Series P/PB2/1

SET 1

CLAS XII PRE-BOARD EXAMINATION – 2025-26

Q.P. Code: 065/2/1

Roll No. | | | | | | | | |

Candidate must write the Q.P. Code on the title page of the answer-book.

- Please check that this question paper contains 15 printed pages.
- Please check that this question paper contains 37 questions.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The students will read the question paper only and will not write any answer on the answer-book during this period.

INFORMATICS PRACTICES

Time allowed : 3 hours *Maximum Marks : 70*

General Instructions:

(i) ***All*** *questions are compulsory.*

(ii) *The Examination paper contains* ***five*** *sections.* ***Section A*** *to* ***Section E****.*

(iii) ***Section A*** *has* ***21*** *questions (1 to 21). Each question carries 1 Mark.*

(iv) ***Section B*** *has* ***7*** *Very Short Answer type questions (22 to 28). Each question carries 2 Marks.*

(v) ***Section C*** *has* ***4*** *Short Answer type questions (29 to 32). Each question carries 3 Marks.*

(vi) ***Section D*** *has* ***2*** *questions (33 to 34). Each question carries 4 Marks*

(vii) ***Section E*** *has* ***3*** *questions (35 to 37). Each question carries 5 Marks*

(viii) There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.

(ix) ***All*** *programming questions are to be answered using Python language only.*

(x) 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: A pandas DataFrame can contain homogenous data only.	1
2	The purpose of the GROUP BY clause in a SQL statement is to: (A) Filter rows based on a condition (B) Group rows that have the same values in specified columns (C) Sort the result based on a column (D) Specify the columns to be displayed	1
3.	The primary function of a modem in a computer network is to: (A) Amplify the network signal (B) Connect multiple computers within a local network (C) Convert digital signals to analog signals and vice versa (D) Route data packets between networks	1
4.	Which of the following SQL queries is used to retrieve rows from the "customers" table where the "email" column contains NULL values? (A) SELECT * FROM customers WHERE email = NULL; (B) SELECT * FROM customers WHERE email IS NOT NULL; (C) SELECT * FROM customers WHERE ISNULL(email); (D) SELECT * FROM customers WHERE email IS NULL;	1
5.	Which of the following is a responsible way to manage e-waste? (A) Disposing of electronic devices in landfills (B) Incinerating old electronic devices (C) Recycling or refurbishing electronic devices (D) Storing unused electronic devices in storage rooms	1
6.	Find the output of the following python code:- import pandas as pd df = pd.DataFrame({'KVs': ['KV1', 'KV2', 'KV3', 'KV4', 'KV5']}) print(df.head(-2))	1

	(A) KVs 0 KV1 1 KV2 2 KV3 (B) KVs 0 KV1 1 KV2 (C) KVs 0 KV1 1 KV2 2 KV3 3 KV4 4 KV5 (D) Error	
7.	Which is the correct import statement to import pyplot? (A) import pyplot.matplotlib as plt (B) import pyplot from matplotlib (C) import matplotlib.pyplot as plt (D) None of the above	1
8.	State whether the following statement is True or False: "In SQL, the DELETE command removes rows from a table along with its table structure".	1
9.	What is the default separator (delimiter) when reading a CSV file using pd.read_csv() in Pandas? (Note: pd is an alias for pandas) A) Semicolon (;) B) Comma (,) C) Tab (\t) D) Pipe (|)	1
10.	Master Raj , class XII student, writes a book titled "All round development in KVS". What type of intellectual property protects his rights as the author of the book? A) Trademark B) Patent C) Copyright D) Trade secret	1

11.	The query SELECT department, SUM(salary) FROM employees department; will return the total salary for each department. A) GROUP BY B) ORDER BY C) HAVING D) WHERE	1
12.	In a bus topology, what happens if the main cable (the backbone) fails? A) Only the devices connected after the break stop working B) The entire network fails C) Devices continue to communicate through secondary routes D) Only the central device fails	1
13.	DF-- DataFrame **Name** **Age** **Department** Anjali 25 Sales Ramesh 30 HR Priya 35 Marketing Amit 28 IT What will be the output of DF.loc[1, 'Name']? (A) Priya (B) Ramesh (C) Anjali (D) 1, Name	1
14.	A KV teacher receives an email claiming to be from their bank, asking them to click a link and update their personal information. This is an example of which type of cybercrime? A) Phishing B) Hacking C) Ransomware D) Spyware	1

15.	Which of the following is a one-dimensional array containing a sequence of values in Python ? A) Relation B) DataFrame C) Series D) Square	1
16.	Match the following SQL functions with their purpose: SQL Function / Description P. COUNT() — 1. Finds the position of a substring Q. CONCAT() — 2. Returns the total number of rows R. INSTR() — 3. Return the length of the string, S. LENGTH() — 4. Adds two or more expressions/strings together (A) P-1, Q-2, R-3, S-4 (B) P-2, Q-1, R-3, S-4 (C) P-2,Q-4, R-1, S-3 (D) P-4, Q-2, R-1, S-3	1
17.	Which of the following can be used to specify the data while creating a DataFrame? (A) Dictionaries (B) Series (C) ndarrays (D) All of the above	1
18.	Which Matplotlib plot is best suited to represent changes in data over time? (A) Bar plot (B) Histogram (C) Line plot (D) Histogram & Bar plot	1

19.	Mr. Ram , a computer science teacher wants to transfer data between their smartphone and laptop using Bluetooth in computer lab. Which type of network would this fall under? A) PAN B) LAN C) WAN D) MAN	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):- DataFrame has both a row and column index. Reasoning (R): - A DataFrame is a two-dimensional labelled data structure like a table of MySQL.	1
21.	Assertion (A): The CREATE TABLE command is used to add new rows to an existing table in SQL. Reason (R): The CREATE TABLE command defines the structure of a new table, including its columns and data types.	1
	Section-B (7 x 2 = 14 Marks)	
22.	**(A).** What are the difference between Series and Dataframe. Write any two differences. OR **(B).** What does the term 'library' signify in Python? Mention one use for each of the following libraries: • Pandas • Matplotlib	2
23.	What do you mean by FOSS ? Name any two free and open source software.	2

24.	A string is given as “Humpty Dumpty”. Write suitable SQL queries for the following: I. Count how many characters are there in above string. II. Display above string in uppercase ."	2
25.	**(A).** Explain the role of a web browser in accessing the internet ? Write any 2 names of web browsers. **OR** **(B).** What do you mean by webpage ? How is static web pages differ from the dynamic webpages.	2
26.	Distinguish between primary key and candidate key with example.	2
27.	As a student , what two advice you should give to other student for e-waste disposal ?	2
28.	(A). Parul , class XII student , writes a Python program to create a DataFrame. However, her code contains some mistakes. Identify the errors, rewrite the correct code, and underline the corrections made. import pantas as pd Rollno= [1101, 1102,1103] Name= ['Teena', 'Jay’, 'Rishi'] Age=[26,27,35] Final= [Rollno, Name, Age] df= pdf.DataFrame(Final, INDEX= ['Stud1', 'Stud2', 'Stud3']) print(DataFrame) **OR** (B) Complete the given Python code to get the required output (ignore the dtype attribute) as Output: Jan 31 Feb 28 Mar 31 Apr 30 Code:- _____pandas as pd Month_Day = pd.____({'Jan': 31, 'Feb':28, 'Mar':31, '_____':30}) print(___)	2

Section-C (4 x 3 = 12 Marks)

29. (3)

Bharti received a message that she needs to update the KYC for her Bank Account therefore she should upload her Aadhar Card, Bank Account Number and the OTP on the link given in her message. Answer the following questions :

(i) Is it safe for Bharti to upload her Aadhaar card, bank account number, and OTP on the link provided in the message?

(ii) Why is it important for Bharti to immediately contact her bank to verify the authenticity of the message?

(iii) What type of cyber crime is being committed in the message Bharti received, where she is asked to upload sensitive information?

30. (3)

(A). Write a Python program to create the following DataFrame (Student).

	Name	English	Maths	Physics
0	aparna	80	70	50
1	pankaj	78	18	48
2	sudhir	59	59	69
3	Aditya	76	66	96

OR

(B). Write a Python Program to create a Pandas Series as shown below using a dictionary. Note that the left column indicates the indices and the right column displays the data.

Virat Kohli	Ckricket
Neeraj Chopra	javelin throw
Mary Kom	Boxing

31. (2+1=3)

I. Write an SQL statement to create a table named Employee, with the following specifications:

Column Name	**Data Type**	**Key**
Emp_ID	Integer	Primary Key
Emp_Name	Varchar(20)	Not Null
Department	Varchar(15)	
Increment_Date	Date	
Salary	Int(7)	

II. Write SQL Query to insert the following data in the Employee Table 1001, Rajesh, Sales, 2024-12-10, 75000

32. (A) . Consider the following tables: 3

Table 1:

Flights which stores Flightid, model and company

Table 2:

Booking which stores Ticket number (Ticketno), passenger name(passenger), source , destination, quantity, price and Flightid

Table: Flights

Flightid	**model**	**company**
10	747	Boeing
12	320	Airbus
15	767	Boeing

Table: Booking

Ticketno	**passenger**	**source**	**destination**	**quantity**	**price**	**Flightid**
10001	AJAY	BAN	DELHI	2	7000	10
10002	RIYA	BAN	KOLKATA	3	7500	12
10003	MOHAN	DEL	MUMBAI	1	6000	15
10004	RISHI	MUM	KOLKATA	2	5600	12
10005	VIJAY	MUM	DELHI	4	5000	10

a) Write a query to count flights booking source wise.

b) Increase 10% fare of those flight booking whose destination is Delhi

c) Display Passenger name , source , model and company from the table flights and booking for the matching rows

OR

(B). Consider the following tables:

Table 1:

Table: Stationary , which stores stationary id (S_ID), Stationary Name(StationaryName), Company and Price

Table 2:

Consumer, which stores Consumer id (C_ID), Consumer_Name , Address and stationary id (S_ID)

Table:- Stationary

S_ID	Stationary Name	Company	Price
DP01	Dot Pen	ABC	10
PL02	Pencil	XYZ	6
ER05	Eraser	XYZ	7
PL01	Pencil	CAM	5
GP02	Dot Pen	ABC	15

Table:- Consumer

C_ID	Consumer_Name	Address	S_ID
1	Rajat	Delhi	PL01
6	Mohini	Mumbai	GP02
12	Ragini	Delhi	DP01
15	Anil	Delhi	PL02

I. Display stationary wise average Price

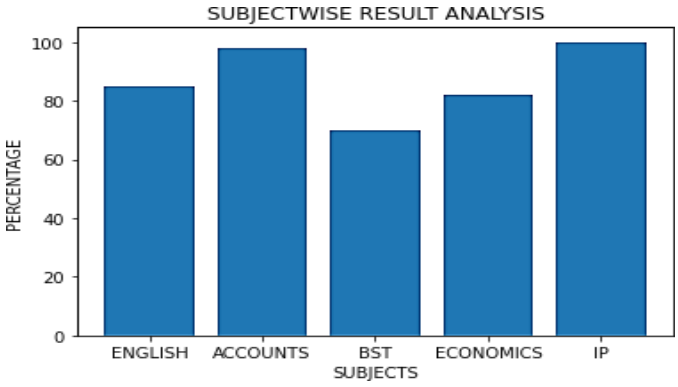
II. Display length of those consumer name who are residing in Delhi

III. Display the stationary name along with their consumer name

Section-D (2 x 4 = 8 Marks)

33. Bharti a class XII (IP) student has to fill in the blanks in Python programs that generate a bar chart. This bar chart calculate subject wise result analysis.

Subject	Percentage
ENGLISH	85
ACCOUNTS	98
BST	70
ECONOMICS	82
IP	100



Help Bharti to complete the code:

```
import _____as plt      #Statement-1
Subject=['ENGLISH','ACCOUNTS','BST','ECONOMICS','IP']
Percentage=[85,98,70,82,100]
plt.bar(_____,  Percentage)          #Statement-2
plt._____("SUBJECTS")        #Statement-3
plt.ylabel("PERCENTAGE")
plt.title('_____')      #Statement-4
plt.show()
plt.savefig('Result.png')
```

I. Write the suitable code for the import statement in the blank space in the line marked as Statement-1.

II. Refer to the graph shown above and fill in the blank in Statement-2 with suitable Python code.

III. Fill in the blank in Statement-3 with the name of the function to set the label on the x-axis.

IV. Refer the graph shown above and fill the blank in Statement-4 with suitable Chart Title.

34. **A)** Sachin, who works as a database designer, has developed a database for a Sport club. This database includes a table *Sportsclub* whose column (attribute) names are mentioned below: 4

Playerid: Shows the player id.

Pname: Shows Player name.

Sports: Specifies the player's sport.

Country: Lists the player's Country

Rating:- List the rating of the player

Salary:- Displays the salary of the players

Table: **Sportsclub**

Playerid	Pname	Sports	Country	Rating	Salary
10001	PELE	SOCCER	BRAZIL	A	50000
10002	FEDERER	TENNIS	SWEDEN	A	20000
10003	VIRAT	CRICKET	INDIA	A	15000
10004	SANIA	TENNIS	INDIA	B	5000
10005	NEERAJ	JAVELIN THROW	INDIA	A	12000
10006	Ronaldinho	SOCCER	BRAZIL	A	8000

I. Write a query to display player's name in the lower case of those player whose country is India

II. Display sum of salary sports wise.

III. Write a query to display unique sport name.

IV. Display all the details of Indian player who got A rating in sportclub

OR

(B). Ranjana has created a database for employee management. The database includes a table named Employee whose column (attribute) names are mentioned below:

EMPNO: Shows the unique employee number for each employee.

NAME: Specifies the employee name

DOJ: Specifies the joining date of employee.

SALARY: Shows the salary of the employee.

CITY: Shows the city of the employee.

Table: EMPLOYEE

EMPNO	NAME	DOJ	SALARY	CITY
5001	SUMIT SINGH	2012-05-24	55000	JAIPUR
5002	ASHOK SHARMA	2015-10-25	65000	DELHI
5003	VIJAY SINGH	2009-09-09	85000	JAIPUR
5004	RAKESH VERMA	2020-12-21	60000	AGRA
5006	RAMESH KUMAR	2011-01-22	72000	DELHI

Write output of the following SQL queries:

I. SELECT NAME, LENGTH(NAME) FROM EMPLOYEE WHERE SALARY>65000;

II. SELECT NAME FROM EMPLOYEE WHERE MONTH(DOJ)=12;

III. SELECT NAME, SALARY FROM EMPLOYEE WHERE NAME LIKE '_A%';

IV. SELECT SUBSTR(NAME, 2,4) FROM EMPLOYEE WHERE CITY <> 'JAIPUR' ;

Section-E (3 x 5 = 15 Marks)

35. Gagan Infotech has a head office in Delhi. Now company wants to set up their computer network in the Jaipur based campus having four buildings. Each block has a number of computers that are required to be connected for ease of communication, resource sharing and data security. You are required to suggest the best answers to the questions (i) to (v) keeping in mind the building layout on the campus. 5

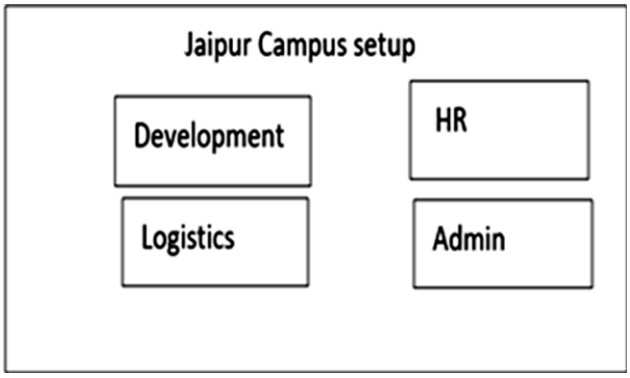
Number of Computers.

Block	Number of computers
Development	100
HR	120
Admin	200

Distance Between the various blocks

Block	**Distance**
Development to HR	50m
Development to Admin	75m
Development to Logistics	120m
HR to Admin	110m
HR to Logistics	50m
Admin to Logistics	75m





i) Suggest the most appropriate block to host the Server. Also justify your choice.

ii) Draw a suitable cable layout of wired network connectivity between the departments in the Jaipur Office.

iii) Suggest the placement of the following device with justification:

a)Repeater b) Hub/Switch

iv) Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

v) Suggest the high-speed wired communication medium between Jaipur Campus and Delhi campus to establish a data network.

36.	Consider the following DataFrame, DF **Rollno** | **Name** | **Class** | **Section** | **CGPA** 0 | 1 | Geeta | IX | E | 8.7 1 | 2 | Preeti | X | F | 8.9 2 | 3 | Ravi | IX | D | 9.2 3 | 4 | Lakshay | X | A | 9.4 I. Add a new column 'Stream' to the Dataframe with values (Science, Commerce, Arts, Science.) II. Add a new row with values (5 , Rajesh ,X, F , 9.8, Science) III. Print no of rows and columns in DataFrame DF IV. Delete row for rollno 2. V. Display record of Ravi in DF DataFrame	5
37	**(A).** Write suitable SQL query for the following: I. Display 5 characters extracted from 3th left character onwards from the string 'EK BHARAT SHRESHTHA BHARAT'. II. Display the position of occurrence of string 'GREATEST' in the string 'INDIA IS THE GREATEST COUNTRY. III. Round off the value 453.668 to two decimal place. IV. Display how many records are there in the Employee table. V. Display Sum of Salary in the Salary column (attribute) in the Employee table. **OR** **(B).** Write suitable SQL query for the following: I. Display 5 characters extracted from 4th left character onwards from the string 'INFORMATICS PRACTICES' . II. Display the position of occurrence of string '*DUMPTY*' in the string '*HUMPTY DUMPTY SAT ON A WALL*'. III. Round off the value 45.1876 to one decimal place. IV. Display the remainder of 77 divided by 4. V. Remove all the expected leading and trailing spaces from a column student_name of the table ' result '.	5