

SECTION A**21X1=21**

1. State whether the following statement is True or False: Slicing can be used to extract a specific portion from a Pandas Series.

2. Which of the following are called wild cards?

- a. % b. * c. _ d. ?

3. _____ is a networking device used to broadcast data packets on a network.

- a. Modem b. Hub c. Router d. Switch

4. Identify the SQL command used to add a new column to an existing table

- a. ALTER b. UPDATE() c. CREATE d. MODIFY

5. Which Python command can be used to select column name "studentname" from a dataframe df.

- a. df.getcolumn('studentname') b. df ('studentname')
c. df ['studentname'] d. df.get('studentname')

6. Which of the following methods can be used to ensure network security?

- a. Strong password with minimum 8 characters of different types.
b. Installing antivirus software on a computer.
c. Deleting data from Recycle Bin.
d. Putting your credit card information online without verifying the authenticity of website.

7. Which of the following function can be used to draw bar graph?

- a. plot() b. bar() c. bard3D() d. hist()

8. Which of the following is not protected through Intellectual Property Rights (IPR)?

- a. Literary works b. Real estate properties c. Web site d. New invention

9. Which of the following statements is used to import data from a CSV file name "data.csv" into a Pandas DataFrame named PD?

- a. PD.open_csv('data.csv') b. PD.read_csv('data.csv')
c. PD.load_csv('data.csv') d. PD.import_csv('data.csv')

10. Assertion (A): We can add a new column in an existing DataFrame.

Reason (R): DataFrames are size mutable

Both A and R are true and R is the correct explanation for A

- a. Both A and R are true but R is not the correct explanation for A
b. A is True but R is False
c. A is false but R is True

11. Assertion (A): INSERT, DELETE, UPDATE, SELECT are DML statements.

Reasoning (R): DML statements are used to create, modify and delete structure of a table.

- a. Both A and R are true and R is the correct explanation for A
b. Both A and R are true but R is not the correct explanation for A
c. A is True but R is False
d. A is false but R is True

12. COUNT(Column_Name) function can be used to:

- a. Count number of records in a table b. Count number of records in a column.
c. Count number of not null values in a column d. Count number of unique values in a column

13. 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

14. Which type of network covers a large geographical area including countries and continents?

- a. PAN b. MAN c. LAN d. WAN

15 In a DataFrame, if the head() function is used without specifying the optional argument indicating the number of rows to display, what is the default number of rows displayed, considering the DataFrame has 20 entries?

- a. 0 b. 1 c. 4 d. 5

16. Match the following SQL functions/clauses with their descriptions:

SQL Function		Description	
P.	MID()	1.	Converts text into lower case.
Q.	INSTR()	2.	Extracts a substring from a string value.
R.	LCASE()	3.	Groups data according to a column values.
S.	GROUP BY	4.	Finds position of a character in a string value.

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

17. Identify the type of cybercrime that involves harassing something using social media and online tools. a. Hacking b. Phishing c. Cyberbullying d. Cyberstalking

18. Predict the output of the following query: SELECT TRUNCATE(5.578, 2);

- a. 5.58 b. 5.57 c. 5.50 d. None of these

19. Identify Open Source software from the following:

- a. Google Chrome b. Linux c. MS-Windows d. Python

20. While creating a Series using a dictionary, the values of the dictionary become:

- a. Values of the Series b. Indices of the Series c. Data type of the Series d. Name of the Series.

21. Using copyrighted material without giving proper acknowledgement to the source.

- a. Copyrighting b. Plagiarism c. Patent d. IPR

SECTION B

7X2=14

22. What is a Data Frame in Python Pandas? Also, give a suitable example to support your answer.

23. What do you mean by copyright? Give example.

24. Consider the string: "CBSEEXAM2024". Write suitable SQL queries for the following:

I. To extract and display "EXAM" from the string.

II. Display the position of the first occurrence of "E" in the given string.

25. What do you mean by web browser? Write names of two browsers.

26. What do you mean by foreign key constraint? What is its purpose?

27. What are two health issues related to excessive use of digital devices?

28. Complete the given Python code to get the required output (ignore the dtype attribute) as Output:

```
Tamil Nadu                      Chennai
Uttar Pradesh                      Lucknow
Manipur                      Imphal
```

Code:

```
import _____ as pd
data = ['Bangalore', 'Amritsar', 'Surat']
indx = ['Karnataka', 'Punjab', 'Gujrat']
s = pd.Series(_____, indx)
print(_____)
```

SECTION C

4X3=12

29. Ramesh's family has decided to throw the old TV in a nearby plot.

I. Explain any one environmental hazard associated with improper e-waste disposal.

II. Suggest one responsible way for proper disposal of their old TV.

III. Describe the importance of recycling in e-waste management.

30. Write a Python program to create the following DataFrame using a list of dictionaries.

	StudentName	Percentage
0	Ayush	87
1	Sunita	65
2	Hamid	54
3	Elena	76

4	Rani	98
---	------	----

31. a) Write SQL statement to create following table with name Examination:

Column Name	Data Type	Key
StudentID	Numeric	Primary Key
StudentName	Varchar(20)	
Stream	Varchar(20)	
Class	Varchar(20)	
Percentage	Float	
DOB	Date	

b) Write SQL statement to insert following record: 1, Aahana, NM , XII, 89.5, 01-Jan-2000

32. Consider the following table:

Table: ATHLETE

AthleteID	Name	COUNTRY
101	Arjun	INDIA
102	Priya	INDIA
103	Asif	UAE
104	Rozy	USA
105	David	DENMARK

Table: MEDALS

AthleteID	Sport	Medals
101	Swimming	8
102	Track	3
103	Gymnastics	5
104	Swimming	2
105	Track	6

Write SQL queries for the following:

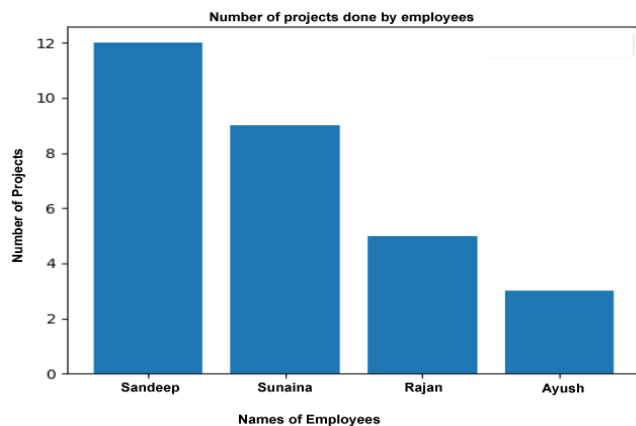
- I. Display the country-wise total number of athletes.
- II. Display the names of all the Sports athletes in small case.
- III. Display the athlete name along with their corresponding medals.

SECTION D

4X2=8

33. During a practical exam, a student Ananya has to fill in the blanks in a Python program that generates a bar chart. This bar chart represents the number of projects done by four employees in one year. Fill the python code as given below

EmployeeName	Numberofprojects
Sandeep	12
Sunaina	9
Rajan	5
Ayush	3



```
import _____ as plt                                #Statement-1
EmployeeName = [Sandeep, 'Sunaina', Rajan', Ayush']
Numberofprojects = [12, 9, 5, 3]
plt.bar(EmployeeName, _____)                       #Statement-2
plt.xlabel('Names of Employees')
plt._____('Number of Projects')                         #Statement-3
plt.title('_____')                                    #Statement-4
plt.show()
```

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

34. Rahul works as a database designer, has developed a database for a hospital. This database includes a table MEDICINE as below:

MID	MED_NAME	SUPP_CITY	STOCK	DEL_DATE
M01	PARACETAMOL	MUMBAI	200	2023-06-15
M02	AMOXICILLIN	KOLKATA	50	2023-03-21
M03	COUGH SYRUP	BENGALURU	120	2023-02-10
M04	INSULIN	CHENNAI	135	2023-01-25
M05	IBUPROFEN	AHMEDABAD	30	2023-04-05

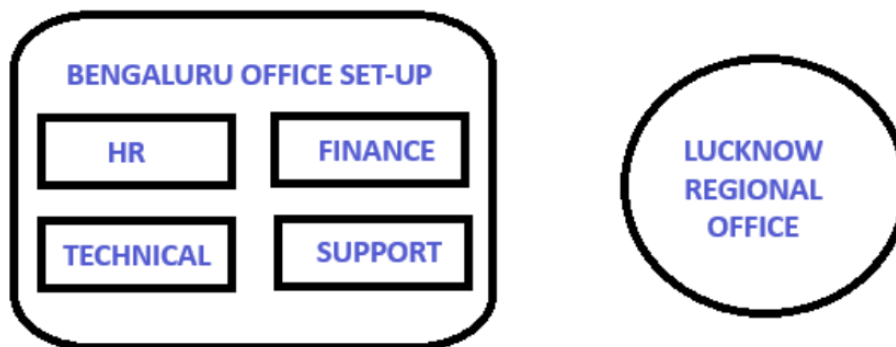
Write the output of the following SQL Queries.

- I. Select LENGTH(MED_NAME) from MEDICINE where STOCK < 100;
- II. Select MED_NAME from MEDICINE where DAY(DEL_DATE) =21;
- III. Select MED_NAME from MEDICINE where STOCK between 50 and 135;
- IV. Select MIN(DEL_DATE) from MEDICINE;

SECTION E

5X3=15

35. ABC Pvt. Ltd., a multinational technology company, is looking to establish its Indian Head Office in Bengaluru, and a regional office branch in Lucknow. The Bengaluru head office will be organized into four departments: HR, FINANCE, TECHNICAL, AND SUPPORT. As a network engineer, you have to propose solutions for various queries listed from I to V.



Distance between various buildings:

HR to FINANCE: 70 meters
 HR to TECHNICAL: 40 meters
 HR to SUPPORT: 75 meters
 FINANCE to TECHNICAL : 25 meters
 FINANCE to SUPPORT: 60 meters
 SUPPORT to TECHNICAL: 40 meters
 BENGALURU TO LUCKNOW: 1150 kms

Each building hosts a varying number of computers:

HR: 55 computers
 FINANCE: 180 computers
 TECHNICAL: 60 computers
 SUPPORT: 15 computers
 LUCKNOW: 70 computers

Based on the above specifications, answer the following questions:

- a. Suggest the cable layout for the above problem. Also suggest the best topology.
- b. Suggest the most suitable place to install the server of this organization.
- c. Which network device should be used to interconnect computers on the network.
- d. The company wants to link its office in Bengaluru to its Office in Lucknow. What type of network of LAN, MAN and WAN will be formed.
- e. The company plans to develop an interactive website that will enable its employees to monitor their performance after login. Would you recommend a static or dynamic website, and why?

36. Given the following datagram df as shown below. Perform the following operations:

	MovieID	Title	Year	Rating
0	1	LAGAAN	2001	8.4
1	2	TAARE ZAMEEN PAR	2007	8.5
2	3	3 IDIOTS	2009	8.4
3	4	DANGAL	2016	8.4
4	5	ANDHADHUN	2018	8.3

- I. Print last two rows of the above diagram.
- II. Display Rating of all the movies.
- III. Remove the column Year.
- IV. Display the data of the 'Title' column from indexes 1 to 3 (both included)
- V. Rename the column name 'MOVIEID' to 'MOVIE_NO'.

37. Write suitable SQL query for the following:

- I. Round the value 4.34557 to two decimal places.
- II. Calculate the remainder when 15 is divided by 4.
- III. Remove '*'s from the value '*****NewDelhi'.
- IV. Display 'Practices' from the word 'Informatics Practices 2024'.
- V. Display details from 'phoneno' column (attribute) along with number of digits in the phone number from the 'Students' table.