INFORMATICS PRACTICES – Code No. 065
SAMPLE QUESTION PAPER*
Class - XII - (2025-26)

Time Allowed: 3 Hrs. **Maximum Marks:70**

General Instructions:

- All questions are compulsory.
- The examination paper contains five sections, from Section A to Section E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
- Section D consists of 2 questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1	**State whether the following statement is True or False:** The **drop()** method can be used to remove rows or columns from a Pandas DataFrame.	1
2	**What will be the result of the following SQL query?** **SELECT MOD(5, 6);** (A) 3 (B) 5 (C) 6 (D) 0	1
3	**Shruti received an email that appeared to be from a popular social media platform, requesting her to click a link to reset her password. The link directed her to a fraudulent website designed to capture her login credentials. This situation is an example of which type of cybercrime?** (A) Cyber Bullying (B) Violation of Intellectual Property Rights (C) Hacking (D) Phishing	1

*Please note that the assessment scheme of the Academic Session 2024-25 will continue in the current session i.e. 2025-26.

4	**Which of the following Python statements is used to write a Pandas DataFrame df to a CSV file?** (A) **df.to_csv()** (B) **df.write_csv()** (C) **df.to_table()** (D) **df.export_csv()**	1
5	**Which of the following device is used for converting digital signals from a computer into analog signals for transmission over a telephone line.** (A) Modem (B) Switch (C) Repeater (D) Router	1
6	**What is the purpose of the ROUND(num, 0) in SQL, assuming num is a number with a fractional part?** (A) Rounds the number to the nearest integer (B) Always rounds the number up (C) Leaves the number unchanged (D) Always rounds the number down	1
7	**Aarushi has written a novel and wants to protect her literary work. Which type of Intellectual Property right will help her do that?** (A) Patent (B) Copyright (C) Trademark (D) Both Copyright & Trademark	1
8	**The default index used in a Pandas Series, if no index is explicitly specified, is _____** (A) Strings starting with 'a' (B) Consecutive integers starting from 1 (C) Random integers (D) Consecutive integers starting from 0	1
9	**Consider a table named Students that has one primary key and three alternate keys. How many candidate keys does the table have?**	1

	(A) 1 (B) 2 (C) 3 (D) 4	
10	**Which of the following is an application of VoIP technology?** (A) Email (B) Chat (C) Internet Telephony (D) Web Browsing	1
11	**Which of the following SQL function is used to count the non-NULL values in a column named column_name?** (A) COUNT(*) (B) COUNT(column_name) (C) SUM(column_name) (D) AVG(column_name)	1
12	**When two Pandas Series with different indices are added, the result is _____.** (A) Error occurs (B) Indices are ignored, and elements are added in order (C) The result has all indices, with missing values filled as NaN (D) Only the common indices are retained in the result	1
13	**In India, the primary law that deals e-commerce and cybercrime is _____.** (A) Cybercrime Prevention Act, 2000 (B) Digital Security Act, 2000 (C) Information Technology Act, 2000 (D) E-Commerce Regulation Act, 2008	1
14	**Which SQL command is used to sort rows in either ascending or descending order of values in a specific column?** (A) ORDER BY (B) SORT BY (C) GROUP BY	1

	(D) SORT ON	
15	**Which of the following Python commands selects the first 3 rows of a DataFrame df, assuming that labelled index are consecutive integers starting from 0?** (A) df.loc[:3] (B) df.loc[:2] (C) df.loc[0:4] (D) df.loc[1:4]	1
16	**In which network topology is every node directly connected to every other node?** (A) Star (B) Tree (C) Mesh (D) Bus	1
17	**What is the use of the INSTR() function in SQL?** (A) To replace characters in a string (B) To find the length of a string (C) To find the position of a substring in a string (D) To extract characters from a string	1
18	**Which of the following Python statements creates an empty Pandas DataFrame (Note: pd is an alias for pandas)?** (A) pd.DataFrame(None) (B) pd.DataFrame() (C) pd.DataFrame([]) (D) pd.DataFrame.empty()	1
19	**Which of the following is NOT an aggregate function in SQL?** (A) MIN() (B) SUM() (C) UPPER() (D) AVG()	1

	Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as: (A) Both A and R are True, and R correctly explains A. (B) Both A and R are True, but R does not correctly explain A. (C) A is True, but R is False. (D) A is False, but R is True.		
20	**Assertion (A):**. The output of **print(df)** and **print(df.loc[:])** will be same for a DataFrame **df**. **Reason (R):** The statement **print(df.loc[:])** will display all rows and columns of the DataFrame df, thus showing the entire data.		1
21	**Assertion (A):** The **INSERT INTO** command is a **DML** (Data Manipulation Language) command. **Reason (R): DML** commands are used to insert, update or delete the data stored in a database.		1
Q No.	**Section-B (7X2 = 14 Marks)**		**Marks**
22	(A)	What is a DataFrame in Pandas? Mention any one property of DataFrame. **OR** (B) List any two differences between Series and DataFrame in Pandas.	2
23	What is e-waste? Mention any one impact of e-waste on the environment.		2
24	Ravi wants to create a Pandas Series as shown below: January 31 February 28 March 31 Help him in completing the code below to achieve the desired output. Note: **ser_data** is a dictionary. **import _____ as pd** **ser_data = _____** **s = pd._____(ser_data)** **print(s)**		2

25	(A)	Rohan, a Class XII student, has written code for a website but is unsure how to make it available on the Internet. Explain to Rohan the role of a web server and web hosting in ensuring availability of his website on the internet. **OR**	2
	(B)	Explain the concept of VoIP and mention one benefit of using it.	
26	Write SQL queries to perform the following: I. Display the name of the day (e.g., Monday, Tuesday) for the date **'2026-01-01'**. II. Find and display the position of the substring **"India"** in the string **"Incredible India"**		2
27	Define digital footprints. Differentiate between active and passive digital footprints.		2
28	(A)	Write the output of the following code: **import pandas as pd** **students = pd.Series(['Abhay', 'Ananya', 'Javed'])** **marks = pd.Series([85, 92, 88])** **data = {'Name': students, 'Marks': marks}** **df = pd.DataFrame(data)** **df.rename(columns={'Name': 'StuName', 'Marks': 'Score'}, inplace=True)** **print(df)**	2
	(B)	**OR** Write the output of the following code: **import pandas as pd** **states = pd.Series(['Maharashtra', 'Gujarat', 'Kerala'])** **capitals = pd.Series(['Mumbai', 'Gandhinagar', 'Thiruvananthapuram'])** **data = {'State': states, 'Capital': capitals}** **df = pd.DataFrame(data)** **df.drop(index=1, inplace=True)** **print(df)**	

<table>
<tr><th>Q No</th><th colspan="2">Section-C (4X3 = 12 Marks)</th><th>Marks</th></tr>
<tr><td>29</td><td colspan="2">Rahul has recently invented a new type of solar-powered water purification system and is concerned about the possibility of someone illegally copying and selling his invention without his permission.
I. Explain Rahul the terms Intellectual Property & Intellectual Property Rights (IPR).
II. Under which specific category of IPR is Rahul's invention covered?
III. Describe the importance of IPR in safeguarding innovations.</td><td>3</td></tr>
<tr><td>30</td><td>(A)</td><td>Write a Python program to create a Pandas Series as shown below using a ndarray, where the subject names are the indices and the corresponding marks are the values in the series.
Mathematics 85
Science 90
English 78
History 88
OR
(B)
Write a Python program to create the Pandas DataFrame displayed below using a list of dictionaries.
Course Duration
0 Data Science 12
1 Artificial Intelligence 18
2 Web Development 6</td><td>3</td></tr>
<tr><td>31</td><td colspan="2">I. Write an SQL statement to create a table named EMPLOYEES, with the following specifications:
<table><tr><th>Column Name</th><th>Data Type</th><th>Key</th></tr><tr><td>EmployeeID</td><td>Numeric</td><td>Primary Key</td></tr><tr><td>EmpName</td><td>Varchar(25)</td><td></td></tr><tr><td>HireDate</td><td>Date</td><td></td></tr><tr><td>Salary_in_Lacs</td><td>Float(4,2)</td><td></td></tr></table>II. Write an SQL Query to insert the following data into the EMPLOYEES table: 101, Ravi Kumar, 2015-06-01, 1.70</td><td>2+1=3</td></tr>
</table>

32 (A) Consider the following tables: 3

Table 1: STUDENT, which stores **StudentID**, **Name**, and **Class**.

StudentID	Name	Class
1	Ankit	12
2	Priya	11
3	Rohan	12
4	Shreya	11
5	Rehan	12

Table 2: MARKS, which stores **StudentID**, **Subject**, and Score

StudentID	Subject	Score
1	Mathematics	85
2	Physics	78
3	Chemistry	88
4	Biology	81
6	Computer Science	93

Write appropriate SQL queries for the following:

I. List the names of students enrolled in Class 12, sorted in ascending order.

II. Display name of all subjects in uppercase where students scored more than 80 marks.

III. Display the names of students along with their subject and Score.

OR

(B) Consider the following table **EMPLOYEE**, which stores **EmployeeID**, **Name**, **Department and Salary**.

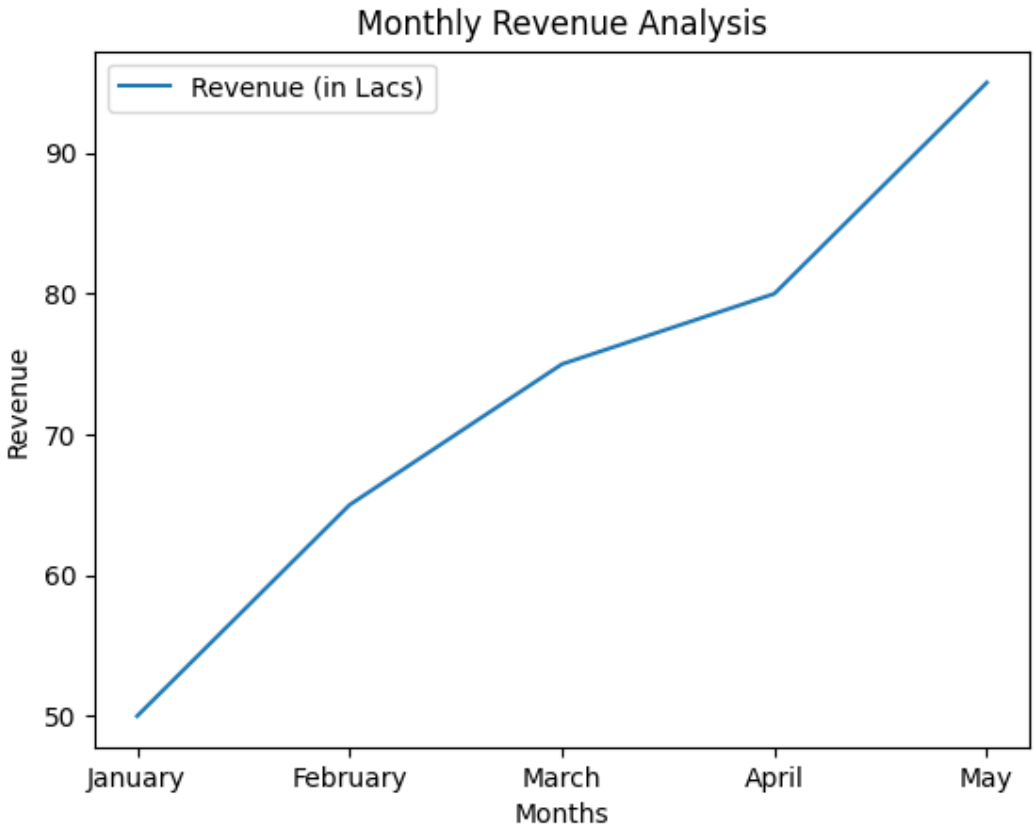
Table: EMPLOYEE

EmployeeID	**Name**	**Department**	**Salary**
101	Aman	IT	60000
102	Rahul	HR	50000
103	Priya	IT	70000
104	Neha	Finance	55000
105	Rahul	IT	60000

I. Which attribute in the Table can be considered as the Primary Key? Provide justification for your answer

		II. Write a suitable SQL query to add a new column, **Experience**, of numeric data type to the table. III. Write the output of the following SQL Query. **SELECT Department, COUNT(*) FROM Employee GROUP BY Department;**	
Q No.		**Section-D (2X4 = 8 Marks)**	**Marks**
33		Rohan, a business analyst, is working on a Python program to create a line graph that represents the monthly revenue (in lakhs) of a company over five months. However, some parts of his code are incomplete. Help Rohan by filling in the blanks in the following Python program.	4

Month	Revenue (in Lacs)
January	50
February	65
March	75
April	80
May	95



Help Rohan to complete the code.

```
_____ as plt #Statement-1
Months = ['January', 'February', 'March', 'April', 'May']
Revenue = [50, 65, 75, 80, 95]
_____ #Statement-2
plt.xlabel('Months')
plt.ylabel('Revenue')
_____ #Statement-3
_____ #Statement-4
plt.legend()
plt.show()
```

I. Write the suitable code for the import statement in the blank space in the line marked as Statement-1.
II. Write the suitable code for the blank space in the line marked as Statement-2, which plots the line graph with the appropriate data and includes a label for the legend.
III. Fill in the blank in Statement-3 with the correct Python code to set the title of the graph.
IV. Fill in the blank in Statement-4 with the appropriate Python code to save the graph as an image file named **monthly_revenue.png**.

34 (A) Raghav, who works as a database designer, has created a table **Student** as shown below: (4)

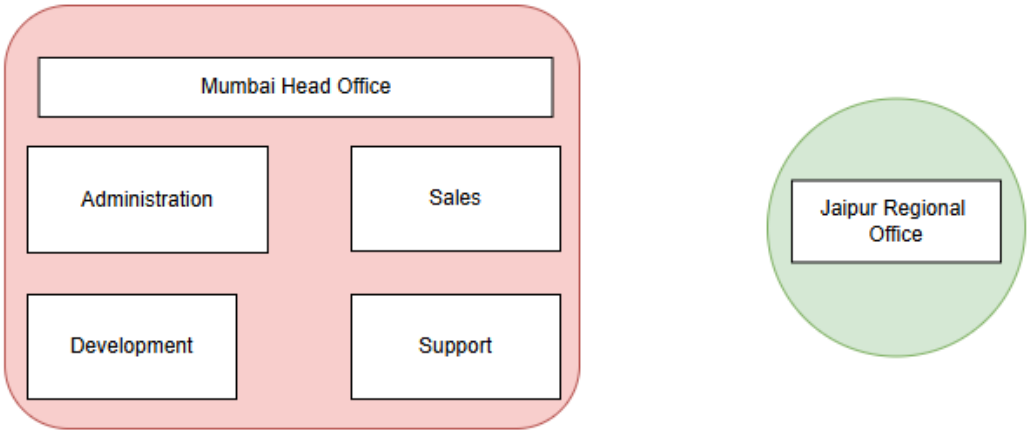
Table : Student

StudentID	Name	City	Marks	Admission_Date
101	Aarav Sharma	Delhi	85	2022-04-01
102	Priya Iyer	Mumbai	78	2021-05-15
103	Rohan Verma	Bangalore	92	2020-06-10
104	Simran Patel	Delhi	88	2022-03-20
105	Karan Yadav	Mumbai	75	2021-08-05

Write suitable SQL query for the following.

I. Show the Name and City of the students, both in uppercase, sorted alphabetically by Name.
II. Display the Student ID along with the name of the month in which the student was admitted to the school.
III. Calculate and display the average marks obtained by students.

	(B)	IV. Show the names of the cities and the number of students residing in the city. **OR** Consider the following table and write the output of the following SQL Queries. **Table : Student** **StudentID** | **Name** | **DateofBirth** | **Marks** | **City** 301 | Aryan | 15-03-2005 | 88 | Delhi 302 | Ayesha | NULL | 90 | NULL 304 | Aditi | NULL | 85 | Pune 305 | Rajesh | 11-01-2006 | 72 | NULL 306 | Maria | 29-04-2005 | 95 | Chennai Write the output of the following SQL Queries. **I. SELECT Name, LENGTH(Name) FROM Student WHERE StudentID < 303;** **II. SELECT lower(Name) FROM Student WHERE MONTH(DateofBirth)= 3;** III. **SELECT AVG(Marks) FROM Student;** IV. **SELECT Name, Marks FROM Student WHERE Marks BETWEEN 90 AND 100;**	
Q No.	**Section-E (3X5 = 15 Marks)**		**Marks**
35	ABC Pvt Ltd. is a leading global IT solutions provider. The company's head office is located in Mumbai while its Regional Office is in Jaipur. The Mumbai office consists of four departments: Administration, Sales, Development, and Support.		5



The distances between these departments, as well as between Mumbai and Jaipur, are as follows:

Administration to Sales	60 meters
Administration to Development	90 meters
Administration to Support	120 meters
Sales to Development	50 meters
Sales to Support	70 meters
Development to Support	45 meters
Mumbai Office to Jaipur Office	1400 kilometers

The number of computers in each department/office is as follows:

Administration	120
Sales	40
Development	70
Support	25
Jaipur Office	50

As a network engineer, you have to propose solutions for various queries listed from I to V.

I. Suggest the most suitable department in the Mumbai Office Setup, to install the server. Also, give a reason to justify your suggested location.

II. Draw a suitable cable layout of wired network connectivity between the departments in the Mumbai Office.

III. Which hardware device will you suggest to connect all the computers within each department?

	IV. Suggest the most appropriate type of network (LAN, MAN, WAN) to connect the Mumbai Head Office and Jaipur Regional Office. V. When a signal is transmitted through a wire from Administration department to Support department, its strength reduces. Which device would you suggest the company use to solve this problem?		
36	Consider the DataFrame **df** shown below. **df** Write Python statements for the following tasks: I. Print the last three rows of the DataFrame **df**. II. Add a new column named "**Experience**" with values [5, 8, 10, 6, 7]. III. Delete the column "**Salary**" from the DataFrame. IV. Rename the column "**Department**" to "**Dept**". V. Display only the "**Name"** and "**Salary"** columns from the DataFrame.		5
37	(A)	Write suitable **SQL** query for the following: I. To extract the first five characters from the **product_code** column in the **Products** table. II. To display the total number of orders from **Order_Id** column in the **Orders** table. III. To display the year of the order dates from the **order_date** column in the **Orders** table. IV. To display the **Address** column from the **Customers** table after removing leading and trailing spaces V. To display the current date. **OR**	5
	(B)	Write suitable **SQL** query for the following:	

	Name	Department	Salary
0	Rohan Sharma	IT	75000
1	Meera Kapoor	HR	68000
2	Aarav Singh	Finance	85000
3	Nisha Singh	Marketing	72000
4	Aditya Verma	IT	80000

		I. To display the total number of characters in the string **DatabaseSystems.** II. Find the position of the first occurrence of the letter 'a' in the **Product_Name** column of the **Products** table. III. Calculate the square of the Amount for each transaction in the **Tran_Amount** column of the **Transactions** table. IV. To display the average salary from the **Salaries** column in the **Employees** table. V. Display the total sum of the Salary from the **Salary** column in the **Employees** table.	