COMMON PRE-BOARD EXAMINATION

INFORMATICS PRACTICES-Code No. 065

Class-XII-(2025-26)

SET: 1

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 shape attribute of a pandas DataFrame returns the number of rows and columns.	1
2.	What will be the result of the following SQL query? SELECT ROUND(25.678, 1); (A) 25.6 (B) 25.7 (C) 25.67 (D) 26	1
3	Riya received a phone call from someone pretending to be from her bank, asking for her OTP to "verify" her account. This is an example of: (A) Identity Theft (B) Cyber Bullying (C) Phishing (D) Data Diddling	1
4.	Which command is used to read data from a CSV file into a Pandas DataFrame df? (A) df.read_csv() (B) pd.read_csv() (C) pd.to_csv()	1

	(D) df.import_csv()	
5	_____ is a network device that can receive the data, analyses it and transmit it to other networks. (A) Hub (B) Switch (C) Router (D) Repeater	1
6	Which Python statement will display the first two rows of a DataFrame df? (A) df.head(2) (B) df.tail(2) (C) df.iloc[:3] (D) df.iloc[2:]	1
7	A new brand logo designed by a company is protected under: (A) Trademark (B) Copyright (C) Patent (D) Industrial Design	1
8	What will be the output of the following statement? SELECT MID('INDIA IS GREAT', 7, 5); (A) GREAT (B) IS GREAT (C) IS GRE (D) IS GR	1
9	A table named Library has one primary key and two alternate keys. How many candidate keys does the table have? (A) 1 (B) 2 (C) 3 (D) 4	1
10	Skype and WhatsApp calls are examples of: (A) Email (B) VoIP (C) Web Browsing (D) FTP	1
11	Which SQL function is used to return the largest value from a column? (A) SUM() (B) MAX() (C) COUNT() (D) UPPER()	1
12	The following DataFrame df3 contains _____ rows and _____ columns. import pandas as pd d1={'a':[1,2], 'b':[2,3]} d2={'a':[4,5], 'b':[6,7]} df3=pd.DataFrame({'x':d1 , 'y':d2})	1

<table>
<tr><td></td><td>(A) 2 , 4
(B) 4, 2
(C) 2, 2
(D) 4, 4</td><td></td></tr>
<tr><td>13</td><td>The Indian law governing cybercrimes and e-commerce is:
(A) Digital India Act, 2015
(B) Information Technology Act, 2000
(C) Cybersecurity Act, 2008
(D) Indian Penal Code, 1860</td><td>1</td></tr>
<tr><td>14.</td><td>Which SQL clause is used to group rows that have the same values in specified columns?
(A) GROUP BY
(B) ORDER BY
(C) HAVING
(D) SORT BY</td><td>1</td></tr>
<tr><td>15</td><td>Which command selects rows 2 to 4 (inclusive) of DataFrame df with default index?
(A) df.iloc[2:5]
(B) df.iloc[1:4]
(C) df.iloc[:4]
(D) df.iloc[2:4]</td><td>1</td></tr>
<tr><td>16.</td><td>In which topology do all nodes share a single communication cable?
(A) Mesh
(B) Tree
(C) Star
(D) Bus</td><td>1</td></tr>
<tr><td>17.</td><td>Match the following SQL functions/clauses with their descriptions:
<table><tr><th colspan="2">SQL Function</th><th colspan="2">Description</th></tr><tr><td>P</td><td>MAX()</td><td>1</td><td>Find the position of a substring in a string</td></tr><tr><td>Q</td><td>SUBSTRING()</td><td>2</td><td>Returns the maximum value in a column</td></tr><tr><td>R</td><td>INSTR()</td><td>3</td><td>Sorts the data based on a column</td></tr><tr><td>S</td><td>ORDER BY</td><td>4</td><td>Extracts a portion of a string.</td></tr></table>
(A) P-2, Q-4, R-3, S-1
(B) P-2, Q-4, R-1, S-3
(C) P-4, Q-3, R-2, S-1
(D) P-4, Q-2, R-1, S-3</td><td>1</td></tr>
<tr><td>18.</td><td>Which command creates a Series from a Python dictionary?
(A) pd.Series(dict)
(B) pd.DataFrame(dict)</td><td>1</td></tr>
</table>

	(C) pd.createSeries(dict) (D) pd.DictSeries(dict)	
19.	Which of the following is not a valid SQL data type? (A) VARCHAR (B) INT (C) DATE (D) STRINGARRAY	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):- While creating a dataframe with a nested or 2D dictionary, Python interprets the outer dictionary keys as the columns and the inner dictionary keys as the row indices. Reasoning (R):- A column can be deleted using remove command.	1
21.	Assertion (A): In SQL, the DROP command removes the table definition as well as the data. Reason (R): Delete is a DML command used to delete selected rows from a table.	1
	SECTION B (7 × 2 = 14 Marks)	
22.	**(A)** What is a Pandas Series? Mention one key feature of it. **OR** (B) What is data visualization? Which is the library used?	2
23.	Mention any two health concerns associated with excessive usage of technology.	2
24	Find the output of the following code: import pandas as pd S=pd.Series(200, index=[‘P1’,’P2’,’P3’,’P4’]) print(S+S) print(S[1:3])	2
25.	What is difference between static and dynamic webpages? **OR** Explain web hosting.	2
26.	Write SQL queries for the following: I. Display the last five letters of the string "Artificial Intelligence". II. Extract the name of the day of week of the date 2025-12-15.	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 data = {'Name': ['Ravi','Neha','Karan'], 'Age':[21,20,22]} df = pd.DataFrame(data) print(df[0:2]) print(df.size) **OR** (B) Write the output of the following code: import pandas as pd fruits = pd.Series(['Apple','Mango','Banana','Guava']) prices = pd.Series([120,60,40,90]) df = pd.DataFrame({'Fruit':fruits,'Price':prices}) df.drop(2, inplace=True) print(df)	2
	SECTION C (4 × 3 = 12 Marks)	
29.	Shreya has designed a new logo for her fashion company. She is worried that competitors might use it without permission. I. Define Intellectual Property and Intellectual Property Rights. II. Under which IPR category is her logo protected? III. Write one importance of IPR in protecting brand identity.	3
30.	(A) Write a Python program to create a Pandas Series '**student**' with rollno and names of students using dictionary. 101 Aman 102 Riya 103 Kabir 104 Sara **OR** (B) Write a Python program to create a Pandas DataFrame '**course**' using a dictionary of list to display the following: **Course** **Duration** **Fees** R1 Python Basics 6 250 R2 Data Analytics 10 300 R3 Cyber Security 8 150	3

31. (A) Write SQL statements for the following: 3

I. Create a table *CUSTOMER* with fields:

Field	Datatype	Constraint
Custid	Integer	Primary key
Name	Varchar(20)	
Joindate	Date	Not null
Balance	Decimal(8,2)	

II. Insert record → (1, 'Ananya', '2022-05-10', 2500.50).
III. Modify Balance to 5000.75 where CustID = 1.

OR

(B) Consider the table *COURSES*:

CourseID	CourseName	Fees
201	Python	15000
202	Java	14000
203	SQL	12000

I. Which field can be considered the Primary Key? Give justification.
II. Write SQLcommand to add a new column Duration of type integer.
III. Write SQL command to delete the details of courses with fees more than or equal to 15000.

32. Consider the following tables: 3

Table: EMP

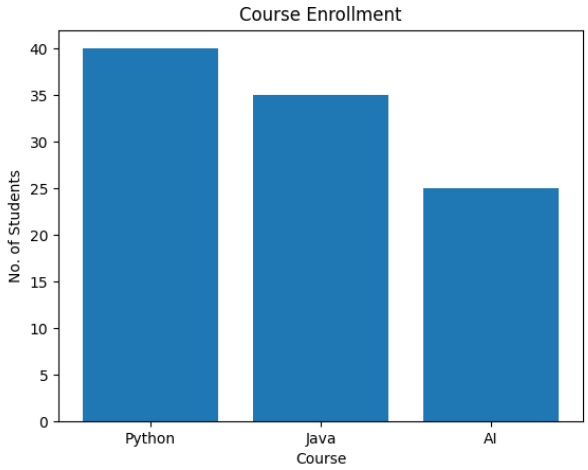
EmpID	Name	Dept
1	Arjun	HR
2	Riya	IT
3	Mehul	IT
4	Kiran	Sales

Table: PAYROLL

EmpID	Salary
1	45000
2	60000
3	58000
4	40000

Write SQL queries for the following:
I. Display names of employees working in IT.

	II. Display names and salaries of employees earning more than 50000. III. Display the name of the department with two employees.	
	SECTION D (2 × 4 = 8 Marks)	

33.	Ramesh wants to create a bar graph showing the number of students enrolled in different courses:
	 
	
	Fill in the missing code:
	import _____ as plt # Statement 1
	courses = ['Python','Java','AI']
	students = [40,35,25]
	_____ # Statement 2
	plt.xlabel("Course")
	plt.ylabel("No. of Students")
	_____ # Statement 3
	plt._____("enrollment.png") # Statement 4
	plt.show()
	I. Fill Statement 1 with correct import.
	II. Fill Statement 2 to plot a bar chart.
	III. Fill Statement 3 to give the graph a title “Course Enrollment”.
	IV. Fill Statement 4 to save the graph.
		4

34.	(A) Consider the table *BOOKS*: **BookID** | **Title** | **Author** | **Price** | **Published_Date** 1 | Python Mastery | Arjun Mehta | 450 | 2020-06-10 2 | AI for Beginners | Riya Kapoor | 500 | 2021-01-20 3 | SQL Simplified | Mehul Jain | 300 | 2019-12-05 4 | Java Basics | Neha Sharma | 400 | 2022-07-15	4

Write SQL queries:
I. Display Title in uppercase and Author names in lowercase of all books.
II. Display the title and price of books published in the month of January and author name contains the letter 'r'.
III. Find average price of all books.
IV. Display the number of books published before 2020-10-21.

OR

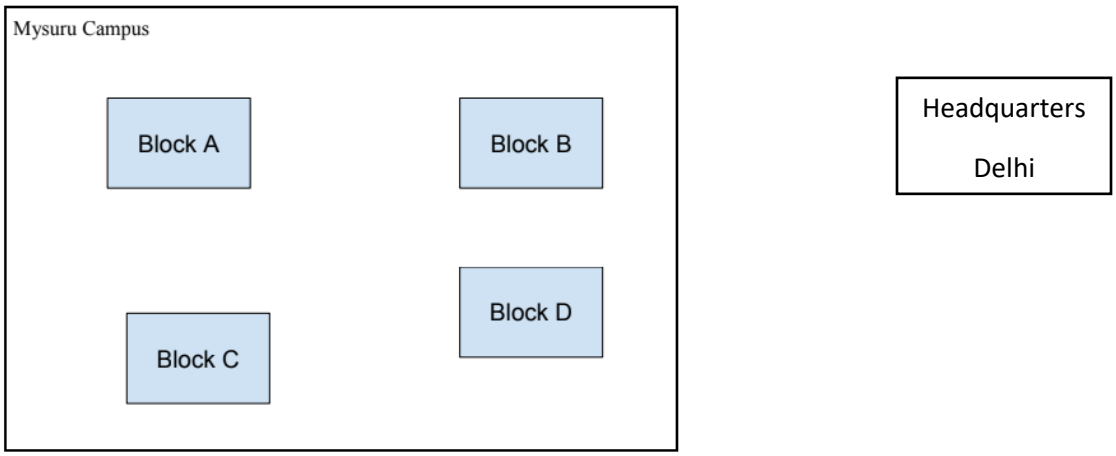
(B) Table *SUPPLIERS*:

SupID	Name	City	Phone
11	Amit	Delhi	9812345
12	Kiran	Mumbai	9988776
13	Ramesh	NULL	9876501

Write the output of:
I. SELECT Name, LENGTH(city) FROM SUPPLIERS;
II. SELECT UPPER(Name) FROM SUPPLIERS WHERE City IS NULL;
III. SELECT COUNT(*) FROM SUPPLIERS;
IV. SELECT City, COUNT(*) FROM SUPPLIERS GROUP BY City;

SECTION E (3 × 5 = 15 Marks)

35 Digital University of Kerala is opening a new campus in Mysore with 4 different blocks, named A, B, C, D . Its Headquarters is in Delhi. 5



The shortest distances between the departments/offices are as follows:

Block A to Block B	95 m
Block A to Block C	120 m

	Block A to Block D 90 m Block C to Block D 80 m Block D to Block B 120 m Block B to Block C 130 m Headquarters to Mysuru 2000 KM Number of computers in each block is as given in the table given below: Block A 85 Block B 90 Block C 120 Block D 95 Headquarters 50 University is planning to interconnect all the computers in each block, interconnect all the blocks of Mysuru campus and to connect the Mysuru campus with Headquarters in Delhi. Answer the following: I. Suggest the best department to install the server with justification. II. Suggest and draw suitable cable layout to efficiently connect all blocks in Mysuru Office. III. Suggest suitable networking device for connecting computers in each department. IV. What is the type of network that connects Headquarters and Mysuru offices. V. Which device should be installed to strengthen weak signals?	
36.	Consider the following DataFrame **stud_df**: **ID** | **Name** | **Marks** 1 | Rohan | 85 2 | Meera | 92 3 | Aarav | 78 4 | Simran | 88 Write Python statements to: I. Display the Name of students whose mark is more than 85. II. Add a new column Grade with values ['A','A+','B','A']. III. Change the columnname **Name** to **StudentName**. IV. Add the details of a new student with ID=5, Name='Sajin', Marks=90 and Grade='A+' V. Delete the column Marks.	5

37.	(A) Write SQL queries: I. Display the rightmost 4 characters from column CustCode of *CUSTOMER* table. II. Display the number of different City values from column City of *CUSTOMER* table. III. Extract month from column JoinDate of employee table. IV. Display the number of characters after removing the trailing spaces from column Address of customer table. V. Display todays date in date and time format. **OR** (B) Write SQL queries: I. Find total number of characters in string 'ArtificialNeuralNetworks'. II. Display position of 'a' in the string ‘qualification’ III. Display cube of 5. IV. Display the string ‘form’ from the string ‘information’. V. Calculate total Salary from *EMPLOYEE* table.	5