Roll No. **Series JPR_PB/25-26/12/065/SET No.9**

- Please check that this question paper contains 11 printed pages.
- Please check that this question paper contains 37 questions.
- Please write down the serial number of the question in the answer-book before attempting it.
- 15 minutes time has been allotted to read the 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 (065)

Time allowed: 3 hours **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.

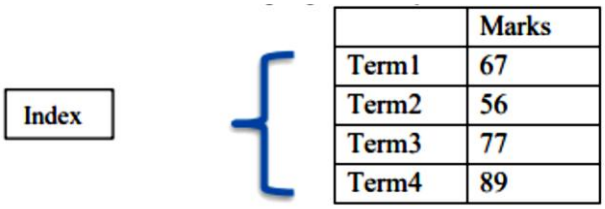
Q.	Section-A (21 x 1 = 21 Marks)	Mark
1	**State whether the following statement is True or False:** Pandas DataFrame.loc can select row by label.	1
2	Which SQL function returns the remainder of division? (A) REM (B) DIV (C) MOD (D) AVG	1
3	Identify the type of cybercrime from the followings- (A) Using WiFi (B) Downloading books (C) Phishing (D) Saving passwords in mobile	1

4	Which of the following Python statements is used to write a Pandas DataFrame df to a CSV file? (A) df.to_csv('file.csv') (B) df.save_csv() (C) pd.write_csv() (D) df.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) Switch (B) Router (C) Modem (D) Repeater	1
6	If a column fee contains the following data set (75, null, null, 100, 200), what will be the output of the following query. Select count(Fee) from emp; (A) 5 (B) 2 (C) 3 (D) output cannot be predicted	1
7	GPL stands for _____ (a) General Public License (b) GNU General Private License (c) GNU General Public License (d) GNU Public License	1
8	What is the default index of Pandas Series if not given? (A) 1,2,3… (B) row labels (C) 0,1,2… (D) random	1
9	A candidate key in a Relation is- (A) Primary Key of a relation (B) That can serve as Primary Key	1

	(C) All Alternate Keys (D) That can serve as foreign key	
10	Which protocol is used to transfer files between computers? (A) FTP (B) HTTP (C) TCP (D) SMTP	1
11	Which SQL statement do we use to find out the total number of records present in the table SALES? (A) SELECT * FROM SALES; (B) SELECT COUNT (*) FROM SALES; (C) SELECT FIND (*) FROM SALES; (D) SELECT SUM () FROM SALES;	1
12	If two Pandas Series with unmatching indexes are added? (A) Does not adds matched only (B) Shows Error (C) Output with NaN for unmatched keys (D) Drops unmatched	1
13	Indian Cyber law is governed by… (A) CyberBill, 2000 (B) IT Act, 2000 (C) Copyright Act, 1957 (D) IPR Act, 1999	1
14	Which SQL keyword sorts output records? (A) GROUP BY (B) ORDER BY (C) SORT (D) ARRANGE	1
15	Which command selects first 3 rows of DataFrame df? (A) df.head(3) (B) df.tail(3)	1

	(C) df.loc[0:2] (D) df.first(3)	
16	Topology with every node connected to a single, central cable called - (A) Line Topology (B) Bus Topology (C) Wire Topology (D) Central Topology	1
17	SQL function to find position of substring? (A) INSTR (B) MID (C) LEN (D) SUBSTR	1
18	Code for creating empty DataFrame: (A) pd.DataFrame() (B) pd.create_df() (C) pd.Series([ ]) (D) None	1
19	Which of the following is not an aggregate SQL function: (A) MAX (B) AVG (C) UPPER (D) COUNT	1
	Q20 and Q21 are Assertion (A) and Reason(R) based questions. Mark the correct choice as: **(A) Both A and R are true and R is the correct explanation for A** **(B) Both A and R are true and R is not the correct explanation for 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 DELETE is a DML (Data Manipulation Language) command. Reason(R): DDL (Data Definition Language) commands are used to modify structure of the tables.	1

Q	Section-B (7 x 2=14 Marks)	Mark
22	(A) Consider a given Series, M1.  Write a program in Python Pandas to create the series. **OR** (B) Write a program to create a series object using a dictionary that stores the number of Kendriya Vidyalayas in each city of cities of your state. **Note**: Assume some cities like AGRA, JHANSI, MATHURA, NOIDA having 4, 3, 5, 4 KVs respectively and pandas library has been imported as mypandas.	2
23	Define e-waste. Give one solution to reduce it.	2
24	Neena has created a Python code to create a DataFrame Toppers with appropriate column headings from the list given below: [[501,'Aromal','Commerce'], [502,'Greeshma','Science'], [503," Preeti","Humanities'], [504,' Rupin ','Arts']] However, her code contains some mistakes. Identify the errors, rewrite the code, and underline the corrections made. import pndas as pd Data= [[501,'Aromal','Commerce'], [502,'Greeshma','Science'], [503,"Preeti","Humanities'], [504,' Rupin ','Arts']] Toppers=pd.dataframe (data,columns=('Rno','Name', 'Stream')) print(Toppers)	2
25	What is a webpage? Differentiate between static and dynamic webpage. **OR** What is a web browser? Give name of any two commonly used web browsers.	2

26	Write SQL statements to: - i. Display name of the weekday (e.g., Monday, Tuesday) for '2025-12-25' ii. Find and display the position of the substring "India" in the string 'Best of India'.	2
27	Amit got good marks in all the subjects. His father gifted him a smart phone. He would like to make Amit aware of health hazards associated with inappropriate and excessive use of smart phone. Help his father to list the points which he should discuss with Amit?	2
28	(A) Write the output of the following code: import pandas as pd data = pd.DataFrame({'marks':[75,94,67],'status':['pass','pass','fail']}) data.rename(columns={'marks': 'Score', 'status': Result'}, inplace=True) print(data) **OR** (B) Write the output of the following code: import pandas as pd ser = pd.Series([1,2,3,4]) frame = pd.DataFrame({'nums':ser}) print(frame.tail(2))	2

Q	Section-C (4 x 3 = 12 Marks)	Mark
29	i) Ishita is using a software which are sold commercially and their source code not shared or distributed to the users. What are such softwares known as? ii) What is IPR? What is the significance of IPR?	3 (1+2)
30	(A) Observe the following code and predict the output. import pandas as pd d1 = {'Item': 'PEN', 'Price': 25} d2 = {'Item': 'PENCIL', 'Price': 10} d3 = {'Item': 'ERASER', 'Price': 5} d4 = {'Item': 'SCALE', 'Price': 20} data = [d1, d2, d3, d4] df = pd.DataFrame(data) print(df)	3

```
print(df.head(2))
print(df.T)
```

OR

(B) Observe the following code and predict the output.

```
import pandas as pd
l1=[10,20,30,40,50]
l2=[89,56,23,45,78]
s1=pd.Series(l1,index=['a','b','c','d','e'])
s2=pd.Series(l2,index=['a','b','e','g','k'])
print(s1+s2)
print(s2*2)
print(s1[s1>25])
```

31 (i) Write an SQL statement to create a table named EMPLOYEES, with the following specifications: — 3 (2+1)

Column Name	Data Type	Key
EmployeeID	Numeric	Primary Key
EmpName	Varchar(25)	
HireDate	Date	
Salary_in_Lacs	Float(4,2)	

(ii) Write an SQL Query to insert the following data into the EMPLOYEES table:
101, Ravi Kumar, 2015-06-01, 1.70

32 Consider following tables Student and Book — 3

Table : Student

S_ID	S_NAME	CLASS	SECTION
S101	Ashish	11	A
S102	Anil	12	A
S103	Shefali	11	A
S104	Mitesh	12	B
S105	Sandhya	12	B

Table : Book

S_ID	Book_ID	Title	Price
S101	1235	Computer Network	200
S102	6598	Operating System	300
S103	7845	DBMS	425
S104	1346	Python	530
S105	4679	Computer System	350

Write appropriate SQL queries for the following:

i. To display class wise total number of students.

ii. To display maximum and minimum price of book.

iii. To display student name and title of book issued to him/her.

OR

Consider following tables Teacher and Subject

Table : Teacher

T_ID	T_NAME
T101	Vikash Sharma
T102	Rohan Verma
T103	Meena Singh
T104	Sohel Khan
T105	Vinay Shroff

Table: Subject

T_ID	Code	Name
T101	083	Computer Science
T102	065	Informatics Practices
T103	301	English Core
T104	302	Hindi Core
T105	044	Biology

Write appropriate SQL queries for the following:

i. To display name of teachers in uppercase.

ii. To display first four characters of each subject.

iii. To display teacher name and subject taught by him/her.

Q	Section-D (2 x 4 = 8 Marks)	Mark
33	Write python code to generate bar chart of marks scored by 5 students in first pre-board exam as per following data. Student Name: Vishal, Ajay, Nirav, Khyati, Mitali Marks: 65, 58, 62, 57, 66 Give appropriate Title, X and Y labels to the chart. Also write statement to save chart with appropriate name.	4
34	Consider the following table Medicine and answer the questions.	4

Table: Medicine

Code	Name	Price	Exp_Date
123	PARACETAMOL	150	2024-12-15
787	AMOXICILLIN	253	2025-01-16
465	COUGH SYRUP	350	2025-08-22
327	INSULIN	560	2025-03-31
369	IBUPROFEN	300	2025-02-28

i. Write SQL query to print Medicine names in descending order of their price.
ii. Write SQL query to print number of characters in each medicine name.
iii. Write SQL query to print medicine name and its month name of expiry date.
iv. Write SQL query to print total price of medicines.

OR

Write the output of the following SQL Queries on the basis of table Medicine.

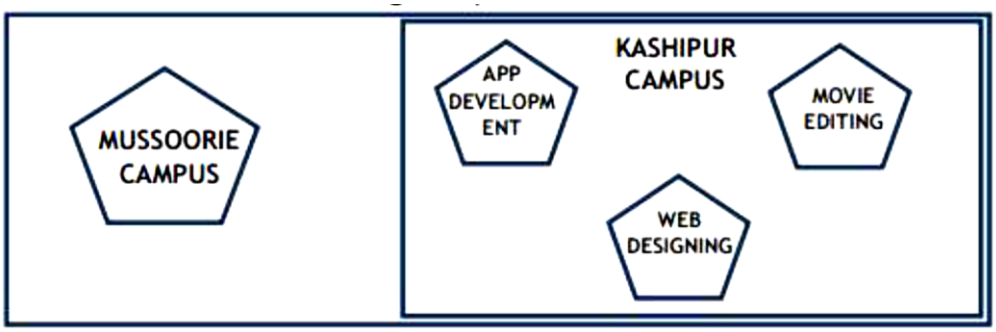
i) SELECT MOD(PRICE,10) FROM MEDICINE;

ii) SELECT MID(NAME,5) FROM MEDICINE;

iii) SELECT RIGHT(NAME,3) FROM MEDICINE;

iv) SELECT COUNT(*) FROM MEDICINE;

Q	Section-E (3 x 5 = 15 Marks)	Mark
35	MakeInIndia Corporation, an Uttarakhand based IT training company, is planning to set up training centres in various cities in next 2 years. Their first campus is coming up in Kashipur district. At Kashipur campus, they are planning to have 3 different blocks for App development, Web designing and Movie editing. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in question keeping in mind the distances between various blocks/locations and other given parameters.	5



	Distance between various blocks/locations: | Block	Distance
---	---
App development to Web designing	28 m
App development to Movie editing	55 m
Web designing to Movie editing	32 m
Kashipur Campus to Mussoorie Campus	232 km | Number of computers in each block: | Block	Number of Computers
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App development	75
Web designing	50
Movie editing	80 | a) Suggest the most appropriate block/location to house the SERVER in the Kashipur campus (out of the 3 blocks) to get the best and effective connectivity. Justify your answer. b) Suggest a device to be installed in each block of Kashipur Campus to connect computers. c) Suggest the best wired medium and draw the cable layout (Block to Block) to economically connect various blocks within the Kashipur Campus. d) Suggest the placement of Repeater with appropriate reason. e) Suggest a protocol that shall be needed to provide Video Conferencing solution between Kashipur Campus and Mussoorie Campus.	
36	Consider the following data frame book and answer the questions. |	Title	Author	Price	Year
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101	India Shining	Milan Sen	520	2024
102	Indian Tourism	Romit Ray	650	2023
103	Indian Culture	Dhruv Jain	270	2023
104	Indian Festivals	Kishan Roy	300	2022 | Write Python statements for the Data Frame book to: i) Print the first two rows of the Data Frame book. ii) Display author of all the books. iii) Add the column Publisher [Assume appropriate data for the column]. iv) Display the Title, Author and Price of books with row index 102 and 103. v) Rename the column name 'Year' to 'Year of Publish'.	5
37	Write suitable SQL query for the following:	5

	i) To extract sub string ‘EXAM’ from string ‘PRE-BOARD EXAMINATION’ ii) To remove all leading and trailing spaces from ’ Commerce ‘ iii) To round the number 123.456 to two decimal places. iv) To print cube of 100. v) To find number of characters in “INFORMATICS PRACTICES” **OR** What is the use of following functions in SQL? Also give one example. i) MONTH() ii) SUBSTRING () iii) COUNT() iv) MOD() v) RTRIM()	

===XXX===XXX===XII==IP===XXX===XXX===