

PRACTICE PAPER
CLASS XII
INFORMATICS PRACTICES (065)
SESSION: 2025-26

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

- Please check this question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- A, B, C, D and 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 case study type questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- 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 iloc[] indexer in Pandas allows selection of rows and columns by integer positions.	1
2.	Which SQL function is used to find the largest value in a column? A. MAX() B. HIGH() C. UPPER() D. TOP()	1
3.	Rohan received repeated threatening messages on social media from an unknown account. This is an example of: A. Cyber Grooming B. Cyber Bullying C. Hacking D. Identity Theft	1
4.	Which of the following statements will display the last 5 rows of a DataFrame df ? A. df.first() B. df.show(5) C. df.tail() D. df.top(5)	1

5.	Which of the following network devices regenerates weak signals to extend the transmission distance? A. Router B. Modem C. Repeater D. Switch	1
6.	Which SQL function returns the remainder of division between two numbers? A. DIV() B. MOD() C. REMAINDER() D. BALANCE()	1
7.	Sushmita, a movie producer wants to protect the script and dialogues of her film. Which IPR should be used? A. Trademark B. Copyright C. Patent D. Industrial Design	1
8.	Which of the following statements for a Pandas Series 's' returns its index labels ? A. s.index B. s.values C. s.keys() D. s.labels()	1
9.	In a relational database, a foreign key is used to: A. Uniquely identify each record in a table B. Define a candidate key C. Store duplicate values D. Link two tables together	1
10.	The full form of URL is: A. Uniform Resource Locator B. Universal Record Link C. Unique Resource List D. Uniform Record Locator	1
11.	Which of the following SQL aggregate functions can be used with both numeric and non-numeric columns ? A. SUM() B. AVG() C. MAX() D. COUNT()	1
12.	What will be the result of adding a scalar value to a Pandas Series ? A. The scalar value is ignored B. The scalar is added to each element of the Series C. The scalar is added to only the first element D. Error occurs	1

13.	Which government agency in India handles cybercrime investigation and policy enforcement ? A. Indian Cyber Crime Coordination Centre (I4C) B. National Crime Records Bureau (NCRB) C. Press Information Bureau (PIB) D. Telecom Regulatory Authority of India (TRAI)	1
14.	Which of the following SQL queries will display student names in descending order ? A. SELECT Name FROM Students ORDER BY Name DESC; B. SELECT Name FROM Students SORT BY Name DESC; C. SELECT Name FROM Students GROUP BY Name DESC; D. SELECT Name FROM Students ORDER Name DESC;	1
15.	To select rows with labels 2 to 5 (inclusive) in a DataFrame df, which command should be used? A. df.iloc[2:5] B. df.loc[2:4] C. df.loc[2:5] D. df.iloc[2:6]	1
16.	In which topology are all devices connected to a single central device like a switch or hub? A. Bus B. Mesh C. Ring D. Star	1
17.	What will be the output of the SQL query: SELECT INSTR('DATABASE', 'A'); A. 2 B. 3 C. 1 D. 0	1
18.	Which of the following commands is used to create a DataFrame from a CSV file named data.csv ? (Note: pd is an alias for pandas) A. pd.create_csv('data.csv') B. pd.read_csv('data.csv') C. pd.DataFrame('data.csv') D. pd.open_csv('data.csv')	1
19.	If a table has 10 rows and 2 of them have NULL in the column AGE, what will COUNT(AGE) return? A. 10 B. 8 C. 2 D. 0	1
	Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as: A. Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A) B. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the	

	correct explanation of Assertion (A) C. Assertion (A) is True, but Reason (R) is False D. Assertion (A) is False, but Reason (R) is True	
20.	Assertion (A): The command df['Column1'] returns a Pandas Series. (Note: df is a Pandas DataFrame) Reason (R): Selecting a single column from a DataFrame gives a one-dimensional object.	1
21.	Assertion (A): The DROP TABLE command deletes the structure and data of a table. Reason (R): DROP TABLE is a DDL (Data Definition Language) command.	1
Q. No.	Section-B (7 x 2 = 14 Marks)	Marks
22.	A. What type of data structure is a DataFrame? Give one example. OR B. Which library in Python is used for data analysis and manipulation? What is the alias commonly used for the library?	2
23.	A mobile repair shop owner throws damaged circuit boards and batteries in a nearby garbage bin. Identify the type of waste being generated. State one harmful effect of this waste on the environment.	2
24.	Kamla wants to create a Pandas Series showing the marks scored by students in a test. Ravi 85 Sonia 92 Amit 78 Neha 88 Help her complete the code to display student names as index and marks as values. <pre>import _____ as pd marks_data = {'Ravi':85, 'Sonia':92, 'Amit':78, 'Neha':88} s = pd._____ (_____) print(_____)</pre>	2
25.	A. An organization wants its website to be accessible 24x7 to users around the world. What kind of computer system is needed for this purpose? What service helps in keeping the website files stored and online? OR B. Rohan sends his project file to his teacher using G-mail. Which Internet service is he using? Mention one advantage of this service.	2
26.	Write a SQL query to perform the following: I. Display only the year from the date '2026-03-15' II. Convert the string 'computer' into uppercase.	2

27.	What does the term IPR stands for? Name any one violation of IPR.	2																									
28.	A. Write the output of the following code: <pre>import pandas as pd data = {'Name':['Aman', 'Bina', 'Chirag', 'Divya'], 'Marks':[85,78,92,88]} df = pd.DataFrame(data) df['Grade'] = ['B', 'C', 'A', 'B'] print(df)</pre> OR B. Write the output of the following code: <pre>import pandas as pd data = {'Name':['Hira', 'Lala', 'Chetan', 'Damini'], 'Marks':[58,87,95,83], 'Grade':['D', 'B', 'A', 'B']} df = pd.DataFrame(data) print(df['Marks'])</pre>	2																									
Section-C (4 x 3 = 12 Marks)																											
29.	Write the differences between the following: I. Copyrights and Patents II. Plagiarism and Copyright infringement III. Non-ethical hacking and Ethical hacking	1+1+1=3																									
30.	A. Write a Python program to create and print a Pandas Series using a list where the items sold in a shop are the indices and their quantities are the values as shown below: <table border="1"><thead><tr><th>Item</th><th>Quantity</th></tr></thead><tbody><tr><td>Notebook</td><td>120</td></tr><tr><td>Pen</td><td>250</td></tr><tr><td>Pencil</td><td>300</td></tr><tr><td>Eraser</td><td>180</td></tr></tbody></table> OR B. Write a Python program to create and print a Pandas DataFrame from a dictionary of Series. Set the Book Title as the row index of the DataFrame, and columns as the number of books (Copies) and their prices (Price) in a library as shown below: <table border="1"><thead><tr><th>Book Title</th><th>Copies</th><th>Price</th></tr></thead><tbody><tr><td>Python Basics</td><td>25</td><td>320</td></tr><tr><td>Data Science Guide</td><td>18</td><td>450</td></tr><tr><td>AI for Students</td><td>12</td><td>500</td></tr><tr><td>Computer Networks</td><td>20</td><td>400</td></tr></tbody></table>	Item	Quantity	Notebook	120	Pen	250	Pencil	300	Eraser	180	Book Title	Copies	Price	Python Basics	25	320	Data Science Guide	18	450	AI for Students	12	500	Computer Networks	20	400	3
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Computer Networks	20	400																									

31.	I. Write a SQL query to create a table named ORDERS with the following specifications: <table><tr><th>Column Name</th><th>Data Type</th><th>Key / Description</th></tr><tr><td>OrderID</td><td>Numeric</td><td>Primary Key</td></tr><tr><td>CustomerName</td><td>Varchar(30)</td><td>Name of the customer</td></tr><tr><td>OrderDate</td><td>Date</td><td>Date of the order</td></tr><tr><td>OrderAmount</td><td>Float(8,2)</td><td>Total amount of the order</td></tr></table> II. Write a SQL query to insert one record into the ORDERS table with the following details: (101, 'Arbaz Khan', '2026-11-10', 2599.50)	Column Name	Data Type	Key / Description	OrderID	Numeric	Primary Key	CustomerName	Varchar(30)	Name of the customer	OrderDate	Date	Date of the order	OrderAmount	Float(8,2)	Total amount of the order	2+1=3																																							
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32.	A. Consider the following two tables: Game, which stores (GameID, GameName, and Venue) and Player, which stores (PlayerID, PlayerName, Age, GameID). Table 1: GAME <table><tr><th>GameID</th><th>GameName</th><th>Venue</th></tr><tr><td>101</td><td>Cricket</td><td>Delhi</td></tr><tr><td>102</td><td>Football</td><td>Mumbai</td></tr><tr><td>103</td><td>Badminton</td><td>Chennai</td></tr><tr><td>104</td><td>Chess</td><td>Kolkata</td></tr></table> Table 2: PLAYER <table><tr><th>PlayerID</th><th>PlayerName</th><th>Age</th><th>GameID</th></tr><tr><td>1</td><td>Rohan</td><td>18</td><td>101</td></tr><tr><td>2</td><td>Meena</td><td>17</td><td>102</td></tr><tr><td>3</td><td>Arjun</td><td>19</td><td>103</td></tr><tr><td>4</td><td>Priya</td><td>18</td><td>101</td></tr><tr><td>5</td><td>Karan</td><td>17</td><td>105</td></tr></table> Write SQL queries to: I. List the names of players aged 18 or above, sorted in ascending order by their name. II. Display the names of games in uppercase that are played at Delhi. III. Display the names of players along with the games they play and the venue. OR B. Consider the following table Dishes, which stores (DishID, FoodName, Category, Price, SpiceLevel) Table : Dishes <table><tr><th>DishID</th><th>FoodName</th><th>Category</th><th>Price</th><th>SpiceLevel</th></tr><tr><td>101</td><td>Chole Bhature</td><td>Main Course</td><td>120.00</td><td>Spicy</td></tr><tr><td>102</td><td>Raima Chawal</td><td>Main Course</td><td>110.00</td><td>Medium</td></tr></table>	GameID	GameName	Venue	101	Cricket	Delhi	102	Football	Mumbai	103	Badminton	Chennai	104	Chess	Kolkata	PlayerID	PlayerName	Age	GameID	1	Rohan	18	101	2	Meena	17	102	3	Arjun	19	103	4	Priya	18	101	5	Karan	17	105	DishID	FoodName	Category	Price	SpiceLevel	101	Chole Bhature	Main Course	120.00	Spicy	102	Raima Chawal	Main Course	110.00	Medium	3
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103	Aloo Paratha	Breakfast	80.00	Medium
104	Paneer Tikka	Snack	150.00	Spicy
105	Gulab Jamun	Sweet	60.00	Mild

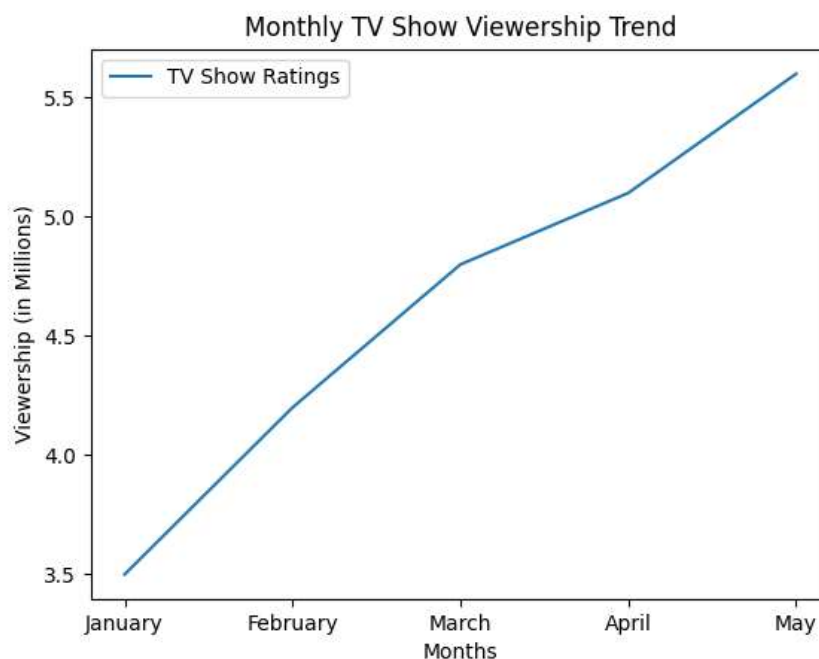
- I. Write a suitable SQL query to rename the column FoodName to Dish.
- II. Write a suitable SQL query to remove the column SpiceLevel.
- III. Write the output of the SQL query:
SELECT COUNT(*) FROM DISHES
GROUP BY CATEGORY HAVING COUNT(*) > 1;

Section-D (2 x 4 = 8 Marks)

- 33.** Amit, a data analyst, is preparing a Python program to create a line graph showing the average viewership ratings (in millions) of popular TV shows over five months. However, some parts of his code are missing. Help Amit by filling in the blanks.

1x4=4

Month	Viewership (in Millions)
January	3.5
February	4.2
March	4.8
April	5.1
May	5.6



The incomplete code is as follows:

```

_____ as plt # Statement-1
Months = ['January', 'February', 'March', 'April', 'May']
Viewership = [3.5, 4.2, 4.8, 5.1, 5.6]
_____ # Statement-2
plt.xlabel('Months')

```

	<pre>plt.ylabel('Viewership (in Millions)') _____ # Statement-3 _____ # Statement-4 plt.legend() plt.show()</pre> I. Write the suitable import statement for Statement-1. II. Write the suitable code for Statement-2 to plot the line graph with an appropriate label for the legend. III. Fill in Statement-3 to set the title of the graph. IV. Fill in Statement-4 to save the graph as an image file named tv_ratings.png.																																									
34.	A. Geeta, a database designer has created the following table: News, which stores (NewsID, Headline, Category, PublishDate and Views columns). TABLE: NEWS <table><tr><th>NewsID</th><th>Headline</th><th>Category</th><th>PublishDate</th><th>Views</th></tr><tr><td>101</td><td>Election Results Announced</td><td>Politics</td><td>2025-05-10</td><td>15000</td></tr><tr><td>102</td><td>Budget Session Highlights</td><td>Politics</td><td>2025-07-12</td><td>13500</td></tr><tr><td>103</td><td>Bollywood Awards Night</td><td>Entertainment</td><td>2025-06-15</td><td>8500</td></tr><tr><td>104</td><td>New Movie Trailer Released</td><td>Entertainment</td><td>2025-08-05</td><td>9200</td></tr><tr><td>105</td><td>Startup Funding Increased</td><td>Business</td><td>2025-08-25</td><td>9800</td></tr><tr><td>106</td><td>Stock Market Reaches New High</td><td>Business</td><td>2025-09-02</td><td>11200</td></tr></table> Write suitable SQL query to: I. Display all headlines in uppercase, sorted in descending order of Views. II. Display the month name and headline of all news articles published. III. Display the total number of articles and the average number of views across all categories. IV. Display the total number of articles and total views for each category. OR B. Consider the following table Books, which stores (BookID, Title, Genre, PublishDate and Price) TABLE: BOOKS <table><tr><th>BookID</th><th>Title</th><th>Genre</th><th>PublishDate</th><th>Price</th></tr></table>	NewsID	Headline	Category	PublishDate	Views	101	Election Results Announced	Politics	2025-05-10	15000	102	Budget Session Highlights	Politics	2025-07-12	13500	103	Bollywood Awards Night	Entertainment	2025-06-15	8500	104	New Movie Trailer Released	Entertainment	2025-08-05	9200	105	Startup Funding Increased	Business	2025-08-25	9800	106	Stock Market Reaches New High	Business	2025-09-02	11200	BookID	Title	Genre	PublishDate	Price	1x4=4
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	<table><tr><td>201</td><td>The Lost Symbol</td><td>Fiction</td><td>2023-03-12</td><td>499</td></tr><tr><td>202</td><td>Python for Beginners</td><td>Education</td><td>2022-07-25</td><td>650</td></tr><tr><td>203</td><td>Data Science Simplified</td><td>Education</td><td>2024-01-10</td><td>720</td></tr><tr><td>204</td><td>The Silent Patient</td><td>Fiction</td><td>2023-09-18</td><td>540</td></tr><tr><td>205</td><td>World History Timeline</td><td>History</td><td>2021-11-22</td><td>430</td></tr><tr><td>206</td><td>Ancient Civilizations</td><td>History</td><td>2024-02-14</td><td>520</td></tr></table> Write the output of the following SQL Queries: I. SELECT UPPER(Title) FROM BOOKS WHERE Genre='Fiction'; II. SELECT ROUND(Price/100,1) FROM BOOKS WHERE BookID=203; III. SELECT YEAR(PublishDate) FROM BOOKS WHERE Title='World History Timeline'; IV. SELECT COUNT(Genre) FROM BOOKS WHERE Genre='Education';	201	The Lost Symbol	Fiction	2023-03-12	499	202	Python for Beginners	Education	2022-07-25	650	203	Data Science Simplified	Education	2024-01-10	720	204	The Silent Patient	Fiction	2023-09-18	540	205	World History Timeline	History	2021-11-22	430	206	Ancient Civilizations	History	2024-02-14	520	
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206	Ancient Civilizations	History	2024-02-14	520																												
	Section-E (3 x 5 = 15 Marks)																															
35.	SmartWave Solutions Pvt. Ltd. is a reputed IT company with its Head Office in Bengaluru and a Regional Office in Pune. The Bengaluru office consists of four departments — HR, Accounts, Development, and Support. The distances (in meters) between departments / offices are as follows: <table><tr><th>Connection</th><th>Distance</th></tr><tr><td>HR to Accounts</td><td>50</td></tr><tr><td>HR to Development</td><td>80</td></tr><tr><td>HR to Support</td><td>100</td></tr><tr><td>Accounts to Development</td><td>60</td></tr><tr><td>Accounts to Support</td><td>90</td></tr><tr><td>Development to Support</td><td>40</td></tr><tr><td>Bengaluru to Pune</td><td>980 km</td></tr></table> The number of Computers in each Department / Offices are as follows: <table><tr><th>Department / Office</th><th>No. of Computers</th></tr><tr><td>HR</td><td>50</td></tr><tr><td>Accounts</td><td>35</td></tr><tr><td>Development</td><td>100</td></tr><tr><td>Support</td><td>20</td></tr><tr><td>Pune Office</td><td>40</td></tr></table> As a network engineer, you have to propose solutions for various queries listed from I to V: I. Which department in the Bengaluru Office should host the main server? II. Suggest a suitable wired network layout to connect all the departments of the Bengaluru office. III. Name the network device required to connect all computers within a department efficiently.	Connection	Distance	HR to Accounts	50	HR to Development	80	HR to Support	100	Accounts to Development	60	Accounts to Support	90	Development to Support	40	Bengaluru to Pune	980 km	Department / Office	No. of Computers	HR	50	Accounts	35	Development	100	Support	20	Pune Office	40	5		
Connection	Distance																															
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HR	50																															
Accounts	35																															
Development	100																															
Support	20																															
Pune Office	40																															

	IV. What type of network (LAN / MAN / WAN) should be used to connect the Bengaluru Head Office and the Pune Regional Office? V. The company wants to plan efficient data transmission between the computers in its offices, which networking device from Hub or Switch should they prefer? Explain why.																			
36.	Consider the DataFrame df given below: <table border="1"> <thead> <tr> <th>InsectName</th><th>Category</th><th>Lifespan (in days)</th></tr> </thead> <tbody> <tr> <td>Butterfly</td><td>Flying</td><td>30</td></tr> <tr> <td>Ant</td><td>Crawling</td><td>60</td></tr> <tr> <td>Dragonfly</td><td>Flying</td><td>45</td></tr> <tr> <td>Beetle</td><td>Crawling</td><td>120</td></tr> <tr> <td>Mosquito</td><td>Flying</td><td>20</td></tr> </tbody> </table> Write Python statements for the following tasks: (assume all necessary modules are imported and DataFrame df is created) I. Display the first three rows of the DataFrame df. II. Add a new column named "Count" with values [10, 25, 12, 8, 20]. III. Display the names of insects whose lifespan is greater than 40 days. IV. Change the Category of "Mosquito" to "Crawling". V. Delete the row corresponding to "Beetle" from the DataFrame.	InsectName	Category	Lifespan (in days)	Butterfly	Flying	30	Ant	Crawling	60	Dragonfly	Flying	45	Beetle	Crawling	120	Mosquito	Flying	20	1x5=5
InsectName	Category	Lifespan (in days)																		
Butterfly	Flying	30																		
Ant	Crawling	60																		
Dragonfly	Flying	45																		
Beetle	Crawling	120																		
Mosquito	Flying	20																		
37.	A. Write suitable SQL queries for the following: I. To display the first three characters from the Name column of the Patients table. II. To display the total salary of all employees from the Salary column in the Employees table. III. To display the day name from the Joining_Date column in the Teachers table. IV. To display the GameName column from the Games table after removing all extra spaces from the right-hand side. V. To display the current system date & time. OR B. Write suitable SQL queries for the following: I. To display the square of the values in the Marks column of the Students table. II. To display the substring of Name starting from 2nd character for 4 characters from the Customers table. III. To display the length of the City names from the Address table. IV. To display the minimum price from the Price column in the Products table. V. To display the number of non-null entries in the Email column of the Users table.	1x5=5																		

