks each) [2 × 5 = 10 Marks]

19. Write Python statement to plot a line chart showing sales for four quarters using Matplotlib.
20. Write SQL query to display names of employees whose salary is between 30000 and 50000.
21. Write two advantages of using open-source software.
22. Define phishing. Suggest two preventive measures.
23. Write two differences between TCP/IP and HTTP.

SECTION C

(3 Marks each) [3 × 5 = 15 Marks]

24. Write a Python program to create a Series from a list of numbers and display all elements greater than 50.

25. Consider the following DataFrame:

Roll Name Marks

1	Aarti	85
2	Mohit	90
3	Riya	76

Write Python statements to:

- Display the names of students scoring above 80.
- Add a new column Grade.
- Display summary statistics of numeric columns.

26. Consider the table **Product**:

PCode PName Price Category

P01	Pen	20	Stationery
P02	Pencil	10	Stationery
P03	Mouse	600	Electronics
P04	Bag	800	Accessories

Write SQL queries for:

- Display all product names in lowercase.
- Display product name and price where price > 100.
- Show number of products in each category.

27. Explain any three types of cyberbullying.

28. Consider the table **Orders**:

OrderID CustName Amount OrderDate

101	Rahul	2500	2024-06-12
102	Meena	4500	2024-06-15
103	Rohan	1200	2024-07-01

Write SQL queries to:

- Display all orders placed in June 2024.
- Show customer name and amount where amount > 2000.
- Display maximum order amount.

SECTION D

(4 Marks each) [4 × 5 = 20 Marks]

29. Write Python program using Matplotlib to draw a bar chart to compare marks of 5 students in two subjects – English and Computer Science.

30. Write Python code to read a CSV file “sales.csv” and display:

- first 5 rows
- total sales amount using sum()
- column names
- number of rows and columns

31. Consider the following two tables:

CUSTOMER

CID Name City

C1 Aryan Delhi

C2 Bhavya Mumbai

C3 Ritu Delhi

ORDERS**OID CID Amount**

O1 C1 2500

O2 C2 1800

O3 C1 4000

Write SQL queries to:

a) Display Name and Amount for each customer using INNER JOIN.

b) Display customers from Delhi with orders above 2000.

c) Display average amount per customer.

d) Count number of orders for each city.

32. Explain any four data-security measures to ensure safe use of the Internet.

33. Write Python code to create a DataFrame containing columns Item, Quantity, and Price. Add a new column Total = Quantity * Price and display the entire DataFrame.

SECTION E

(5 Marks each) [5 × 2 = 10 Marks]

34. (Pandas – Data Analysis)

A CSV file “*student_marks.csv*” contains the following columns: Name, Maths, Science, Computer.

Write a Python program using Pandas to:

a) Read the file into a DataFrame.

b) Add a new column Total = sum of all three subjects.

c) Display names of students scoring above 240 in total.

d) Display the highest marks in Computer.

e) Save the DataFrame into a new CSV file “*result.csv*”.

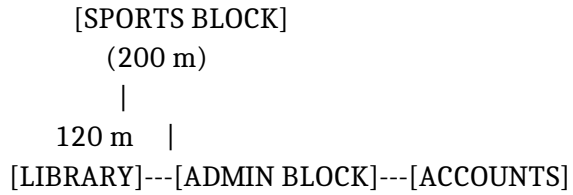
35. (Networking – Network Setup Design)

Brain International School, Delhi is setting up a network in its new campus. The campus has four blocks:

Block Name Number of Computers Distance from Admin Block

ADMIN	20	—
ACCOUNTS	15	70 m
LIBRARY	10	120 m
SPORTS	6	200 m

A rough layout of the blocks is shown below (distances in meters):



The Internet connection is available in the **ADMIN Block**.

Answer the following:

- a) Suggest the most suitable **topology** to connect all computers within each block.
- b) Suggest a suitable **wired medium** for connecting:
 - i. ADMIN → ACCOUNTS
 - ii. ADMIN → SPORTS
- c) Name one **network device** required to connect all blocks in the campus.
- d) Suggest one **wireless technology** for laptops and mobiles.
- e) Mention any two **data-security measures** to protect the school's network.

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PRACTICE PAPER 2

Class XII

Subject – Informatics Practices (065)

SECTION – A (15 Marks)

Objective Type Questions

1. Which of the following is a mutable data type in Python?
a) Tuple b) List c) String d) None of these
2. The function df.head(3) in pandas returns:
a) Last 3 rows b) First 3 rows c) Random 3 rows d) All rows
3. Which SQL command is used to remove a record from a table?
a) DROP b) REMOVE c) DELETE d) CLEAR
4. Which of the following is not a network device?
a) Router b) Switch c) Compiler d) Hub
5. Which function is used to find correlation between two Series in pandas?
a) mean() b) corr() c) sum() d) compare()
6. _____ method is used to read a CSV file into a DataFrame.
7. SQL command used to arrange records in ascending order is _____.
8. _____ topology connects each node to a central node.
9. In Python, the keyword used to handle exceptions is _____.
10. _____ function returns the number of rows and columns of a DataFrame.
11. try block must always be followed by an except block.
12. In SQL, UPDATE command modifies existing records.
13. The DataFrame is a one-dimensional data structure.
14. Bus topology uses a single backbone cable.
15. Primary key can take NULL values.
16. What is the default axis for sum() operation in a Pandas DataFrame?
17. Write one point of difference between DELETE and DROP command in SQL.
18. Which function is used to write DataFrame data into a CSV file?

SECTION – B (12 Marks)

Short Answer Questions (2 Marks each)

19. Differentiate between Series and DataFrame.
20. Write a Python statement to open a file “data.csv” in read mode and read its contents.
21. Explain the use of groupby() function in pandas with an example.
22. What is the purpose of a foreign key in a relational database?
23. Define bandwidth and data transfer rate.
24. Write two differences between LAN and WAN.

SECTION – C (18 Marks)

Short Answer Questions (3 Marks each)

Q25. Write a Python code to create a DataFrame named *Sales* with columns Item, Price, and Quantity. Display the first two rows.

Q26. Explain any three commonly used DataFrame functions with examples.

Q27. Write an SQL query to create a table Student with the following fields:

RollNo (int), Name (varchar(20)), Marks (int), Class (varchar(5))

Q28. Explain the difference between DELETE and DROP commands in SQL with examples.

Q29. Write a Python code to handle a division-by-zero error.

Q30. What are cyber crimes? Explain any two preventive measures.

SECTION – D (15 Marks)

Long Answer Questions (5 Marks each)

Q31. Write Python code to:

- Create a CSV file “Employee.csv” containing EmpID, Name, Salary, and Department.
- Read the file and display records of employees earning more than 50,000.

Q32. Write SQL queries for the following table:

Table: Product

PID	PName	Price	Quantity	Category
101	Pen	10	200	Stationery
102	Pencil	5	100	Stationery
103	Mouse	700	50	Electronics
104	Keyboard	850	40	Electronics

- Display all products where Category = ‘Electronics’.
- Show product names and prices in descending order of price.
- Display total quantity of Stationery items.
- Increase price of all Electronics items by 10%.
- Delete the record where PID = 101.

Q33. What is a computer network? Explain different types of network topologies with neat diagrams.

SECTION – E (10 Marks)

Case Study Based Questions (5 + 5 = 10 Marks)

Q35. Pandas Based Question

Consider the following DataFrame named **Sales**:

S_ID	Product	Quantity	Price
1	Pen	20	10
2	Pencil	10	5
3	Eraser	15	8
4	Sharpener	8	12
5	Marker	12	20

Write Python statements for the following:

- a) Display only the Product and Price columns.
- b) Display records where Quantity > 10.
- c) Add a new column Total as Quantity × Price.
- d) Display average price of all products.
- e) Display details of the product with maximum price.

Q35. Networking Case Study

A school named **Brain International** is setting up its new campus with 4 blocks: **Admin, Academic, Library, and Hostel**.

The layout of the buildings is as follows:

ADMIN --- ACADEMIC --- LIBRARY --- HOSTEL

Distance between buildings:

- Admin to Academic: 80 m
- Academic to Library: 100 m
- Library to Hostel: 120 m

Each block has:

- Admin: 20 computers
- Academic: 150 computers
- Library: 40 computers
- Hostel: 25 computers

Answer the following:

- a) Suggest the most suitable topology for connecting all blocks.
- b) Suggest the placement of the main server with a valid reason.
- c) Suggest the type of cable required for campus connectivity.
- d) Identify the most suitable device for connecting computers within each block.
- e) Suggest one measure to ensure data security.