TIME-3 hrs   **INFORMATICS PRACTICES(065)**   **M.M.70**

SECTION-A (21 x 1 = 21 marks)

1. State whether the following statement is True or False goldw When a DataFrame is created from a dictionary, keys of the dictionary become row labels.

2. What will be the output of the following SQL command SELECT NOW();

(A)Current system time only   (B) Current system time and date

(C)Current system date and time   (D) Current system date only

Q3. An extension used to add a particular functionality to the browser is called

(A) Cookie   B) Plug-in   (C) Add-on   (D) Bookmark

Q4.Which of the following SQL statements returns the total number of NOT NULL values for the COMM column of the EMP table

(A) SELECT COUNT(COMM) FROM EMP;   (B)SELECT COUNT(*) FROM EMP;

(C)SELECT COUNT(NOT NULL) FROM EMP;   (D) SELECT SUM(COMM) FROM EMP;

Q5.Seema informed her friends that she has given due credit to the creator of the images she has used in her project in order to avoid

(A) Plagiarism (B) Violation of Intellectual Property Rights   (C) Digital Footprint   (D) All of these

Q6.When positional index is used for slicing in a DataFrame

(A) Start index is excluded   (B) Last index is excluded

(C) Both start and last indices are included   (D) Both start and last index are excluded

Q7.Which function of the pyplot module in matplotlib library of 1 Python is used to create a chart/graph

(A) show()   (B) plot()   (C) title()   (D) savefig()

8. What will be the output of the following SQL query? SELECT ROUND(2499.50,0);

(A) 2490   (B) 2499   (C) 2499.5   (D) 2500

9. A Series in Python Pandas can be created from which of the 1 following data type

(A) a list   (B) a tuple   (C) a string   (D)All of these

10. Mahesh shares a photo of his friend Hitesh in a social media friends' group and all the friends starts making mockery about Hitesh by posting derogatory comments. What type of cybercrime did Hitesh fall victim to?   (A) Phishing   (B) Spamming   (C)Cyber Bullying   (D) Hacking

11. Which SQL function is used to find the remainder after dividing A by B

(A) DIV(A,B)   (B) MOD(A,B)   (C) FLOOR(A,B)   (D) CEIL(A,B)

12. Which protocol is used to access data from web sites in a secured way?

(A)HTTP   (B) HTTPS   (C) FTP   (D) Ethernet.

13. While performing mathematical operations on two or more Series in Pandas

(A) index matching is done and all missing values s are replaced with zero

(B) index matching is done and all missing values are filled with NaN

(C) operation is performed only for same indices, others are dropped

(D) error is raised when there are non-matching indices

14. Which of the following is not an Open-Source Software

(A) MYSQL   (B) LIBRE OFFICE   (C) PYTHON IDLE   (D) MS OFFICE

15. Which of the following statements creates a one-dimensional array A with 10 elements in numpy (np is an alias used for numpy)

(A) A= np.arange(10,1,-1)   (B) A= np.arange(1,10)   (C)A = np.arrange(10)   (D)A = np.arange(10,20)

16. Which of the following key in SQL allows to retrieve data from multiple relations simultaneously

(A) Primary Key   (B) Foreign Key   (C) Alternate Key   (D) Candidate Key

17. Which of the following Python statement is used to remove the row with label 'Science' from the DataFrame Result

(A) Result.remove('Science', axis=0)   (B) Result.remove('Science', axis=1)

(C)Result.drop('Science', axis=0)   (D) Result.drop('Science', axis=1)

18. Which of the following function is used to load data from a from a CSV file to a DataFrame

(A) read_csv()   (B) load_csv()   (C) get_csv()   (D) from_csv()

19. A network device that can receive data, analyse it and transmit data through best possible path
(A) Modem   (B) Switch   (C) Router   (D) Gateway

Q.20 and 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 and Reason (R) is not the correct explanation of Assertion (A)

(C) Assertion (A) is True and Reason (R) is False

(D) Assertion (A) is False, but and Reason (R) is True

20. Assertion (A): A DataFrame is a two-dimensional a labelled 1 data structure containing data values in one/more columns with Cdifferent data type.

Reason (R) : DataFrame is homogeneous.

21 Assertion (A): Aggregate functions are often used in association 1 with the GROUP BY clause

Reason (R) : GROUP BY clause is used to group records having same value for specific column

SECTION-B (7 x 2 = 14 marks)

22. (a) What is the need of Pandas and Matplotlib libraries in Python?

OR   (b) Create a series having names of any three famous monuments of India and assign the States as index values.

23. What is Digital Footprint? Can it be fully eliminated, Justify your answer.

24. Write queries using suitable SQL functions to do the following (a) Display "Python" from the text "Python Programming" (b) Display the positions of "Pro" in "Python Programming"

25. (a) Differentiate between LAN & WAN

OR   (b) Differentiate between Star & Tree topologies

26. What do you understand by Degree and Cardinality of a 1+1 relation? A relation has 10 rows and 6 columns. Two more rows were inserted and a column is dropped. What is its degree and cardinality?

27. Increased use of electronic devices has caused exponential 2 increase in e-waste. What is the impact of e-waste to our environment?

28. **(a) Rewrite the correct code after removing syntax errors and 2 underline the corrections made**
import pandas
Names = [Maria, Alice, Shelly]
Marks= [90, 95, 85]
Result = pd.series (Marks, index=Names)
Print(Result)

OR   (b)Complete the Python statements-1 and 2 to generate the following output

	Country	Capital
0	India	New Delhi
1	Nepal	Kathmandu
2	Bhutan	Thimphu

Import _____ #statement-1
StCap=[{'Country': 'India', 'Capital': 'New Delhi'},
     {'Country': 'Nepal', 'Capital': 'Kathmandu'}, {'Country': 'Bhutan', 'Capital': 'Thimphu'}]
DF=_____ #statement-2
 print(DF)

SECTION-C (4 x 3 =12 marks)

29. Digital Technologies play a vital role is making our life easier. 1x3 However, these technologies can be misused. As a responsible netizen,

(a) List any two services that you avail online

(b) State any two ways in which you can protect your personal data online

(c) What social media etiquettes you should follow (any two)?

30. (a) Write a Python Program to create a DataFrame with the 3 following data using dictionary

	State	Area-Sq-Km
0	Assam	78438
1	Meghalaya	22429
2	Tripura	10491

OR

(b) Write a Python Program to create a Pandas Series using ndaray to store the ASCII codes 65, 66, 67, 68 with the corresponding alphabets A, B, C, D as row indices.

A	65
B	66
C	67
D	68

31. (a) Write SQL statement to create a table STREAM with the following specification

Column Name	Data type	Key
StreamID	Char(5)	Primary key
StreamName	Varchar (20)	
Strength	Int	

(b) Write SQL query to display all records of the STREAM table in the decreasing order of Strength

32. [A]Consider the following tables

ACCOUNT

AccNo	Name	Type	Code
2409945621	Priya Singh	Savings	B01
3526743245	Arjun Verma	Current	B02
1234567890	Ravi Tyagi	Savings	B01
4567890123	Richa Sharma	Savings	B03

BRANCH

Code	City
B01	Kanpur
B02	Lucknow
B03	Agra

(I) Which column is most suitable to be used a Primary Key in ACCOUNT table and why?

(II)Write SQL queries to do the following

[i]Display the name of the account holder having Savings account

[ii]Display the name of account holder along with the city in which they have account

OR

(b) [I]Which column in the ACCOUNT table can serve as a foreign key for joining the ACCOUNT and BRANCH tables, why?

[II]Write the output of the following SQL queries

(i) SELECT TYPE, COUNT(*) FROM ACCOUNT GROUP BY TYPE;

(ii) SELECT A.NAME, A.ACCNO, B.CITY FROM ACCOUNT A, BRANCH B WHERE A.CODE = B.CODE AND A.TYPE= 'Current';
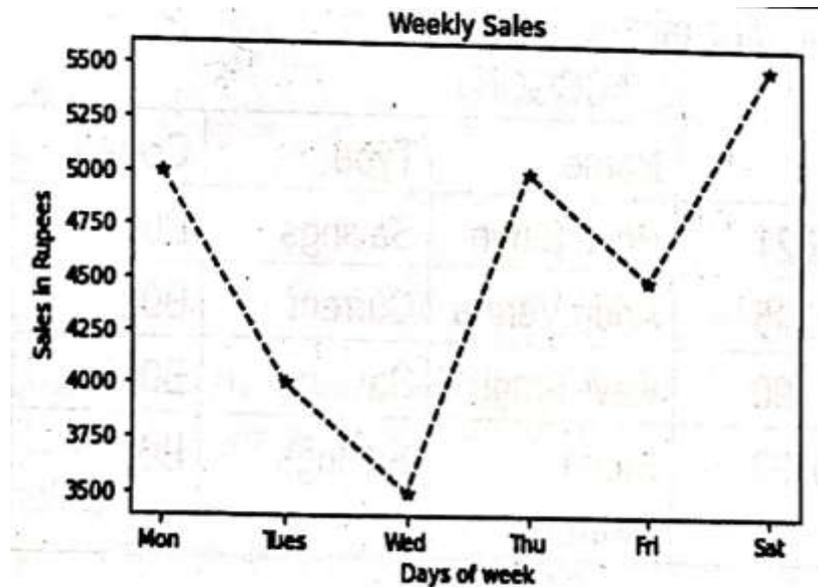
SECTION-D (2 x 4 = 8 marks)

33. Manasi wants to analyse the sales made in a week as per the 4 give data using a chart as shown below.
Sales in Rupees

Days	Mon	Tues	Wed	Thu	Fri	Sat
Sales	5000	4000	3500	5000	4500	5500

Help Manasi to fill in the blanks (statements 1 to 4) with Python statements in the program given below to generate a line plot as shown in the above figure..

```
Import _____ as P
Sales= [5000,4000,3500,5000,4500,5500]
#statement1
Days = ["Mon", "Tues", "Wed", "Thu", "Fri", "Sat"]
P._____(Days, Sales, marker= '*', linestyle= '--') #statement2
P.xlabel("Days of week")
P._____("Sales in Rupees") #statement3
P.title("Weekly Sales")
P._____ #statement4
```


Weekly Sales

34. (a) Himanshu is the Sales Manager of a company who is 4 keeping record of sale made by different salesman in the SALES table with the following attributes

SID- stores a unique ID for each Salesman Name- stores name of the Salesman

City - stores the city where sale is made Amount-stores amount of sale

SALES

SID	Name	City	Amount
S001	Pankaj	Delhi	15000
S002	Ritesh	Lucknow	90000
S005	Ritika	Chennai	54000
S004	Priya	Gurugram	30000

Help Himanshu by writing SQL query to do the following tasks

(i) Add a new record with values ('S003', 'Amrita', 'Hisar', 80000)

(ii) Display the cities starting with the letter 'C'

(iii) Display name of salesman who have made sale more than 50000

(iv) Display the average sale made by all the salesman

OR

(c) Model Public School is keeping teachers' data in a table TEACHER containing the following attributes.

TID stores unique teacher ID TNAME - stores name of teacher

DESIG - designation of teacher DOJ - date of joining the school

TEACHER

TID	TName	DESIG	DOJ
101	ALOK	PGT	2024-12-10
102	GAURAV	TGT	2023-10-15
103	NEERAJ	PGT	2025-06-24
104	NIMISHA	NULL	2024-07-03
105	KIRAN	TGT	2025-01-20

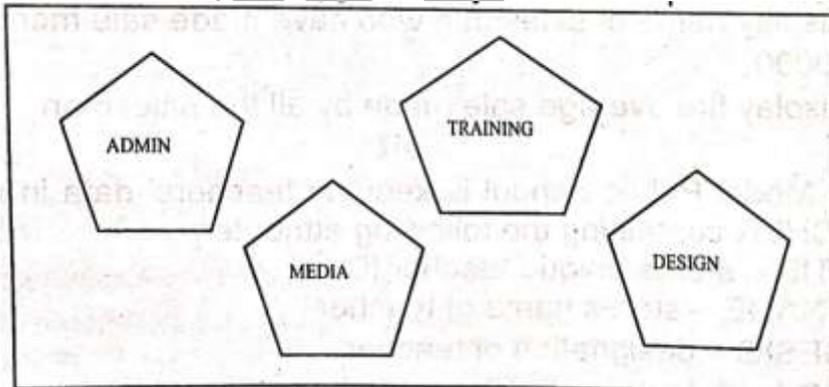Help Computer Operator of the school to find output of the SQL queries

(i) SELECT NAME, YEAR(DOJ) FROM TEACHER WHERE DESIG='TGT'

(ii) SELECT COUNT(*) 'TEACHER STRENGTH' FROM TEACHER

(iii) SELECT LEFT(TNAME, 1), RIGHT(TNAME, 1) FROM TEACHER WHERE YEAR(DOJ)=2023

(iv) SELECT DESIG, COUNT(DESIG) FROM TEACHER GROUP BY DESIG SECTION-E (3 x 5 = 15 marks)

35. Pixel Design and Training Institute in Jodhpur is dealing with AI 5 and ML projects. They have four specialised units Admin, Design, Media and Training. The layout of Jodhpur division is

They want to connect computers in each unit and also to connect all the units for resource sharing. Distances between these units are given below

ADMIN to MEDIA	75m
ADMIN to DESIGN	90m
MEDIA to TRAINING	54m
TRAINING to DESIGN	60m
ADMIN to TRAINING	70m

Number of computers to be installed in these units are

Number of Computers	Unit
ADMIN	05
MEDIA	25
DESIGN	30
TRAINING	100

Based on the above specifications answer the following:

(i)Suggest the topology and draw the cable layout most suitable for connecting all the units

(ii)It has its head office in New Delhi. Which kind of network out of LAN, WAN and MAN will be suitable for connecting Jodhpur division with New Delhi office. Justify your answer.

(iii) Suggest the unit most suitable to place the server. Explain the reason for your selection

(iv) Which device will you suggest to connect computers in each unit

(v) Suggest a protocol that will be needed to communicate with New Delhi office through video conferencing.

36. Consider the DataFrame Departments shown below
Write Python statements for the following

(i) Display the name of Departments with their HOD

(ii) Display the topmost row from Department

(iii) Rename the column ID to DeptID

(iv) Display rows from index 1 to 3

(v) Remove the Courses column

.	ID	Name	HOD	Courses
0	D01	TECH	P. Sharma	10
1	D02	MGMT	A. Meena	8
2	D03	MATH	S. Bora	12
3	D04	COMP	K. Singh	7
4	D05	MED	D. Verma	9

37. (a) Write SQL query for the following

(i) Display the number of characters in the text "GOD IS GREAT!!" and position of 'D'

(ii) Display the month name of current system date and week day of 10th march 2025

(iii) Display the cube of 10 and remainder of 14/5

(iv) Display the total number of records in a relation STUDENT (v) Display" Good Morning" removing all leading and trailing spaces.

OR

(b) Consider the CUSTOMER table give below

CID	Name	Address	Contact	Bill_Amount
C01	AVIRAL	2, T Nagar	9437634213	4045
C02	PRIYA	5, Haripur	9337829765	2563
C03	TANAY	10, Allepy	9437868206	1042
C04	RASHMI	5, T Nagar	9861334243	3675

Write SQL query to do the following

(i) Display customer names in capitals, with number of letters in them

(ii) Display the house number from address of employees

(iii) Display Name and Contact number of customers in ascending order of their names

(iv) Display Bill amount rounded to nearest hundred

(v) Display the total bill amount of all customers