QUESTION BANK

CLASS: XII

SUBJECT- INFORMATICS PRACTICES (065)

NOTE: SUGGESTIVE VALUE POINTS ARE PROVIDED WITH EACH QUESTION FOR ANSWER FORMULATION

CHAPTER 1 - DATA HANDLING USING PANDAS

Q No.	1 MARK QUESTIONS	MAIN EXAM/ COMP EXAM	YEAR
1	State whether the following statement is True or False : "Series data structure of Pandas can hold the value of integer data type only." Appropriate option: False	COMP	2025
2	Which of the following functions is used to delete a row from a DataFrame ? (A) drop() (B) delete() (C) remove_row() (D) pop_attribute() Appropriate option: (A) drop()	COMP	2025
3	_____ is the type of indexing that allows us to filter a DataFrame by applying a condition. (Label Indexing / Boolean Indexing) Appropriate answer: Boolean Indexing	COMP	2025
4	Which of the following is the correct full form of CSV ? (A) Common Separated Values (B) Comma Separated Values (C) Colon Separated Values (D) Ctrl Separated Values Appropriate option: (B) Comma Separated Values	COMP	2025

5	NumPy stands for _____ Python. (A) Numerous (B) Neural (C) Numerical (D) Numron Appropriate option: (C) Numerical	COMP	2025
6	To create a Pandas series from an ndarray array1, which of the following statements can be used ? (Note : Assume pd as alias for pandas) (A) pd.array (array1) (B) nd.series (array1) (C) pd.Series (array1) (D) array1.toSeries( ) Appropriate option: (C) pd.Series (array1)	COMP	2025
7	Which method is used to store data from a Pandas DataFrame dF into a CSV file ? (A) dF.store_csv( ) (B) dF.csv_store( ) (C) dF.to_csv( ) (D) dF.set_csv( ) Appropriate option: (C) dF.to_csv( )	COMP	2025
8	How can we add a new column named ‘name’ to a DataFrame dF ? (Note : Assume the values for the column are stored in a list named data) (A) dF.add_column(name,data) (B) dF[name] = data (C) dF.set_column(name,data) (D) dF.add(name,data) Appropriate option: (B) dF[name] = data	COMP	2025

9	State whether the following statement is True or False: In Python, we cannot create an empty DataFrame. Appropriate answer: False	MAIN	2025
10	What is the default index type for a Pandas Series if not explicitly specified ? (A) String (B) List (C) Numeric (D) Boolean Appropriate option: (C) Numeric	MAIN	2025
11	Which of the following data structure is used for storing one-dimensional labelled data in Python Pandas ? (A) Integer (B) Dictionary (C) Series (D) DataFrame Appropriate option: (C) Series	MAIN	2025
12	Which of the following Python statements will be used to select a specific element having index as points, from a Pandas Series named ser ? (A) ser.element(points) (B) ser.select(points) (C) ser[points] (D) ser.show(points) Appropriate option: (C) ser[points]	MAIN	2025
13	Which of the following libraries defines an ndarray in Python ? (A) pandas (B) numpy (C) matplotlib (D) scipy Appropriate option: (B) numpy	MAIN	2025

14	Which of the following Python statements is used to change a column label in a DataFrame, df ? (A) df = df.rename({old_name : new_name}, axis='columns') (B) df = df.rename(old_name, new_name), axis='columns' (C) df = df.change_name(old_name, new_name, axis='bar') (D) df = df.update({old_name : new_name}, axis='bar') Appropriate option: (A) df = df.rename({old_name : new_name}, axis='columns')	MAIN	2025
15	In Python Pandas, DataFrame. _____ [] is used for label indexing with DataFrames. (A) label (B) index (C) labindex (D) loc Appropriate option: (D) loc	MAIN	2025
16	In Pandas library of Python, a one-dimensional array containing a sequence of values of any datatype is known as: (A) DataFrame (B) Histogram (C) Series (D) Panel Appropriate option: (C) Series	COMP	2024

17	What will be the output of the following Python code ?
	
	`import pandas as pd`
	`dd={'Jan':31,'Feb':28,'Mar':31,'Apr':30}`
	`rr=pd.Series(dd)`
	`print(rr)`
	
	(A) Jan 31
	
	Feb 28
	
	Mar 31
	
	Apr 30
	
	dtype: int64
	
	(B) Jan Feb Mar Apr
	
	31 28 31 30
	
	dtype: int64
		COMP	2024

	(C) Jan – 31 Feb – 28 Mar – 31 Apr – 30 dtype: int64 (D) Jan Feb Mar Apr 31 28 31 30 dtype: int64 Appropriate option: (A) Jan 31 Feb 28 Mar 31 Apr 30 dtype: int64		
18	Which of the following command is used to display first three rows of a DataFrame 'DF' ? (A) DF.head() (B) DF.header() (C) DF.head(3) (D) DF.Head(3) Appropriate option: (C) DF.head(3)	COMP	2025
19	Which of the following is NOT true with respect to CSV files ? (i) Values are separated by commas. (ii) to_csv() can be used to save a dataframe to a CSV file. (iii) CSV file is created using a word processor. (iv) CSV file is a type of text file. Appropriate option: All the options are true with respect to CSV files.	MAIN	2024

20	What will be the output of the following Python code ?
	
	`import pandas as pd`
	`dd= { 'One':1, 'Two':2, 'Three':3, 'Seven':7}`
	`rr=pd.Series(dd)`
	`rr['Four']=4`
	`print(rr)`
	
	(i) One 1
	
	Two 2
	
	Three 3
	
	Seven 7
	
	dtype: int64
	
	(ii) One 1
	
	Two 2
	
	Three 3
	
	Four 4
	
	Seven 7
	
	dtype: int64
	
	(iii) Four 4
	
	One 1
	
	Two 2
	
	Three 3
	
	Seven 7
	
	dtype: int64
	
	(iv) One 1
	
	Two 2
	
	Three 3
	
	Seven 7
	
	Four 4
	
	dtype: int64
	
	Appropriate option: (iv) One 1
		MAIN	2024

	Two 2 Three 3 Seven 7 Four 4 dtype: int64 Note: Full 1 mark to be awarded for attempt / any one or more options is/are mentioned		
21	Which of the following command will not show first five rows from the Pandas series named Sl ? (i) Sl[0:5] (ii) Sl.head() (iii) Sl.head(5) (iv) Sl.head[0:5] Appropriate option: (iv) S1.head[0:5]	MAIN	2024
	Q22 - Q25 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		
22	Assertion (A) : Pandas is a high level data manipulation tool used for analyzing data. Reason (R) : It is very easy to import and export data using the Pandas library which has a very rich set of functions. Appropriate option: (A) Both Assertion (A) and Reason (R) are True and Reason (R) is the correct explanation for Assertion (A).	COMP	2025
23	Assertion (A) : The drop() method in Pandas can be used to delete rows and columns from a DataFrame. Reason (R) : The axis parameter in the drop() method specifies whether to delete rows (axis=0) or columns (axis=1). Appropriate option: (A) Both Assertion (A) and Reason (R) are True and Reason (R) is the correct explanation for Assertion (A).	MAIN	2025

<table>
<tr><td>24</td><td>Assertion (A) : The Pandas library in Python is primarily used for creating static, animated and interactive 2D plots or figures.

Reason (R) : Data visualization can be achieved with the help of a variety of charts and plots, including static plots, animations, and interactive visualizations.

Appropriate option: (D) Assertion (A) is false, but Reason (R) is true.</td><td>COMP</td><td>2024</td></tr>
<tr><td>25</td><td>Assertion (A) : A Series is a one dimensional array and a DataFrame is a two-dimensional array containing sequence of values of any data type. (int, float, list, string, etc.)

Reason (R) : Both Series and DataFrames have by default numeric indexes starting from zero.

Appropriate option: (B) Both (A) and (R) are true and (R) is not the correct explanation for (A).</td><td>MAIN</td><td>2024</td></tr>
<tr><td></td><td>2 MARK QUESTIONS</td><td></td><td></td></tr>
<tr><td>1</td><td>What is DataFrame in Pandas ? Explain with the help of an example.

Suggestive value points:

A DataFrame is a two-dimensional labelled data structure in Pandas in which data is organized into rows and columns.
For example student’s data can be organized in a DataFrame as follows
<table>
<tr><td>Name</td><td>Subject</td><td>Marks</td></tr>
<tr><td>Rozy</td><td>IP</td><td>90</td></tr>
<tr><td>Rekha</td><td>HSC</td><td>92</td></tr>
<tr><td>Arav</td><td>IP</td><td>95</td></tr>
</table></td><td>COMP</td><td>2025</td></tr>
<tr><td>2</td><td>Arjun is trying to load data from a CSV file, where values are separated by commas, into a DataFrame using Pandas, but his code has errors.

Identify the mistakes, rewrite the correct code, and underline the corrections made.

<pre>import Pandas as pd
df = pd.load_csv('data.csv',sep="-")
print(data_frame)</pre>
Suggestive value points:

import pandas as pd
df = pd.read_csv('data.csv’,sep=",")
print(df)</td><td>COMP</td><td>2025</td></tr>
</table>

<table>
<tr>
<td>3</td>
<td>Complete the given Python code to get the required output as (ignore the dtype attribute) :

Output :
Dog Mammal
Cat Mammal
Goldfish Fish

Code :
<pre>import ______ as pd
data = ['Mammal','Mammal','Fish']
indx = ['Dog','_____','Goldfish']
s = pd.Series (_____, index=indx)
print(_____)</pre>
Suggestive value points:

import pandas as pd
data = ['Mammal','Mammal','Fish']
indx = ['Dog','Cat','Goldfish']
s = pd.Series (data, index=indx)
print(s)</td>
<td>COMP</td>
<td>2025</td>
</tr>
<tr>
<td>4</td>
<td>Mention any two main points of difference between Series and DataFrame of Python Pandas.

Suggestive value points:

<table>
<tr><th>Series</th><th>DataFrame</th></tr>
<tr><td>Series is one-dimensional</td><td>DataFrame is two-dimensional</td></tr>
<tr><td>Series is used for storing a single column of data.</td><td>DataFrame is used for storing multiple columns of data.</td></tr>
<tr><td>Elements in Series must be homogeneous</td><td>Elements in DataFrame may be heterogeneous.</td></tr>
<tr><td>Elements in Series are accessed using a single index.</td><td>Elements in DataFrame are accessed using two indices.</td></tr>
<tr><td>Size of Series is immutable</td><td>Size of DataFrame is mutable</td></tr>
</table>
</td>
<td>MAIN</td>
<td>2025</td>
</tr>
<tr>
<td>5</td>
<td>Explain how we can access elements of a series using slicing. Give an example to support your answer

Suggestive value points:

Elements of a series can be accessed in any of the following ways using slicing:

Example: Considering data to be a pandas series containing values [10, 20, 30, 40, 50] having index as ['a','b','c','d','e']</td>
<td>MAIN</td>
<td>2025</td>
</tr>
</table>

Positional Indexing/ Integer-based slicing: Slice a Series using indices
Slice the Series from the first to the third element
data[0:3] OR data.iloc[0:3]

Label-based slicing: Slice a Series using its index labels.
data['b':'d'] OR data.loc['b':'d']

Conditional slicing: Slice a Series based on condition.
Slice the Series where values are greater than 30
#for a pandas series named as data
data[data > 30]

6 Rohit is trying to create a Pandas Series from scalar values. His code has some mistakes. Rewrite the correct code and underline the corrections made. — MAIN — 2025

```
import pandas
data = [50, 15, 40]
series = pd.series(data, Index=['x', 'y', 'z'])
Print(series)
```

Suggestive value points:

import pandas as pd
data=[50,15,40] #OR data = <any numeric value>
series=pd.Series(data, index=['x', 'y', 'z'])
print(series)

7 Complete the given Python code to generate the following output : — MAIN — 2025

	COLOUR	NAME	QTY
0	Red	Apple	10
1	Blue	Berry	15
2	Green	Guava	20

```
import _________ as pd
data=[{'COLOUR':'Red', 'NAME':'Apple', 'QTY':10},
{'COLOUR':'Blue','NAME':'Berry', 'QTY':15},
{___________, 'NAME' :'Guava','QTY':20}]
df=pd.DataFrame(__________)
print(____________)
```

Suggestive value points:

import pandas as pd
data= [{'COLOUR':'Red' , 'NAME': 'Apple' , 'QTY' : 10},
{'COLOUR':'Blue' , 'NAME': 'Berry' , 'QTY' : 15},
{'COLOUR':'Green' , 'NAME': 'Guava' , 'QTY' : 20}]
df=pd.DataFrame(data)
print(df)

8 | COMP | 2024

The Python code written below has syntactical errors. Rewrite the correct code and underline the correction(s) made.

```
import Pandas as pd
countries=[{'country';'INDIA','capital':'New Delhi'},
 {'country':'USA','capital':'New York'},
 {'country':'JAPAN','capital':'Tokyo'}
df=pd.DataFrame(country)
print(df)
```

Suggestive value points:

```
import pandas as pd
countries=[{'country':'INDIA','capital':'New Delhi'},
 {'country':'USA','capital':'New York'},
 {'country':'JAPAN','capital':'Tokyo'}]
df=pd.DataFrame(countries)
print(df)
```

9 | COMP | 2024

Find the output of the following Python code :

```
import pandas as pd
vaccine_qty=pd.Series([10,16,1],index=["Typhoid",
 "Tetanus","Hepatitis"])
cost=pd.Series([200,500,800],index=["Typhoid","Tetanus",
 "Flu"])
print(vaccine_qty + cost)
```

Suggestive value points:

```
Flu NaN
Hepatitis NaN
Tetanus 516.0
Typhoid 210.0
dtype: float64
```

10 | COMP | 2024

Consider the following Python code :

```
import pandas as pan
customer =[{'Name':'Alisha','Age':25,'Gender':'Female',
 'Occupation':'Engineer'},
 {'Name':'Rozer','Age':34,'Gender':'Male',______:
'Analyst'},
 {'Name':'Fazal','Age':28,'Gender':'Male',
 'Occupation':'Developer'}]
df= _________.DataFrame(__________)
print(_________)
```

Complete the above given Python code to display the following output :

	Name	Age	Gender	Occupation
0	Alisha	25	Female	Occupation
1	Rozer	34	Male	Engineer
2	Fazal	28	Male	Developer

	Suggestive value points: import pandas as pan customer=[{'Name':'Alisha','Age':25,'Gender':'Female', 'Occupation':'Engineer'}, {'Name':'Rozer','Age':34,'Gender':'Male','Occupation': 'Analyst'}, {'Name':'Fazal','Age':28,'Gender':'Male', 'Occupation':'Developer'}] df= pan.DataFrame(customer) print(df)		

11	The Python code written below has syntactical errors. Rewrite the correct code and underline the correction(s) made.
	
	`import Pandas as pd`
	`stud=['Name':'Ramya','Class':11,'House':'Red']`
	`s=p.Series(s)`
	`print(s)`
	
	Suggestive value points:
	
	import pandas as pd
	stud = {'Name':'Ramya', 'Class':11, 'House':'Red'}
	s = pd.Series(stud)
	print(s)
		MAIN	2024

12	Find the output of the following Python code :
	
	`import pandas as pd`
	`com=pd.Series([45,12,15,200],index=['mouse','printer',`
	`'webcam','keyboard'])`
	`print(com[l:3])`
	
	Suggestive value points:
	
	printer 12
	webcam 15
	dtype: int64
		MAIN	2024

13	Consider the following Python code :
	
	`import pandas as pd`
	`Sl=pd.Series(['Rubina','Jaya','Vaibhav'],index=[10,16,18])`
	`S2=pd.Series( ________, index=[10,16,18])`
	`S3=pd.Series([56,67,86], ________)`
	`xiia={'Name': ________,'Subject':S2,'Marks':S3}`
	`df=pd.DataFrame(________ )`
	`print(df)`
	
	Complete the above Python code to display the following output :
	
	| | Name | Subject | Marks |
	|---|---|---|---|
	| 10 | Rubina | IP | 56 |
		MAIN	2024

		16	Jaya	HSc	67	
		18	Vaibhav	IP	86	

Suggestive value points:

```
import pandas as pd
S1=pd.Series(['Rubina','Jaya','Vaibhav'], index=[10,16,18])
S2=pd.Series(['IP','HSc','IP'], index=[10,16,18])
S3=pd.Series([56,67,86], index=[10,16,18])
xiia={'Name':S1, 'Subject':S2, 'Marks':S3}
df=pd.DataFrame(xiia)
print(df)
```

3 MARK QUESTIONS

1 Write a Python Program to create a DataFrame using a list of dictionaries with the following data : — COMP — 2025

	Student	Marks
0	Aarav	85
1	Aisha	90
2	Vivaan	78
3	Meera	92

Suggestive value points:

```
import pandas as pd
data = [ {'Student':'Aarav','Marks':85}, {'Student':'Aisha','Marks':90},
{'Student':'Visaan','Marks':78}, {'Student':'Meera','Marks':92} ]
df = pd.DataFrame(data)
```

2 Write a Python program to create a Pandas Series from a scalar value. The Series should have indexes as ‘X1’, ‘X2’, ‘X3’, ‘X4’, ‘X5’ with each value in the Series set to 100. — COMP — 2025

Suggestive value points:

```
import pandas as pd
val = 100
indx = ['X1', 'X2', 'X3', 'X4', 'X5']
series = pd.Series(val,index=indx)
```

3 Write a Python program to create the following DataFrame using a — MAIN — 2025

Dictionary of Series :

	City	State

		0	Mumbai	Maharashtra
		1	Dehradun	Uttarakhand
		2	Bengaluru	Karnataka
		3	Hyderabad	Telangana

	Suggestive value points:
	
	import pandas as pd
	d={
	'City':pd.Series(
	['Mumbai','Dehradun','Bengaluru','Hyderabad']),
	'State': pd.Series(
	['Maharashtra','Uttarakhand' , 'Karnataka' , 'Telangana'])
	}
	df=pd.DataFrame(d)
	print(df)
	
	OR
	
	import pandas as pd
	City=pd.Series(['Mumbai','Dehradun','Bengaluru','Hyderabad'])
	State=pd.Series(['Maharashtra','Uttarakhand','Karnataka','Tel
	angana'])
	df=pd.DataFrame({'City':City, 'State':State})
	print(df)			

4	Write a Python program to create a Pandas Series as shown below from an ndarray containing the numbers 10, 20, 30, 40, 50 with corresponding indices 'A', 'B', 'C', 'D', 'E'.			MAIN 2025
		A	10	
		B	20	
		C	30	
		D	40	
		E	50	

	Suggestive value points:
	
	import pandas as pd
	import numpy as np
	data = np.array([10,20,30,40,50]) # np.arange(10,60,10)
	s = pd.Series(data,index=['A', 'B', 'C', 'D', 'E'])
	print(s)
	
	OR
	
	import pandas as pd
	import numpy as np
	L1=np.array([10,20,30,40,50])
	L2=np.array(['A','B','C','D','E'])
	S1=pd.Series(L1,index=L2)
	print(S1)			

5	Sejal, a Python programmer has been given the following tasks : (i) Create two series – one to store various product names and the other to store the corresponding price. Each series should have appropriate row label as given below : should have appropriate row label as given below : (ii) Create a dictionary containing 'Product_name' and 'Product_price' as keys. Add the series created in part (i) as their corresponding values. (iii) Create a DataFrame from the above created dictionary of series. Help her in writing the Python program to accomplish the above mentioned tasks. Suggestive value points: (i) import pandas as pd D1=['Butterscotch','Vanilla','Mango Zap','Magnum','Cassatta'] D2=[130,100,150,190,200] I=['B1001','V3002','M4002','M4007','C6005'] S1=pd.Series(D1,I) S2=pd.Series(D2,I) (ii) D={'Product_name':S1,'Product_price':S2} (iii) DF=pd.DataFrame(D)	COMP	2024
6	Consider the following DataFrame Cricket : Write suitable Python statements to perform the following tasks : (i) Add a new column Rating to the DataFrame having the following values : 3, 1, 2, 4, 5 (ii) Change the row labels from A, B, C, D, E to Team A, Team B, Team C, Team D and Team E.	COMP	2024

	Product_name	Product_price
B1001	Butterscotch	130
V3002	Vanilla	100
M4002	MangoZap	150
M4007	Magnum	190
C6005	Cassatta	200

	Won	Lost	Played
A	9	11	20
B	12	5	17
C	10	6	16
D	7	7	14
E	6	6	12

(iii) Change the column label of first column from 'Won' to 'Matches won'.

Suggestive value points:

(i) Cricket['Rating']=[3,1,2,4,5]

(ii) Cricket.rename(index={"A":"Team A", "B":"Team B",
"C":"Team C", "D":"Team D", "E":"Team E"}, inplace=True)

(iii) Cricket.rename(columns={"Won":"Matches won"}, inplace=True)

7 MAIN 2024

Kabir, a data analyst, has stored the voter's name and age in a dictionary. Now, Kabir wants to create a list of dictionaries to store data of multiple voters. He also wants to create a DataFrame from the same list of dictionaries having appropriate row labels as shown below:

Voter	Name	Voter_Age
Ar1001	Arjun	35
Ba3002	Bala	23
Go4002	Govind	25
Dh4007	Dhruv	19
Na6005	Navya	18

Help Kabir in writing a Python program to complete the task.

Suggestive value points:

```
import pandas as pd
voters=[{"Voter_Name":"Arjun", "Voter_Age":35}, {"Voter_Name":"Bala",
"Voter_Age":23}, {"Voter_Name":"Govind", "Voter_Age":25},
{"Voter_Name":"Dhruv", "Voter_Age":19}, {"Voter_Name":"Navya",
"Voter_Age":18}]
dfVoters=pd.DataFrame(voters,
index=["Ar1001","Ba3002","Go4002","Dh4007","Na6005"])
print(dfVoters)
```

8 MAIN 2024

Consider the given DataFrame 'password':

	CodeName	Category	Frequency
0	aaaaaa	alpha	6.91
1	dragon	animal	18.52
2	baseball	sport	1.29
3	football	sport	11.11
4	monkey	animal	3.72
5	qwerty	alpha	1.85
6	abcde	alpha	3.19

Write suitable Python statements for the following :

i. To add a new row with following values :
CodeName - 'abc123'
Category - alphanumeric
Frequency - 12.8

ii. To delete the row with the row label 2.

iii. To delete the column having column label as Frequency.

Suggestive value points:

(i) password.loc[7]=['abc123','alphanumeric',12.8]
OR
password.at[7]=['abc123','alphanumeric',12.8]
OR
password.loc[len(password)] = ['abc123','alphanumeric',12.8]
OR
password.at[len(password)] = ['abc123','alphanumeric',12.8]
OR
password.loc[len(password.index)] =
['abc123','alphanumeric',12.8]
OR
password.at[len(password.index)] =
['abc123','alphanumeric',12.8]
OR
password.loc[7,:]=['abc123','alphanumeric',12.8]
OR
password.at[7,:]=['abc123','alphanumeric',12.8]
OR
password=password.append({"CodeName":"abc123","Category":"alpha
numeric","Frequency":12.8}, ignore_index=True)
OR
df1=pd.DataFrame({"CodeName":["abc123"],"Category":["alphanumer
ic"],"Frequency":[12.8]})
OR
password=pd.concat([password,df1], ignore_index=True)

(ii) password.drop(2, inplace=True)
OR
password.drop(2, inplace=True, axis=0)
OR
password.drop(labels=2, inplace=True)
OR
password.drop(labels=2, axis=0, inplace=True)
OR
password.drop([2], inplace=True)
OR
password.drop([2], axis=0, inplace=True)
OR
password=password.drop([2])
OR
password=password.drop([2], axis=0)
OR
password.drop([password.index[2]], inplace=True)
OR
password.drop(password.index[2:3], inplace=True)

(iii) password.drop("Frequency", axis=1, inplace=True)
OR

	password.drop(columns=['Frequency'], inplace=True) OR password.drop(password.columns[2], axis=1, inplace=True) OR password.drop(password.iloc[:, 2:], inplace=True, axis=1) OR password.drop(password.loc[:, "Frequency":].columns, inplace=True, axis=1)		
	4 MARK QUESTIONS		
1	Ms. Shambhavi, a data analyst working on a college admission project, has created the following DataFrame Sub_Details to store subjectwise details : (i) Write suitable Python command to display the row having index value 3. (ii) Predict the output of the following Python statement : print(Sub_Details.loc[2:3,'Total Students']) (iii) A) Write suitable Python statement to display the list of various subjects along with their corresponding seat availability. OR [option for part (iii) only] B) Ms. Shambhavi has just created a folder named Project in the E: drive of her computer to store necessary files related to the project. Write suitable Python statement to export the given DataFrame into the file stud.csv, created inside project folder in E: drive. Suggestive value points: print(Sub_Details[2:3]) OR print(Sub_Details.loc[3]) 2 45 3 40 Name: Total Students, dtype: int64 A) print(Sub_Details[['Subject','Seat Availability']]) OR B) Sub_Details.to_csv("E:\project\stud.csv") OR	COMP	2024

	Subject	Total Students	SeatAvailability
1	English	50	No
2	IT	45	Yes
3	AI	40	Yes
4	CS	50	No
5	CA	47	Yes

	Sub_Details.to_csv("E:/project/stud.csv") OR Sub_Details.to_csv("E:\\project\\stud.csv") OR Sub_Details.to_csv(r"E:\project\stud.csv")		
2	Ms. Ritika conducted an online assessment and stored the details in a DataFrame result as given below : (i) Predict the output of the following Python statement: print(result.loc [:,'Attempts'] > 1) (ii) Write the Python statement to display the last three records. (iii) Write Python statement to display records of 'a ' and 'd' row labels OR (Option for Part (iii) only) Write suitable Python statement to retrieve the data stored in the file, 'registration.csv' into a DataFrame, 'regis'. Suggestive value points: (i) a False b True c True d False Name: Attempts, dtype: bool (ii) print(result.tail(3)) OR print(result.iloc[1:]) OR print(result.iloc[1:4]) OR print(result.iloc[[1,2,3],:]) OR print(result.loc[["b","c","d"]]) (iii) print(result.loc[["a","d"]]) OR print(result.iloc[[0,3],:])	MAIN	2024

	Name	Score	Attempts	Qualify
a	Atulya	12.5	1	yes
b	Disha	9.0	3	no
C	Kavita	16.5	2	yes
d	John	15.0	1	no

OR (Option for Part (iii) only)

(iii) regis=pd.read_csv("registration.csv")

5 MARK QUESTIONS

COMP 2025

1 Consider the DataFrame dF shown below :

	PRODUCTID	PRODUCTNAME	CATEGORY	PRICE
0	P001	Laptop	Electronics	60000
1	P002	Mobile Phone	Electronics	30000
2	P003	Washing Machine	Home	25000
3	P004	Refrigerator	Home	40000
4	P005	TV	Electronics	45000

Write Python statement for the DataFrame dF to :

i. Print the first row of the DataFrame dF.

ii. Display the 'ProductName' column for all products.

iii. Add a new row with following values : [5,P006, AC, HOME, 80000]

iv. Remove the column 'Category'.

v. Rename the column 'ProductName' to 'Item'.

Suggestive value points:

```
print(dF.head(1))
```

OR

```
print(dF.iloc(0))
```

OR

```
print(dF.loc(0))
print(dF.ProductName)
```

OR

```
print(dF['PRODUCTNAME'])
dF.loc[5]=[5,'PO06', 'AC', 'HOME', 80000]
dF.drop('CATEGORY', axis=1, inplace=True)
```

OR

```
del dF['CATEGORY']
dF.rename(columns={'ProductName':'Item'},inplace=True)
```

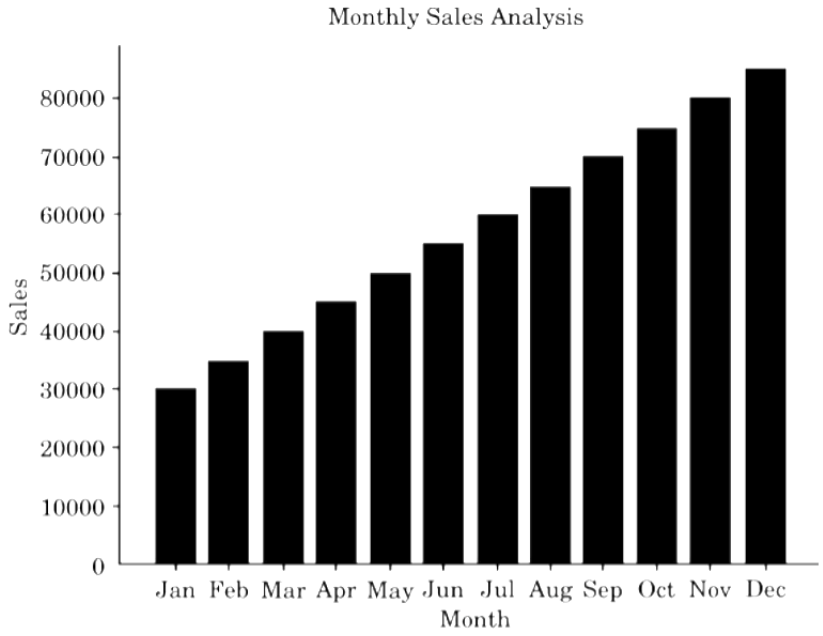
2	Consider the DataFrame Doctor shown below: **DID NAME DEPARTMENT FEE** 0 101 Dr. Joe ENT 1500 1 102 Dr. Salma UROLOGY 1600 2 103 Dr. Jeet ORTHO 1550 3 104 Dr. Neha ENT 1200 4 105 Dr. Vikram ORTHO 1700 Write suitable Python statements for the following: i. To print the last three rows of the DataFrame Doctor. ii. To display the names of all doctors. iii. To add a new column 'Discount' with value of 200 for all doctors. iv. To display rows with index 2 and 3. v. To delete the column 'Department'. Suggestive value points: print(doctor.tail(3)) OR print(doctor.iloc[-3:]) print(doctor['Name']) OR print(doctor.iloc[:,[1]]) OR print(doctor.loc[:,['Name']]) doctor['Discount']=200 OR doctor.loc[:, "Discount"] = 200 print(doctor.loc[[2,3]]) OR print(doctor.iloc[[2,3]]) OR print(doctor[2:4]) doctor.drop(['Department'],axis=1, inplace=True) OR doctor = doctor.drop(['Department'],axis=1)	MAIN	2025

CHAPTER 2 - DATA VISUALIZATION

Q No.	1 MARK QUESTIONS	MAIN EXAM/ COMP EXAM	YEAR
1	In Python which function of matplotlib library is used to save a plot ? (A) save() (B) saveplot() (C) export() (D) savefig() Appropriate option: (D) savefig()	MAIN	2025
	2 MARK QUESTIONS		
1	What is data visualization ? Also mention its any one main purpose. Suggestive value points: Data Visualization is the graphical representation of data and information using charts, graphs, maps, and other visual formats. The purpose of data visualization is to help people understand and interpret data easily by presenting it in a visual form.	COMP	2025
	3 MARK QUESTIONS		
	-NIL-		
	4 MARK QUESTIONS		
1	You are a data analyst at a retail company. The company wants to analyse its monthly sales data for the year 2024 to identify trends and make informed business decisions. The sales data has the following structure :	COMP	2025

Month	Sales
Jan	30000
Feb	35000
Mar	40000
Apr	45000
May	50000
Jun	55000
Jul	60000
Aug	65000
Sep	70000
Oct	75000
Nov	80000
Dec	85000

Complete the Python code to generate the following bar chart :




```
import ______ as plt # Statement-1
import pandas as pd
months = ['Jan','Feb','Mar','Apr','May','Jun',
'Jul','Aug','Sep','Oct','Nov','Dec']
sales=[30000,35000,40000,45000,50000,55000, 60000, 65000,
70000,75000,80000,85000]
plt.bar(_____________) # Statement-2
plt.title("_____________") # Statement-3
plt.xlabel("Month")
plt.ylabel("_____________") # Statement-4
plt.show()
```

i. Write the Python code to import the required library, marked as Statement-1.

ii. Write the Python code to draw the bar graph marked as Statement-2.

iii. Write the Python code to add title to the graph marked as Statement-3

iv. Write Python code to add appropriate ylabel to the graph marked as Statement-4

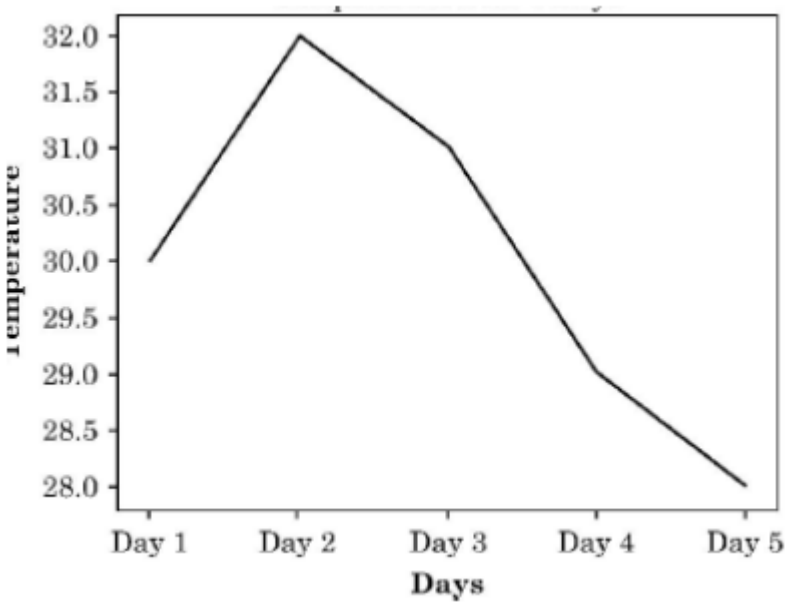
Suggestive value points:

```
import matplotlib.pyplot as plt # Statement-1
import pandas as pd
months = ['Jan','Feb','Mar','Apr','May','Jun',
'Jul','Aug','Sep','Oct','Nov','Dec']
sales=[30000,35000,40000,45000,50000,55000,60000, 65000,
70000,75000,80000,85000]
plt.bar(months,sales) # Statement-2
plt.title("Monthly Sales Analysis") # Statement-3
plt.xlabel("Month")
plt.ylabel("Sales") # Statement-4
plt.show()
```

2 Gurkirat has to fill in the blanks in the given Python program that generates a line plot as shown below. The given line plot represents the temperature (in degree Celsius) over five days as given in the table :

MAIN 2025

Days	Temperature
Day	30
Day	32
Day	31
Day	29
Day	28




```
import ______ as plt # Statement-1
days = ['Day 1', 'Day 2', 'Day 3', 'Day 4', 'Day 5']
temp = [30, 32, 31, 29, 28]
plt.__(days, temp) # Statement-2
plt.xlabel('______') # Statement-3
plt.ylabel('Temperature')
plt.title('_____') # Statement-4
plt.show()
```

Write the missing statements according to the given specifications :

i. Write the suitable code to import the required module in the blank space in the line marked as Statement-1.

ii. Fill in the blank in Statement-2 with a suitable Python function name to create a line plot

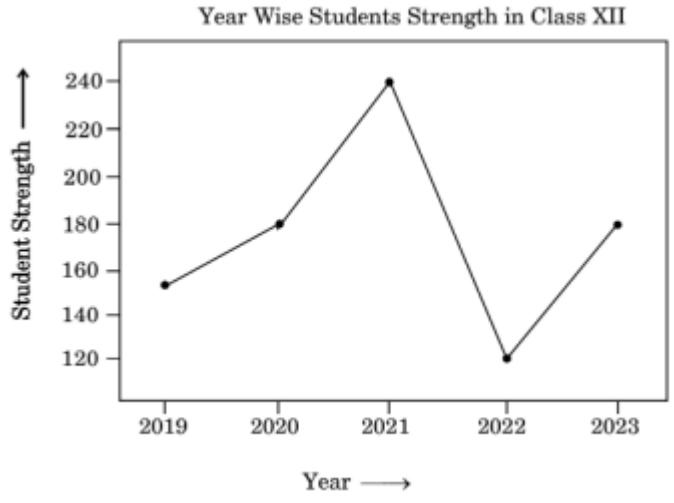
iii. Refer to the graph shown and fill in the blank in Statement-3 to display the appropriate label for x-axis

iv. Refer to the graph shown and fill in the blank in Statement-4 to display the suitable chart title.

Suggestive value points:

i. import matplotlib.pyplot as plt #Statement 1
ii. plt.plot(days,temp) #Statement 2
iii. plt.xlabel('Days') #Statement 3
iv. plt.title('Temperature over 5 days') #Statement 4

5 MARK QUESTIONS

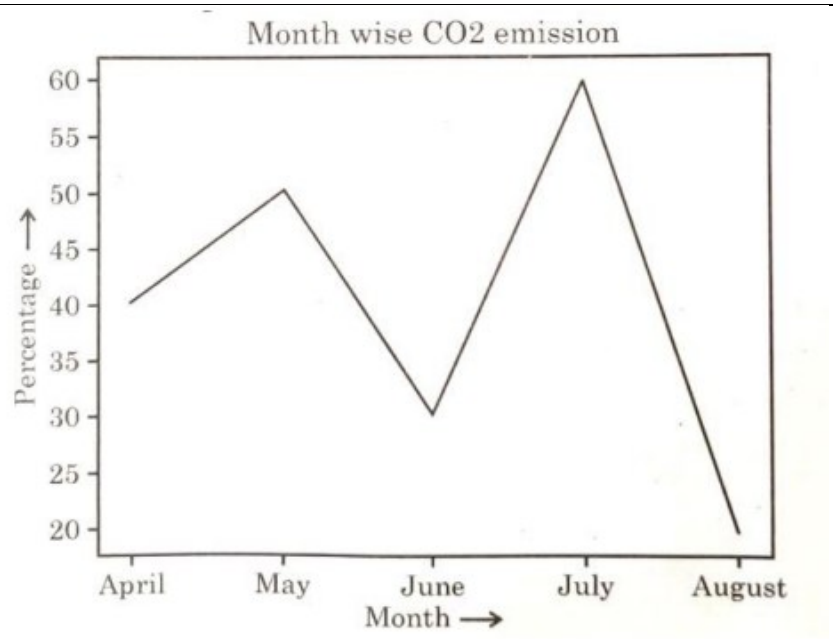
1	Akriti keeps the calorie count of different food items as follows : Food=['Apple','Banana','Rice','Wheat','Carrot'] Calorie=[72,105,204,455,52] Write a Python code to generate a Bar Chart on the given data, having suitable Chart Title and labels for X and Y axis. Also add suitable statement to save this chart with the name calorie.png. Suggestive value points: import matplotlib.pyplot as plt Food=['Apple','Banana','Rice','Wheat','Carrot'] Calorie=[72,105,204,455,52] plt.bar(Food, Calorie) plt.title("Calorie count of different food items") plt.xlabel("Food") plt.ylabel("Calorie") plt.savefig("calorie.png") plt.show()	COMP	2024
2	Consider the following data : Write a Python code to draw the following line chart having title and labels for x and y axis as shown below :  Also give suitable Python statement to save this chart with name,	COMP	2024

Year	Student Strength
2019	150
2020	180
2021	240
2022	120
2023	180

	stud.png Suggestive value points: import matplotlib.pyplot as plt Year=['2019', '2020', '2021', '2022', '2023'] Strength=[150, 180, 240, 120, 180] plt.plot(Year, Strength) plt.title("Year Wise Students Strength in Class XII") plt.xlabel("Year") plt.ylabel("Student Strength") plt.savefig("stud.png") plt.show()		

3	The inventory management software of a grocery shop stores the price of all fruits as follows:
	
	Fruits=['Apple','Guava','Papaya','Grapes','Mango']
	
	Price=[l50,70,50,30,120]
	
	Write suitable Python code to generate a Bar Chart on the given data. Also add the chart title and label for X and Y axis. Also add suitable statement to save this chart with the name fruits.png.
	
	Suggestive value points:
	
	import matplotlib.pyplot as plt #Statement 1
	Fruits=['Apple','Guava','Papaya','Grapes','Mango'] #Statement 2
	Price=[150,70,50,30,120] #Statement 3
	plt.bar(Fruits,Price) #Statement 4
	plt.title("Fruits Prices") #Statement 5
	plt.xlabel("Fruits") #Statement 6
	plt.ylabel("Price") #Statement 7
	plt.savefig("fruits.png") #Statement 8
	plt.show() #Statement 9
		MAIN	2024

4	Write suitable Python code to draw the following line chart "CO2 Emission" having title and label for X and Y axis as shown below	MAIN	2024

	
	Also give suitable Python statement to save this chart with the name, emission.png.
	
	Suggestive value points:
	
	import matplotlib.pyplot as plt #Statement 1
	month=["April", "May", "June", "July", "August"] #Statement 2
	percent=[40,50,30,60,20] #Statement 3
	plt.plot(month, percent) #Statement 4
	plt.title("Month wise CO2 emission") #Statement 5
	plt.xlabel("Month") #Statement 6
	plt.ylabel("Percentage") #Statement 7
	plt.savefig("emission.png") #Statement 8
	plt.show() #Statement 9		

CHAPTER: 3 - DATABASE QUERY USING SQL

Q No.	1 MARK QUESTIONS	MAIN EXAM/ COMP EXAM	YEAR
1	What will be the output of the following SQL command: `SELECT MOD(20,6);` (A) –2 (B) –4 (C) 2 (D) 4 Appropriate option: (C) 2	COMP	2025

2	State True and False : Equi-Join in SQL combines and displays data from two or more relations based on matching values in common attribute. Appropriate answer: True	COMP	2025
3	What will be the output of the following SQL query ? `SELECT MID ('INCREDIBLE INDIA',6,3);` (A) EDI (B) RED (C) DIB (D) CREDIB Appropriate option: (C) DIB	COMP	2025
4	What does the following SQL query do ? `SELECT name, COUNT(*) FROM students GROUP BY name HAVING COUNT(*)>1;` (A) Selects students with unique name. (B) Selects students who have the same name and counts them. (C) Displays the names and the number of occurrences for those names that appear more than once in the table. (D) Orders students by name and counts them Appropriate option: (C) Displays the names and the number of occurrences for those names that appear more than once in the table.	COMP	2025
5	The ALTER command in SQL can be used to : (A) Alter data within a table (B) Delete data from a table (C) Modify the structure of a table (D) Create a new table Appropriate option: (C) Modify the structure of a table	COMP	2025
6	What will be the output of the following SQL command? `SELECT MONTHNAME('2024-08-02');`	MAIN	2025

<table>
<tr><td></td><td>(A) 08 (B) 02
(C) February (D) August
Appropriate option: (D) August</td><td></td><td></td></tr>
<tr><td>7</td><td>Which of the following is not an aggregate function in SQL?
(A) COUNT(*) (B) MIN()
(C) LEFT() (D) AVG()
Appropriate option: (C) LEFT()</td><td>MAIN</td><td>2025</td></tr>
<tr><td>8</td><td>State whether the following statement is True or False : The MOD() function in SQL returns the quotient of division operation between two numbers.
Appropriate answer: False</td><td>MAIN</td><td>2025</td></tr>
<tr><td>9</td><td>Which SQL function calculates a^b ?
(A) MOD() (B) POWER()
(C) RAISE() (D) ROUND()
Appropriate option: (B) POWER()</td><td>MAIN</td><td>2025</td></tr>
<tr><td>10</td><td>With respect to SQL, match the function given in column-II with categories given in column-I:
<table><tr><th></th><th>I</th><th></th><th>II</th></tr><tr><td>(i)</td><td>Math function</td><td>(a)</td><td>COUNT()</td></tr><tr><td>(ii)</td><td>Aggregate function</td><td>(b)</td><td>ROUND()</td></tr><tr><td>(iii)</td><td>Date function</td><td>(c)</td><td>RIGHT()</td></tr><tr><td>(iv)</td><td>Text function</td><td>(d)</td><td>YEAR()</td></tr></table>Options :
(A)(i)-(c), (ii)-(d), (iii)-(a), (iv)-(b)
(B) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)
(C)(i)-(d), (ii)-(b), (iii)-(a), (iv)-(c)
(D)(i)-(b), (ii)-(c), (iii)-(d), (iv)-(a)
Appropriate option: (B) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)</td><td>MAIN</td><td>2025</td></tr>
<tr><td>11</td><td>What will be the output of the following query?</td><td>COMP</td><td>2024</td></tr>
</table>

	`SELECT MOD (5, 15);` (A) 10 (B) 3 (C) 0 (D) 5 Appropriate option: (D) 5		
12	Which of the following aggregate function returns the average of values in a specified column of a MySQL table ? (A) AVG(Column) (B) AVERAGE(Column) (C) MEAN(Column) (D) TOTAL(Column) Appropriate option: (A) AVG(Column)	COMP	2024
13	Now() in MySQL returns _____. (A) Today's date (B) Today's date and current time (C) System's date and time (D) Name of active database Appropriate option: (C) System's date and time	COMP	2024
14	What will be the output of the following query ? `SELECT SUBSTR("Swachh Survekshan",2,4)` (A) wac (B) wach (C) shan (D) achh Appropriate option: (B) wach	COMP	2024
15	With respect to databases, a row in a relation is also known as a/an _____. (A) Attribute (B) Tuple (C) Field (D) Domain Appropriate option: (B) Tuple	COMP	2024
16	What is the output of the following SQL Query ? `SELECT INSTR("KNOWLEDGE","E");` (A) 7 (B) 5 (C) 6 (D) – 6 Appropriate option: (C) 6	COMP	2024
17	What will be the output of the following query ? `SELECT POWER(2,MOD(17,3));` (i) 8 (ii) 1	MAIN	2024

	(iii) 0 (iv) 4 Appropriate option: (iv) 4		
18	Which of the following is not an aggregate function in MYSQL ? (i) AVG() (ii) MAX() (iii) LCASE() (iv) MIN() Appropriate option: (iii) LCASE()	MAIN	2024
19	Which MySQL command helps to add a primary key constraint to any table that has already been created ? (i) UPDATE (ii) INSERT INTO (iii) ALTER TABLE (iv) ORDER BY Appropriate option: (iii) ALTER TABLE	MAIN	2024
20	What will be the output of the following query ? `SELECT SUBSTR("G20 2023 INDIA", 5, 4);` (i) G20 2 (ii) 2023 (iii) INDI (iv) 023 Appropriate option: (ii) 2023	MAIN	2024
21	Which of the following clause cannot work with SELECT statement in MYSQL ? (i) FROM (ii) INSERT INTO (iii) WHERE (iv) GROUP BY Appropriate option: (ii) INSERT INTO	MAIN	2024
22	Which MySQL string function is used to extract a substring from a given string based on a specified starting position and length ? (i) SUBSTRING_INDEX() (ii) LENGTH() (iii) MID() (iv) TRIM() Appropriate option: (iii) MID()	MAIN	2024
	Q23 and Q24 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		
23	Assertion (A) : There can be multiple primary keys in a relation. Reason (R) : There can be multiple candidate keys in a relation but only one of these is chosen as primary key. Appropriate option: (D) Assertion (A) is False, but Reason (R) is True.	COMP	2025
24	Assertion (A) : The ROUND() function in SQL can be used to round off a number to a specified number of decimal places. Reason (R) : The ROUND() function is a string function that accepts character values as input and returns numerical values as output. Appropriate option: (C) Assertion (A) is TRUE and Reason (R) is FALSE	MAIN	2025
	2 MARK QUESTIONS		
1	Write SQL Queries to perform the following task : (i) Extract the leftmost 5 characters after removing the leading and trailing spaces from "DESIGN THINKING" (ii) Display the day name of the week when the National Space Day was celebrated first i.e., '23-08-2023'. Suggestive value points: (i) SELECT LEFT(TRIM("DESIGN THINKING"), 5); (ii) SELECT DAYNAME('2023-08-23');	COMP	2025
2	What are aggregate functions in SQL ? Name any two aggregate functions. Suggestive value points: Aggregate functions perform operations on a set of values and return a single value. Example : SUM( ), AVG( ) , MAX(), MIN(), COUNT()	COMP	2025
3	Consider the string, "Informatics Practices". Write suitable SQL queries for the following : (i) To convert the entire string to uppercase.	MAIN	2025

	(ii) To display the total number of characters in the given string.
	
	Suggestive value points:
	
	i.SELECT UCASE("Informatics Practices");
	OR
	SELECT UPPER("Informatics Practices");
	
	ii.SELECT LEN("Informatics Practices");
	OR
	SELECT LENGTH("Informatics Practices");		

4	What is a Database Management System (DBMS) ? Mention any two examples of DBMS. Suggestive value points: A Database Management System(DBMS) is software that lets us store, organize, manage, and retrieve data efficiently. Examples: MySQL, PostgreSQL, Microsoft Access, Oracle, Microsoft SQL Server, DB2 and Sybase	MAIN	2025
5	Consider the string 'PAINTING'. Write the SQL commands to display the following output : (i) ING (ii) INT Suggestive value points: (i) SELECT RIGHT('PAINTING',3); OR SELECT SUBSTR('PAINTING',6,3); OR SELECT SUBSTRING('PAINTING',6,3); OR SELECT MID('PAINTING',6,3); (ii) SELECT SUBSTR('PAINTING',3,3); OR SELECT SUBSTRING('PAINTING',3,3); OR SELECT MID('PAINTING',3,3);	COMP	2024
6	Write any two differences between DELETE and DROP TABLE command of MySQL. Suggestive value points:	COMP	2024

	<table><tr><th>DELETE</th><th>DROP TABLE</th></tr><tr><td>It removes some or all rows from a table.</td><td>It removes the complete table.</td></tr><tr><td>It doesn't remove the table structure.</td><td>It removes the table structure.</td></tr><tr><td>It is a DML command.</td><td>It is a DDL command.</td></tr><tr><td>It can be used with 'WHERE' clause</td><td>It cannot be used with 'WHERE' clause</td></tr></table>		
7	What will be the output of the following SQL queries : (i) `SELECT RIGHT("CHANDRAYAN3",4);` (ii) `SELECT ROUND(76345.456,2);` Suggestive value points: (i) YAN3 (ii) 76345.46	MAIN	2024
8	Write any two differences between UPDATE and ALTER TABLE commands of MySQL. Suggestive value points: UPDATE ● UPDATE command is used to modify value(s) stored in row(s) in a relation. ● It is a DML (Data Manipulation Language) command / UPDATE command performs action on data in a table. ● Example UPDATE Student SET Marks=30 WHERE RollNo = 1; ALTER TABLE ● ALTER TABLE command is used to add, delete, modify, rename attribute(s) in a relation ● It is a DDL(Data Definition Language) command / ALTER TABLE command performs action on the structure of the table. ● Example ALTER TABLE Student ADD Email varchar(255);	MAIN	2024
	3 MARK QUESTIONS		
1	Write the SQL statement to create a table Customer with the following specifications :	COMP	2025

Table : Customer

Column Name	Data Type	Key
CID	Numeric	Primary Key
Name	Varchar(50)	
Dob	Date	
Phone	Varchar(15)	

Write the SQL query to display the total number of records in the table Customer.

Suggestive value points:

CREATE TABLE Customer (CID Numeric PRIMARY KEY, Name Varchar(50), Dob Date, Phone Varchar(15));

SELECT COUNT(*) FROM Customer;

2 Given the following tables : COMP 2025

Table : EMPLOYEES

EMP_ID	EMP_NAME	DEPARTMENT	JOIN_DATE
1	Ramesh	HR	2022-01-10
2	Sita	Finance	2021-03-15
3	Manoj	IT	2022-07-20
4	Priya	HR	2021-11-30
5	Kumar	IT	2022-05-10

Table : PROJECTS

PROJECT_ID	EMP_ID	PROJECT_NAME	HOURS
1	1	Recruitment	120
2	2	Budgeting	150
3	3	Development	180
4	1	Budgeting	100
5	5	Recruitment	200

For each department, show the department names and the total count of employees working there.

Display the total hours worked on the project named ‘Budgeting’.

Display employee names along with the names of the projects they are working on.

Suggestive value points:

i. SELECT DEPARTMENT, COUNT (*) FROM EMPLOYEES GROUP BY DEPARTMENT;

ii. SELECT SUM(HOURS)FROM PROJECTS WHERE PROJECT_NAME='Budgeting';

iii. SELECT EMP_NAME, PROJECT_NAME FROM EMPLOYEES, PROJECTS

WHERE EMPLOYEES.EMP_ID=PROJECTS.EMP_ID;

OR

SELECT EMP_NAME, PROJECT_NAME FROM EMPLOYEES JOIN PROJECTS ON EMPLOYEES.EMP_ID=PROJECTS.EMP_ID;

OR

SELECT EMP_NAME, PROJECT_NAME FROM EMPLOYEES JOIN PROJECTS WHERE EMPLOYEES.EMP_ID=PROJECTS.EMP_ID;

OR

SELECT EMP_NAME, PROJECT_NAME FROM EMPLOYEES INNER JOIN PROJECTS ON EMPLOYEES.EMP_ID=PROJECTS.EMP_ID;

3 Consider the following tables : COMP 2025

Table 1 : STUDENTS This table stores the details of students in a school.

StudentID	StudentName	Class
101	Ananya	10th
102	Rohan	12th
103	Simran	11th
104	Vikram	10th
105	Priya	12th

Table 2 : EXAMS This table records the marks obtained by students in their exams.

ExamID	StudentID	Subject	Marks
201	101	Mathematics	90
202	102	Physics	85
203	103	Chemistry	88
204	104	Biology	92
205	105	Mathematics	80

Write appropriate SQL queries for the following :

i. Calculate the average marks obtained by students in Mathematics

ii. For each class, show the class and the total count of students studying there.

iii. Display the student names and their corresponding subjects.

Suggestive value points:

i.SELECT AVG(Marks) FROM EXAMS WHERE Subject='Mathematics';

ii.SELECT Class, COUNT(*) FROM STUDENTS GROUP BY Class;

iii.SELECT StudentName, Subject FROM STUDENTS,EXAMS WHERE STUDENTS.StudentID = EXAMS.StudentID;

OR

SELECT StudentName, Subject FROM STUDENTS JOIN EXAMS WHERE STUDENTS.StudentID = EXAMS.StudentID;

OR

SELECT StudentName, Subject FROM STUDENTS JOIN EXAMS ON STUDENTS.StudentID = EXAMS.StudentID;

OR

SELECT StudentName, Subject FROM STUDENTS INNER JOIN EXAMS ON STUDENTS.StudentID = EXAMS.StudentID;

4 | MAIN | 2025

i. Write the SQL statement to create a table, Customer with the following specifications :

Table:Customer

Column Name	Data Type	Key
CID	Int	Primary Key
FName	Varchar(20)	
LName	Varchar(20)	
Age	Int	

ii. Write the SQL query to display all records in descending order of LName from the Table Customer.

Suggestive value points:

i.CREATE TABLE Customer (
CID INT PRIMARY KEY,
FName VARCHAR(20),
LName VARCHAR(20),
Age INT);

OR

CREATE TABLE Customer (
CID INT ,
FName VARCHAR(20),
LName VARCHAR(20),
Age INT ,
PRIMARY KEY (CID)

);

OR

CREATE TABLE Customer (
CID INT ,
FName VARCHAR(20),
LName VARCHAR(20),
Age INT ,
CONSTRAINT PK_CID PRIMARY KEY (CID)
);

ii.SELECT * FROM Customer ORDER BY LName DESC;

5 Given the following tables: MAIN 2025

Table: STUDENTS

S_ID	NAME	AGE	CITY
1	Rahul	20	Delhi
2	Priya	22	Mumbai
3	David	21	Delhi
4	Neha	23	Bengaluru
5	Khurshid	22	Delhi

Table: GRADES

S_ID	SUBJECT	GRADE
1	Math	A
2	English	B
3	Math	C
4	English	A
5	Math	B

Write SQL queries for the following:

(i) To display the number of students from each city.

(ii) To find the average age of all students.

(iii) To list the names of students and their grades.

Suggestive value points:

i.SELECT CITY, COUNT(*) FROM STUDENTS GROUP BY CITY;
ii.SELECT AVG(AGE) FROM STUDENTS;
iii.SELECT NAME, GRADE FROM STUDENTS S, GRADES G
WHERE S.S_ID = G.S_ID ;
OR

SELECT NAME, GRADE FROM STUDENTS, GRADES
WHERE STUDENTS.S_ID = GRADES.S_ID ;
OR
SELECT NAME, GRADE FROM STUDENTS NATURAL JOIN GRADES ;

6 Consider the following tables: MAIN 2025

Table 1: PRODUCTS

This table stores the basic details of the products available in a shop

PID	PName	Category
201	Laptop	Electronics
202	Chair	Furniture
203	Desk	Furniture
204	Smartphone	NULL
205	Tablet	Electronics

Table 2: SALES

This table records the number of units sold for each product.

SaleID	PID	UnitsSold
301	201	50
302	202	100
303	203	60
304	204	80
305	205	70

Write SQL queries for the following:

(i) To delete those records from table SALES whose UnitsSold is less than 80

(ii) To display the names of all products whose category is not known.

(iii) To display the product names along with their corresponding units sold.

Suggestive value points:

i. DELETE FROM SALES WHERE UnitsSold < 80;

ii. SELECT PName FROM PRODUCTS WHERE Category IS NULL;

iii. SELECT PName, UnitsSold FROM PRODUCTS P, SALES S WHERE P.PID = S.P_ID ;

OR

SELECT PName, UnitsSold FROM PRODUCTS, SALES WHERE PRODUCTS.PID = SALES.PID ;

OR

SELECT PName, UnitsSold FROM PRODUCTS NATURAL JOIN SALES;

7 Consider the table BIKES given below : COMP 2024

Table : BIKES

Bid	Bikename	Brandname	Biketype	Cost
1001	DreamRacer	Speedo	Super	1980000
1002	Splendid	Indiana	NULL	50000
1003	SilverWing	Indiana	Touring	2300000
1004	ZZZZ	WMV	Sports	1500000
1005	CH2H	Speedo	Super	470000
1006	Astor	Victory	Normal	1700000
1007	CHANDRA	WMV	Adventure	3000000
1008	SWISS	WMV	Touring	4200000
1009	SWIFT	ROADY	Super	1900000
1010	CLOUD9	GEM	Normal	1700000

Write SQL commands for the following :

(i) Display Bikenames and their corresponding Brandnames in descending order of cost.

(ii) Display Brandnames of bikes whose Biketype is not known.

(iii) Consider the following query :

```
SELECT * FROM BIKES WHERE Cost BETWEEN 200000 AND 3000000;
```

Write another query, using relational and logical operators which will produce the same output.

Suggestive value points:

(i) SELECT Bikename, Brandname FROM BIKES ORDER BY Cost DESC;

(ii) SELECT Brandname FROM BIKES WHERE Biketype IS NULL;

(iii) SELECT * FROM BIKES WHERE Cost >= 200000 AND Cost<=3000000;

8 Predict the output of the following queries based on the table BIKES given above : COMP 2024

(i)
```
SELECT UCASE(TRIM(Brandname)) FROM BIKES
WHERE Bid = 1003;
```

(ii)
```
SELECT COUNT(Biketype) FROM BIKES;
```

(iii)
```
SELECT SUM(Cost), Brandname FROM BIKES
GROUP BY Brandname
Having Brandname = "WMV" OR Brandname = "Indiana";
```

Suggestive value points:

(i) INDIANA

(ii) 9

(iii)

SUM(Cost)	Brandname
2350000	Indiana
8700000	WMV

9 Answer the following questions based on the table Sales given below : COMP 2024

Table : Sales

id	Name	City	Commission
E001	Naman Batra	Chandigarh	20
E002	Rupesh Mann	Delhi	15
E005	Ravi Gautam	Mumbai	25
E006	Mukul Singh	Delhi	30
E007	Ruby Rai	Mumbai	19
E003	Raman Roy	Kolkata	16

(i) Suggest the Primary key for the given table ?

(ii) Write the SQL command to insert the following data in the table Sales :
id → E009
Name → Sukumar
City → Nagpur
Commission → 10

(iii) Is the command used in part (ii) a DDL or a DML command ?

Suggestive value points:

(i) id

(ii) INSERT INTO Sales VALUES('E009','Sukumar','Nagpur',10)

OR

INSERT INTO Sales VALUE('E009','Sukumar','Nagpur',10)

OR

INSERT INTO Sales(id, Name, City, Commision)
VALUES('E009','Sukumar','Nagpur',10)

OR

INSERT INTO Sales(id, Name, City, Commision)
VALUE('E009','Sukumar','Nagpur',10)

(iii) DML

10	Consider the given table and write the following queries in MySQL :	MAIN	2024

Table: Sports

Sid	SName	Fees	DateofPlay	CoachId
1	Karate	1200	2024-08-24	S1
2	Football	1800	2024-09-13	S2
3	Cricket	1500	2024-06-14	S3
4	Lawn Tennis	2500	2024-09-25	S4
5	Badminton	1800	2024-10-20	S5

(i) To display Sid and name of those sports which are to be played in the month of September.

(ii) To display all Sports names in lower case.

(iii) To display last two characters of all sports names whose fees is less than 1500.

OR

Predict the output of the following queries based on the table Sports given above :

(i)
```
SELECT UCASE(TRIM(SName)) FROM Sports WHERE Sid=5 ;
```

(ii)
```
SELECT LEFT (SName,3) FROM Sports WHERE
DateofPlay>"2024-09-13";
```

(iii)
```
SELECT SUBSTR (CoachId,1) FROM Sports WHERE
SName="Cricket" or Fees>=2000;
```

Suggestive value points:

i.SELECT Sid, SName FROM Sports WHERE Monthname(DateofPlay)= "September";
OR
SELECT Sid, SName FROM Sports WHERE Month(DateofPlay)= 9;
OR
SELECT Sid, SName FROM Sports WHERE Month(DateofPlay)= '9';
OR
SELECT Sid, SName FROM Sports WHERE DateofPlay LIKE "%-09-%";
OR
SELECT Sid, SName FROM Sports WHERE DateofPlay>='2024-09-01' AND DateofPlay<='2024-09-30';
OR
SELECT Sid, SName FROM Sports WHERE DateofPlay BETWEEN '2024-09-01' AND '2024-09-30';

ii.SELECT LCASE(SName) FROM Sports;

OR
SELECT LOWER(SName) FROM Sports;

iii. SELECT RIGHT(SName, 2) FROM Sports WHERE Fees<1500;

OR

SELECT MID(SName,LENGTH(SName)-1,2) FROM Sports WHERE Fees<1500;

OR

SELECT SUBSTR(SName,-2) FROM Sports WHERE Fees<1500;

OR

SELECT SUBSTR(SName,LENGTH(SName)-1,2) FROM Sports WHERE Fees<1500;

OR

SELECT SUBSTRING(SName,LENGTH(SName)-1,2) FROM Sports WHERE Fees<1500;

OR

(i) BADMINTON

(ii) Law Bad

(iii) S3
S4

11 Answer the following questions based on the table Salesman given below : MAIN 2024

Table: Salesman

salesman_id	name	city	commission
5001	Neil Bhatt	Delhi	0.15
5002	Rohan Malik	Mumbai	0.13
5005	Ravi Mohan	Delhi	0.11
5006	Mehak Rai	Delhi	0.14
5007	Paul Lal	Bangalore	0.13
5003	Raman Sen	Kolkata	0.12

(i) How many tuples does the given table have ?

(ii) Suggest the primary key for the given table.

(iii) Write the MySQL query to display all the records in descending order of commission.

Suggestive value points:

(i) 6

(ii) salesman_id

(iii) SELECT * FROM Salesman order by commission desc;

4 MARK QUESTIONS

1	Moulik is a database manager at a retail company. The company maintains a Customer table in their database to track customer information. The Customer table has the following columns : ● custid: Unique identifier (UID) for each customer ● cust_name: Name of the customer ● city: City where the customer resides ● age: Age of the customer ● email: Email address of the customer ● phone: Phone number of the customer Table : Customer 	custid	cust_name	city	age	email	phone
---	---	---	---	---	---
C01	Rohan	Nagpur	30	rohan@gocoders.com	9997454516
C02	Saket	Lucknow	45	saket@gocoders.com	9878555414
C03	Sonal	Nagpur	25	sonal@gocoders.com	8231616161
C04	Shivika	Indore	35	shivika@gocoders.com	9947166151
C05	Trisha	Nagpur	28	trishaa@gocoders.com	9957151516 | i. Write an SQL query to retrieve the list of all customers who are less than 30. Display the custid, cust_name and age. ii. Write an SQL query to find the minimum age of all customers from each city iii. Write an SQL query to find all customers whose city is Nagpur. Display the custid, cust_name and email. iv. Write an SQL query to change the phone number of Trisha to 8995715156 Suggestive value points: i.SELECT custid, cust_name, age FROM Customer WHERE age<30; ii.SELECT city, min(age)FROM Customer GROUP BY city; iii.SELECT custid, cust_name, email FROM Customer WHERE city = 'Nagpur'; iv.UPDATE Customer SET phone = 8995715156 WHERE cust_name = 'Trisha';	COMP	2025
2	Rohit who manages the office supplies, has created a database to track stationery inventory. The database includes a table named STATIONERY	COMP	2025

whose column (attribute) names are mentioned below:

ITEM_ID: Shows the unique ID for each stationery item. ITEM_NAME: Specifies the name of the stationery item. CATEGORY: Indicates the category of the item.

QTY: Specifies the number of items available in stock. PUR_DATE:Indicates the date when the item was purchased.

Table : STATIONERY

ITEM_ID	ITEM_NAME	CATEGORY	QTY	PUR_DATE
S001	BALL PEN	WRITING	150	2024-01-15
S002	NOTEBOOK	OFFICE	75	2024-03-10
S003	MARKER	WRITING	40	2024-02-22
S004	FOLDER	OFFICE	200	2024-04-05
S005	GLUE	STATIONERY	30	2024-05-20

Write the output of the following SQL queries :

(i) `Select UPPER(ITEM_NAME) from STATIONERY where CATEGORY = 'WRITING';`

(ii) `Select ITEM_NAME from STATIONERY where month(PUR_DATE) = 4;`

(iii) `Select ITEM_NAME from STATIONERY where QTY < 50;`

(iv) `Select count(*) from STATIONERY where CATEGORY= 'OFFICE';`

Suggestive value points:

i.

UPPER(ITEM_NAME)
BALL PEN
MARKER

ii.

ITEM_NAME
FOLDER

iii.

ITEM_NAME
MARKER
GLUE

iv.

count(*)
2

3	An educational institution is maintaining a database for storing the details of courses being offered. The database includes a table COURSE with the following attributes : C_ID : Stores the unique ID for each course. C_NAME : Stores the course's name.	MAIN	2025

	INSTRUCTOR : Stores the name of the course instructor. DURATION : Stores the duration of the course in hours. Table : COURSE 	C_ID	C_NAME	INSTRUCTOR	DURATION
C101	Data Structures	Dr. Alok	40
C102	Machine Learning	Prof. Sunita	60
C103	Web Development	Ms. Sakshi	45
C104	Database Management	Mr. Suresh	45

C105	Python Programming	Dr. Pawan	35 |
			
			Write SQL queries for the following :
			
			i. To add a new record with following specifications :
			
			C_ID : C106
			C_NAME : Introduction to AI
			INSTRUCTOR : Ms. Preeti
			DURATION : 55
			
			ii. To display the longest duration among all courses.
			
			iii. To count total number of courses run by the institution
			
			iv. To display the instructors' name in lower case.
			
			Suggestive value points:
			
			i.INSERT INTO COURSE VALUES('C106','INTRODUCTION TO AI', 'MS.PREETI',55);
			OR
			INSERT INTO COURSE (C_ID, C_NAME, INSTRUCTOR, DURATION) VALUES('C106','INTRODUCTION TO AI','MS.PREETI',55);
			
			ii.SELECT MAX(DURATION) FROM COURSE;
			iii.SELECT COUNT(DISTINCT C_NAME)FROM COURSE;
			iv.SELECT LOWER(INSTRUCTOR) FROM COURSE;
			OR
			SELECT LCASE(INSTRUCTOR) FROM COURSE;		

4	Ashutosh, who is a manager, has created a database to manage employee records. The database includes a table named EMPLOYEE whose attribute names are mentioned below : EID : Stores the unique ID for each employee. EMP_NAME : Stores the name of the employee. DEPT : Stores the department of the employee. SALARY : Stores the salary of the employee. JOIN_DATE : Stores the employee's joining date.	MAIN	2025

Table : EMPLOYEE

EID	EMP_NAME	DEPT	SALARY	JOIN_DATE
E01	ARJUN SINGH	SALES	75000	2019-11-01
E02	PRIYA JAIN	ENGINEERING	85000	2020-05-20
E03	RAVI SHARMA	MARKETING	60000	2018-08-14
E04	AYESHA	NULL	50000	2021-01-10
E05	RAHUL VERMA	FINANCE	40000	2017-06-25

Write the output of the following SQL Queries :

i. `Select SUBSTRING(EMP_NAME, 1, 5) from EMPLOYEE where DEPT = 'ENGINEERING';`

ii. `Select EMP_NAME from EMPLOYEE where month(JOIN_DATE) = 8;`

iii. `Select EMP_NAME from EMPLOYEE where SALARY > 60000;`

iv. `Select count(DEPT) from EMPLOYEE;`

Suggestive value points:

i.SUBSTRING(EMP_NAME, 1, 5)
PRIYA

ii.EMP_NAME
RAVI SHARMA

iii.EMP_NAME
ARJUN SINGH
PRIYA JAIN

iv.count(DEPT)
4

5 Ms. Sridevi is a placement head in a reputed engineering institute and has created the following table to store the records of students getting placement in various companies :

Table: Placement

Compid	Company Name	Vacancies	Appeared	Department	DoJ	City
CP01	Rising Star	20	300	Networking	2020-07-02	Bengaluru
CP02	Smoke Ring	30	350	Web Development	2019-07-12	Chennai
CP03	Pilot	15	421	Cloud	2020-08-12	Bengaluru
CP04	Jingle	10	145	Servers	2019-01-23	Hyderabad
CP05	Neel Zone	17	568	Data Analytics	2018-09-02	Bengaluru
CP06	Hard Talk	12	276	Marketing	2020-07-02	Hyderabad

Based on the given table, help Ms. Sridevi to write SQL queries for performing the following tasks :

(i) To list names of those companies where department is either Marketing or Networking.

(ii) To display the joining month name for Rising Star company.

COMP 2024

Ms. Sridevi has written following queries. Write the output of each query :

(iii)
```
SELECT LEFT (CompanyName, INSTR(CompanyName,"R"))
FROM Placement where vacancies >=20;
```

(iv)
```
SELECT CompanyName FROM Placement WHERE Vacancies < 20
AND Appeared >300;
```

Suggestive value points:

(i) SELECT CompanyName FROM Placement
WHERE Department = 'Marketing' OR Department = 'Networking';

OR

SELECT CompanyName FROM Placement
WHERE Department IN ('Marketing', 'Networking');

(ii) SELECT MONTHNAME(DoJ) FROM Placement
WHERE CompanyName = 'Rising Star';

(iii)
LEFT (CompanyName, INSTR(CompanyName,"R"))
R
Smoke R

(iv)
CompanyName
Pilot
Neel Zone

6 Rupam created a MySQL table to store the details of Nobel prize winners. Help her to write the following MySQL queries : MAIN 2024

Table: NOBEL

Winner_id	YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1001	1970	Physics	Hannes Alfven	Sweden	Scientist
1002	1970	Physiology	Bernard Katz	NULL	Scientist
1003	1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1004	1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1005	1978	Peace	Menachem Begin	Israel	Prime Minister
1006	1987	Economics	Robert Solow	USA	Economist
1007	1994	Literature	Kenzaburo Oe	Japan	Linguist

(i) Display the names of Nobel Prize winner in 'Literature' for the year 1970.

(ii) Display the subject and category of winners whose country is not known.

(iii) Display the details of all Nobel Prize winners who were Scientists

(iv) Count total number of winners whose subject is Literature.

	Suggestive value points: (i) SELECT WINNER FROM NOBEL WHERE SUBJECT="Literature" AND YEAR = 1970; (ii) SELECT SUBJECT,CATEGORY FROM NOBEL WHERE COUNTRY IS NULL; (iii) SELECT * FROM NOBEL WHERE CATEGORY="Scientist"; (iv) SELECT COUNT(*) FROM NOBEL WHERE SUBJECT="Literature";		
	5 MARK QUESTIONS		

1	Write suitable SQL query for the following :
	i. Display the minimum value in the Salary column from the EMPLOYEES table.
	ii. Display the FirstName column values in lowercase from the EMPLOYEES table.
	iii. Retrieve the DepartmentName column values in uppercase from the DEPARTMENTS table, where the DepartmentName has a length of 7 characters.
	iv. Show the remainder when dividing each value in the Salary column by 1000 in the EMPLOYEES table.
	v. Count the rows in the EMPLOYEES table where Salary is greater than 50000.
	Suggestive value points:
	i. SELECT MIN(Salary) FROM EMPLOYEES;
	ii.SELECT LOWER(FirstName) FROM EMPLOYEES;
	OR
	SELECT LCASE(FirstName) FROM EMPLOYEES;
	iii.SELECT UPPER(DepartmentName) FROM DEPARTMENTS WHERE LENGTH(DepartmentName)=7;
	OR
	SELECT UCASE(DepartmentName) FROM DEPARTMENTS WHERE LENGTH(DepartmentName)=7;
	iv.SELECT MOD(Salary,1000) FROM EMPLOYEES;
	v.SELECT COUNT(*) FROM EMPLOYEES WHERE Salary > 50000;
		COMP	2025

2	Write suitable SQL queries for the following :
	i. Find the power of 5 raised to 3.
	ii. Convert the string 'DATA ANALYSIS' to lowercase.
	iii. Display the first 4 characters of the string 'Information'.
	iv. Extract the year from the date '1995-11-15'.
	v. Display the number of characters in the string 'Cyber Security'
	Suggestive value points:
	i.SELECT POWER(5,3);
	OR
	SELECT POW(5,3);
	ii.SELECT LOWER('DATA ANALYSIS');
	OR
	SELECT LCASE('DATA ANALYSIS');
	iii.SELECT SUBSTRING('Information',1,4);
	OR
	SELECT SUBSTR('Information',1,4);
	OR
	SELECT LEFT('Information', 4);
	iv.SELECT YEAR('1995-11-15'); OR SELECT LEFT('1995-11-15',4);
	OR
	SELECT SUBSTR('1995-11-15',1,4);
	OR
	SELECT MID('1995-11-15',1,4);
	v.SELECT LENGTH('Cyber Security');
	OR
	SELECT LENGTH('CyberSecurity');
		COMP	2025

3	Write SQL query for the following: i. To display sum total of all the values of the Score column, from STUDENTS table ii. To display the first five characters of the Name column from STUDENTS table	MAIN	2025

	iii. To display the values of Name column from the STUDENTS table, after removing the trailing spaces. iv. To retrieve the lowest score from the Score column of GRADES table. v. To increase the fee of all students by 100, in the STUDENTS table. (The name of the column is Fee) Suggestive value points: (i) SELECT SUM(Score) FROM STUDENTS; (ii) SELECT LEFT(Name,5) FROM STUDENTS; OR SELECT MID(Name,1,5) FROM STUDENTS; OR SELECT SUBSTRING(Name,1,5) FROM STUDENTS; OR SELECT SUBSTR(Name,1,5) FROM STUDENTS; (iii) SELECT RTRIM(Name) FROM STUDENTS; (iv) SELECT MIN(Score) FROM GRADES; (v) UPDATE STUDENTS SET FEE = FEE + 100;		
4	Write SQL queries for the following: i. To calculate the square of 15. ii. To round the number 456.789 to the nearest integer. iii. To display the position of first occurrence of 'com' in the string 'mycommercial.com'. iv. To display the name of the day for the date '2024-11-07'. v. To display the current date and time. Suggestive value points: (i) SELECT POWER(15, 2); OR SELECT POW(15, 2); (ii) SELECT ROUND(456.789); (iii) SELECT INSTR('mycommercial.com','com'); (iv) SELECT DAYNAME ('2024-11-07'); (v) SELECT NOW(); OR SELECT SYSDATE();	MAIN	2025
5	Consider the tables Faculty and Batch given below :	COMP	2024

Table : Faculty

F_Id	FacName	DoJ	Qualification	Salary
Emp01	Neeta Khanna	2013-07-01	MCA	85000
Emp02	Sonia Chawla	2023-05-05	MA	35000
Emp03	Sheetal	2015-06-28	MSc	90000
Emp04	Bindu	2016-03-30	M.Com	80000
Emp05	Sunidhi	2002-06-28	BA	100000
Emp06	Ashish	1999-07-01	B.Com	120000

Table : Batch

Batchid	BatchName	F_Id	Daysperweek	Subjects
B01	TXAlpha	Emp01	3	English
B02	TXBeta	Emp05	5	Chemistry
B03	TXGama	Emp02	4	Physics
B04	Super30	Emp03	3	Mathematics
B05	G-20	EMp04	2	Economics
B06	LXAlpha	Emp01	4	Accountancy

Write SQL queries for the following :

(a) (i) Display name and salary of all faculties in alphabetical order of their names.

(ii) Display details of faculties who joined on Monday.

(iii) Display names of faculties, their salary and BatchName from both the tables.

(iv) Display the details of all faculties whose salary is more than 60000 and have joined before the year 2007.

(v) Display the name of faculty who is taking TXAlpha Batch

OR

(b) (i) Display maximum days per week for each F_Id from the table Batch.

(ii) Display names of faculties after removing leading and trailing spaces.

(iii) Display total number of records in the table Faculty.

(iv) Increase the salary by 25% of those employees whose qualification is MCA.

(v) Delete the records of batches whose subject is English.

Suggestive value points:

(a) (i) SELECT FacName,Salary FROM Faculty ORDER BY FacName;

OR

SELECT FacName,Salary FROM Faculty ORDER BY FacName ASC;

(ii) SELECT * FROM Faculty WHERE DAYNAME(DoJ)='Monday';
OR
SELECT * FROM Faculty WHERE DAYOFWEEK(DoJ)=2;

(iii) SELECT FacName, Salary, BatchName FROM Faculty,Batch
WHERE Faculty.F_Id = Batch.F_Id;
OR
SELECT FacName,Salary,BatchName FROM Faculty F,Batch B
WHERE F.F_Id = B.F_Id;
OR
SELECT FacName,Salary,BatchName
FROM Faculty NATURAL JOIN Batch;

(iv) SELECT * FROM Faculty
WHERE Salary>60000 AND YEAR(DoJ)<2007;
OR
SELECT * FROM Faculty
WHERE Salary>60000 AND DoJ<"2007-01-01";

(v) SELECT FacName FROM Faculty, Batch
WHERE BatchName = "TXAlpha"
AND Faculty.F_Id = Batch.F_Id;
OR
SELECT FacName FROM Faculty, Batch
WHERE Faculty.F_Id = Batch.F_Id
AND BatchName = "TXAlpha";
OR
SELECT FacName FROM Faculty F, Batch B
WHERE F.F_Id = B.F_Id AND BatchName = "TXAlpha";
OR
SELECT FacName FROM Faculty NATURAL JOIN Batch
WHERE BatchName = "TXAlpha";

OR

(b) (i) SELECT F_Id, MAX(Daysperweek)FROM Batch GROUP BY F_Id;

(ii) SELECT TRIM(FacName) FROM Faculty;

(iii) SELECT COUNT(*) FROM Faculty;
OR

SELECT COUNT(FID) FROM Faculty;

(iv) UPDATE Faculty SET Salary = Salary+(25/100)*Salary
WHERE Qualification = "MCA";
OR
UPDATE Faculty SET Salary = Salary*1.25
WHERE Qualification = "MCA";

(v) DELETE FROM Batch WHERE Subject = "English";

6 Excellent Consultancy Pvt. Ltd. maintains two tables for all its employees. MAIN 2024

Table: Employee

Employee_id	First_name	Last_name	Salary	Joining_date	Department
El0l	Monika	Das	100000	2019-01-20	Finance
E102	Mehek	Verma	600000	2019-01-15	IT
E103	Manan	Pant	890000	2019-02-05	Banking
E104	Shivam	Agarwal	200000	2019-02-25	Insurance
E105	Alisha	Singh	220000	2019-02-28	Finance
E106	Poonam	Sharma	400000	2019-05-10	IT
E107	Anshuman	Mishra	123000	2019-06-20	Banking

Table: Reward

Employee_id	Date_reward	Amount
E101	2019-05-11	1000
E102	2019-02-15	5000
E103	2019-04-22	2000
E106	2019-06-20	8000

Write suitable SQL queries to perform the following task :

(i) Change the Department of Shivam to IT in the table Employee.

(ii) Remove the record of Alisha from the table Employee

(iii) Add a new column Experience of integer type in the table Employee.

(iv) Display the first name, last name and amount of reward for all employees from the tables Employee and Reward.

(v) Display first name and salary of all the employees whose amount is less than 2000 from the tables Employee and Reward.

OR

Write suitable SQL queries for the following task:

(i) Display the year of joining of all the employees from the table

Employee.

(ii) Display each department name and its corresponding average salary.

(iii) Display the first name and date of reward of those employees who joined on Monday from the tables Employee and Reward

(iv) Display sum of salary of those employees whose reward amount is greater than 3000 from the tables Employee and Reward

(v) Remove the table Reward.

Suggestive value points:

(i) UPDATE Employee SET Department="IT" WHERE First_name="Shivam";

(ii) DELETE FROM Employee WHERE First_name="Alisha";

(iii) ALTER TABLE Employee ADD Experience int;
OR
ALTER TABLE Employee ADD COLUMN Experience int;

(iv) SELECT First_name, Last_name, Amount FROM Employee NATURAL JOIN Reward;
OR
SELECT First_name, Last_name, Amount FROM Employee E, Reward R WHERE E.Employee_id=R.Employee_id;

(v) SELECT First_name, Salary FROM Employee NATURAL JOIN Reward WHERE Amount<2000;

OR

SELECT First_name, Salary FROM Employee E, Reward R WHERE E.Employee_id=R.Employee_id AND Amount<2000;

OR

(i) SELECT YEAR(Joining_date) FROM Employee;

(ii) SELECT Department, AVG(Salary) FROM Employee GROUP BY Department;

(iii) SELECT First_name, Date_reward FROM Employee NATURAL JOIN Reward WHERE DAYNAME(Joining_date)="Monday";
OR
SELECT First_name, Date_reward FROM Employee E, Reward R WHERE E.Employee_id=R.Employee_id AND DAYNAME(Joining_date)="Monday";

(iv) SELECT SUM(Salary) FROM Employee NATURAL JOIN Reward WHERE Amount>3000;
OR
SELECT SUM(Salary) FROM Employee E, Reward R WHERE E.Employee_id=R.Employee_id AND Amount>3000;

(v) DROP TABLE Reward;

CHAPTER: 4 - INTRODUCTION TO COMPUTER NETWORKS

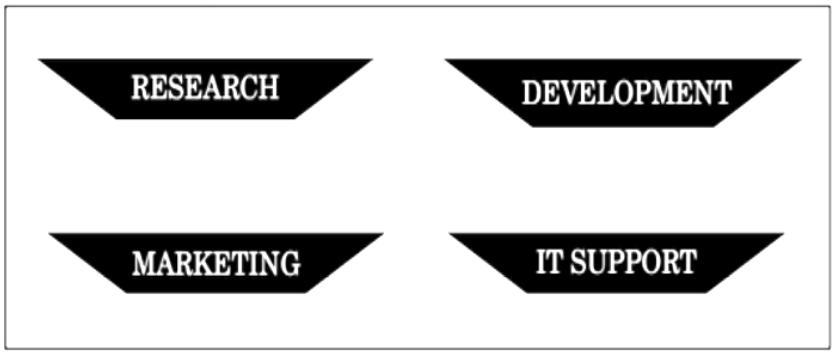
Q No.	1 MARK QUESTIONS	MAIN EXAM/ COMP EXAM	YEAR
1	Webpages showing stock prices and weather updates change frequently, therefore such webpages are : (A) Fixed Webpages (B) Dynamic Webpages (C) Static Webpages (D) Dark Webpages Appropriate option: (B) Dynamic Webpages	COMP	2025
2	I help to regenerate and amplify the signals to ensure reliable communication over long distances. Who am I? (A) Modem (B) Router (C) Repeater (D) Switch Appropriate option: (C) Repeater	COMP	2025
3	Name the device that converts data from digital to analog and vice versa in a network: (A) Router (B) Repeater (C) Modem (D) Gateway Appropriate option: (C) Modem	COMP	2025

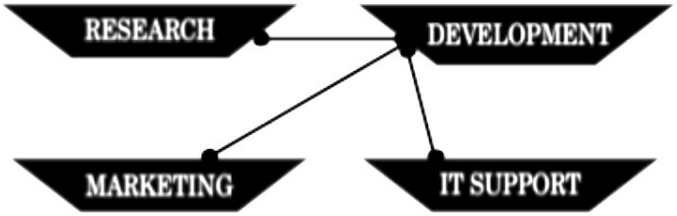
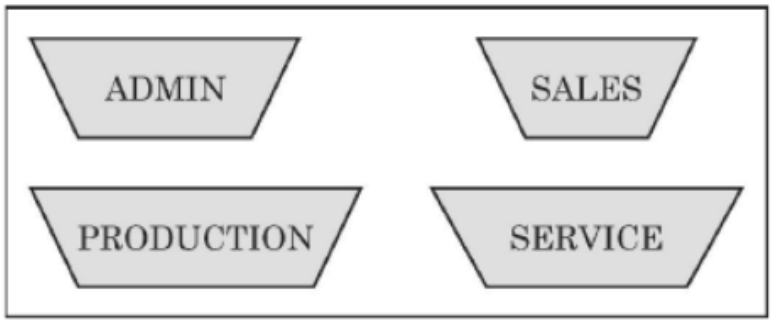
4	Temporary data files stored by websites in our computer can be used to track our online activities and also to personalize browsing experience. These files are known as : (A) Plug-ins (B) Add-ons (C) Cookies (D) Bookmarks Appropriate option: (C) Cookies	MAIN	2025
5	Which protocol is used while communicating through video calls on the Internet ? (A) Video Over Internet Protocol (B) Voice Over Internet Protocol (C)Internet Protocol (D) Video Audio Over Internet Protocol Appropriate option: (B) Voice Over Internet Protocol	MAIN	2025
6	Every web page on the Internet has a unique address. This address is known as : (A) Domain Name (B) Protocol (C) Uniform Resource Locater (D) Network Topology Appropriate option: (C) Uniform Resource Locater	MAIN	2025
7	What does a modem do at the sender's end ? (A) It converts analog signals into digital data. (B) It converts digital data into analog signals. (C) It converts digital data into optical signals. (D) It converts optical signals into digital data. Appropriate option: (B) It converts digital data into analog signals.	COMP	2024
8	Which of the following Internet services is used for instant messaging ? (A) Chat (B) Email (C) WWW (D) Python Appropriate option: (A) Chat	COMP	2024

9	In topology, the devices are arranged in the form of multiple branches in hierarchical manner. (i) Star (ii) Tree (iii) Mesh (iv) Bus Appropriate option: (ii) Tree	MAIN	2024
	2 MARK QUESTIONS		
1	What is a Web Server ? Suggestive value points: A web server is a computer system that stores, processes, and delivers web content to users over the internet. Examples: Nginx, Apache Tomcat, IIS etc.	COMP	2025
2	Write any one advantage and one disadvantage of bus topology. Suggestive value points: Advantage and disadvantage of Bus Topology : Advantage : 1. It is cost effective as it uses less cable length. 2. It is easy to expand as new devices can be added to the network by connecting them to the backbone cable. 3. The network can function even if one device fails (as long as the main cable is intact) 4. Broadcasting is Easy in Bus topology since all devices are on the same cable. Disadvantage : 1. High network traffic can lead to collisions, causing delays. 2. All devices share the same cable, so only one can transmit at a time. 3. If the main cable fails, the entire network goes down. 4. Performance degrades as more devices are added.	COMP	2025
3	Give any two points of difference between Static web page and Dynamic web page. Suggestive value points:	MAIN	2025

	<table><tr><th>Static web page</th><th>Dynamic web page</th></tr><tr><td>A web page with content that is predefined and static.</td><td>A web page with content that changes dynamically.</td></tr><tr><td>Has limited interactivity.</td><td>It is highly interactive.</td></tr><tr><td>Requires minimum Server processing.</td><td>Requires server-side processing.</td></tr><tr><td>Lower development and hosting cost.</td><td>Higher development and hosting cost.</td></tr></table>		
4	Describe the role of a router in a network. Suggestive value points: Roles of router in a network: ● Interconnecting networks: Router connects multiple networks, such as local area networks (LANs), wide area networks (WANs), and the Internet. ● Routing traffic: Routers direct traffic between networks, ensuring that data packets are delivered to the correct destination. ● Packet forwarding using Best route: Routers forward packets of data between networks, using the destination IP address to determine the best route to the destination. ● Quality of Service: Routers prioritize traffic to ensure that critical applications receive sufficient bandwidth and low latency. ● Firewall functionality: Many routers include built-in firewall capabilities, which block unauthorized access to the network. ● Access control: Routers can restrict access to the network based on user authentication, IP addresses, and other criteria.	MAIN	2025
5	Write one function each for the following network devices : (i) MODEM (ii) Router Suggestive value points: Modem converts digital signals into analog signals and vice-versa. Router receives data, analyzes it and transmits it to the destination through the best possible route.	COMP	2024
6	Define the following terms : (i) Web Hosting (ii) WWW Suggestive value points: (i) Web hosting is a service that provides storage for a website's files and network infrastructure that makes the website available on Internet. (ii) The World Wide Web (WWW) is an interconnected network of web pages	COMP	2024

	and documents accessible through the Internet		
7	Expand URL. Identify the protocol and domain in the following URL : https://epathshala.nic.in/topics.php?len=en Suggestive value points: URL : Uniform Resource Locator Protocol - https Domain - epathshala.nic.in	MAIN	2024
8	Write any one advantage and one disadvantage of Star topology. Suggestive value points: Advantage of Star Topology: Centralized control and management makes it easy to monitor, troubleshoot, and scale the network. Other points to be accepted: ● reliable – if one cable or device fails then all the others still work ● high-performing as no data collisions can occur ● Easier to install ● Easy fault detection ● No disruption to the network when connecting or removing devices Or Any other valid point. Disadvantage of Star Topology : Dependence on the central device (hub or switch). If the central device fails, the entire network becomes inaccessible. Other points to be accepted: ● More Cable required ● More expensive	MAIN	2024
9	What is the primary function of a gateway in a computer network ? Explain briefly. Suggestive value points: Gateway is used to connect two networks or applications that use different protocols.	MAIN	2024
	3 MARK QUESTIONS		
	-NIL-		

	4 MARK QUESTIONS		
	-NIL-		
	5 MARK QUESTIONS		
1	ABC Innovators Pvt. Ltd., Bengaluru is a company specializing in IoT solutions. They have different departments : Research, Development, Marketing and IT Support. The layout of the Bengaluru branch is as follows :  Distance between the departments : ● Research to Development : 60 m ● Research to Marketing : 80 m ● Research to IT Support : 70 m ● Development to Marketing : 100 m ● Development to IT Support : 90 m ● Marketing to IT Support : 110 m Number of computers in each department : ● Research : 40 ● Development : 120 ● Marketing : 100 ● IT Support : 20 Based on the above specifications, answer the following questions:	COMP	2025

	i. Suggest the topology and draw the most suitable cable layout for connecting all the departments in the Bengaluru office. ii. Suggest the type of network (LAN/MAN/WAN) that will be created when the Research department is connected to the Development department. Justify your Answer. iii. Suggest the department for the placement of the server. Explain the reason for your selection iv. Suggest the placement of Switch/Hub with justification. v. Employees of Bengaluru campus frequently use VoIP technology to communicate to their foreign clients. What is the full form of VoIP ? Suggestive value points: i.Topology : Star Topology  ii.Suggested Network Type : LAN Justification : Research and Development departments are within the same campus with a distance of 60 m only iii.Suggested Department : Development Reason : Development department has the highest number of computers (120), making it a choice for server placement to handle the load efficiently iv.Switch/Hub should be placed in all departments as all divisions have more than 1 computer. v.Voice over Internet Protocol		
2	XYZ Technologies, Hyderabad is a company that deals with data science and AI projects. They have different divisions ADMIN, SALES, PRODUCTION and SERVICE. The layout of the Hyderabad branch is :  The management wants to connect all the divisions as well as the computers of each division (ADMIN, SALES, PRODUCTION and SERVICE).	MAIN	2025

Distance between the divisions are as follows :

ADMIN to SALES	69m
ADMIN to PRODUCTION	84m
ADMIN to SERVICE	60m
SALES to PRODUCTION	110m
SALES to SERVICE	135m
PRODUCTION to SERVICE	90m

Number of computers in each division :

Division	Number of Computers
ADMIN	40
SALES	75
PRODUCTION	120
SERVICE	20

Based on the above specifications, answer the following questions:

(i) Suggest the topology and draw the most suitable cable layout for connecting all the divisions in the Hyderabad office.

(ii) XYZ Technologies is having its head office in USA. Out of LAN, MAN and WAN, which kind of network will be created to connect Hyderabad office with USA Office? Justify your answer.

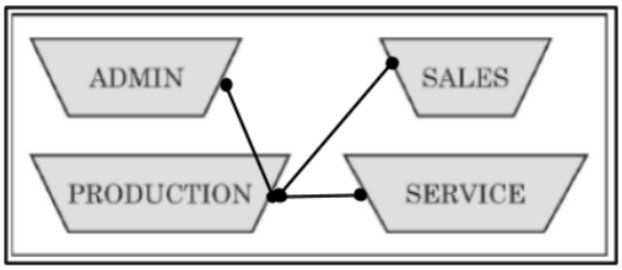
(iii) Suggest the division for the placement of server. Explain the reason for your selection.

(iv) Suggest the placement of Switch/Hub with justification.

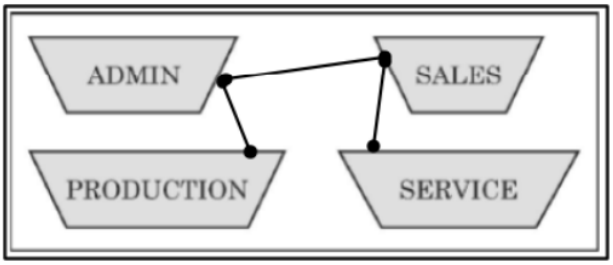
(v) Where will a repeater be placed in the suggested network layout? Justify your answer.

Suggestive value points:

i.Star topology



OR Bus topology



ii. WAN will be created as the network connection needs to be across different countries.

iii. Server should be placed in the Production division as it has the maximum number of computers.

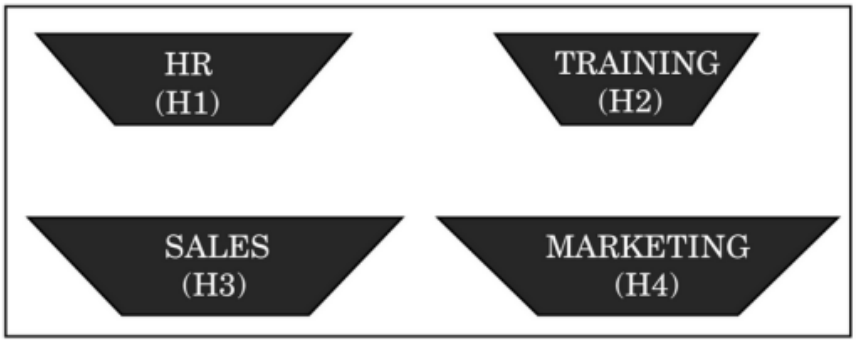
iv. Switch/Hub should be placed in each of the divisions ADMIN, SALES, PRODUCTION and SERVICE as multiple devices need to be inter-connected.

v. Repeater will be placed: Between Sales and Production (for first layout - Star Topology)

OR
Between Sales and Service (for second layout - Bus Topology)

OR
Placement of Repeater according to the correct layout drawn in part(i) Because a repeater is required if the distance between the blocks is more and the repeater receives the weak signal, amplifies it, and retransmits it

3	Classpoint Pvt. Ltd., Pune is a company that deals with development and training of software. They have different divisions HR (H1), Training (H2), Sales (H3) and Marketing (H4). The layout of the Pune branch is :	COMP	2024



The management wants to connect all the divisions as well as all the computers of each

division (H1, H2, H3 and H4).

Distance between the divisions are as follows :

H1 to H2	90m
H1 to H3	145m
H1 to H4	88m
H2 to H3	110m
H2 to H4	80m
H3 to H4	160m

Number of computers in each division :

Division	NumberofComputers
H1	100
H2	220
H3	160
H4	140

Based on the above specifications, answer the following questions :

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

(ii) Classpoint Pvt. Ltd. plans to establish a new office in Dubai. Out of LAN, MAN and WAN, what kind of network will be created to connect Pune office with Dubai office ?

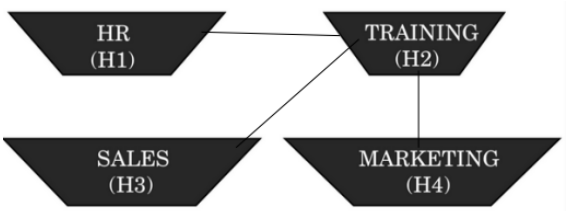
(iii) Suggest the division for the placement of server in Pune office. Explain the reason for your selection.

(iv) Suggest the placement of switch/hub with justification.

(v) Ms. Abhilasha, working in Dubai office, is creating a software for conducting program for the employees of Pune branch. Which protocol would help her in voice transmission over a computer network ?

Suggestive value points:

(i) STAR TOPOLOGY



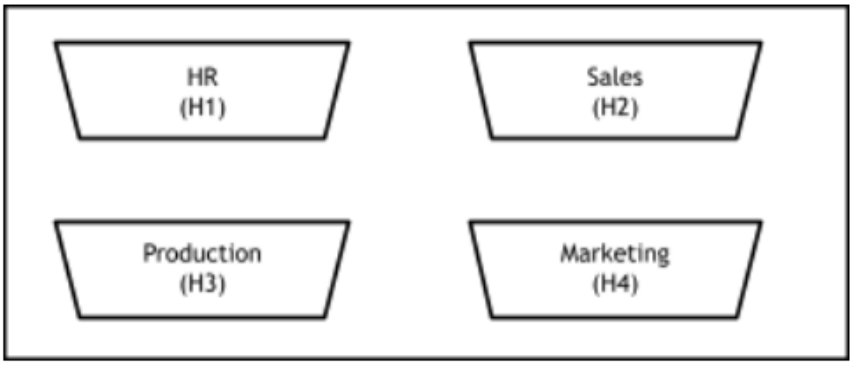
(ii) WAN

(iii) Server should be placed in H2 division as it has the maximum number of computers.

(iv) Switch/hub should be placed in all blocks as it is used to connect computers within each building.

(v) VOIP/Voice over Internet Protocol

4	FULLMAN Tech, Bengaluru is a company that deals with software development. They have different divisions HR (H1), Sales (H2), Production (H3) and Marketing (H4). The layout of the Bengaluru branch is :	MAIN	2024



The management wants to connect all the divisions as well as all the computers of each division (H1, H2, H3 and H4).

Distance between the divisions are as follows :

H1 to H2	76m
H1 to H3	185m
H1 to H4	88m
H2 to H3	140m
H2 to H4	125m
H3 to H4	160m

Number of computers in each division are:

Division	Number of Computers
H1	140
H2	340
H3	180
H4	260

Based on the above specifications, answer the following questions :

(i) Suggest the topology and draw the most efficient cable layout for connecting all the divisions of Bengaluru branch.

(ii) FULLMAN Tech is expanding its reach and therefore it establishes a new office in Delhi. Out of LAN, MAN, and WAN what kind of network will be created to connect Bengaluru office with Delhi Office ?

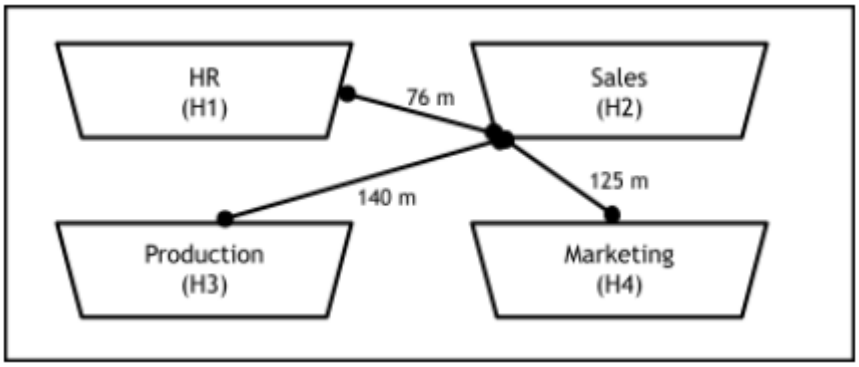
(iii) Suggest the division for the placement of server in Bengaluru branch. Explain the reason for your selection.

(iv) Suggest the placement of the following devices in Bengaluru branch:
(a) Repeater (b) Switch/Hub

(v) The company's manager Ms. Ritu is worried as to how she can extend and modify the functionality of the web browser. Help her by giving names of any two tools.

Suggestive value points:

(i) Star Topology

	 (ii) WAN (iii) Sales (H2). Maximum number of computers in Sales division (iv) (a) Between Sales (H2) and Production (H3), Between Sales(H2) and Marketing(H4) (b) One in each of the divisions HR(H1), Sales(H2), Production(H3), Marketing(H4) (v) Extensions Plug-ins Add-Ons		

CHAPTER 5 - SOCIETAL IMPACTS

Q No.	1 MARK QUESTIONS	MAIN EXAM/ COMP EXAM	YEAR
1	The fraudulent act of obtaining the personal information of another person to commit online fraud, is called: (A) Copyright Infringement (B) Plagiarism (C) Cyberbullying (D) Identity Theft Appropriate option: (D) Identity Theft	COMP	2025
2	Which of the following statements is true about Copyright ? (A) Copyright allows anyone to use, modify, and distribute a work without restrictions. (B) Copyright grants exclusive legal rights to the owner to copy, distribute, or create derivative of creative work. (C) Copyright applies only to written books.	COMP	2025

	(D) Copyright does not cover digital content. Appropriate option: (B) Copyright grants exclusive legal rights to the owner to copy, distribute, or create derivative of creative work.		
3	Which of the following is a potential hazard associated with e-waste disposal ? (A) Phishing (B) Spread of computer virus (C) Decrease in computer performance (D) Pollution Appropriate option: (D) Pollution	COMP	2025
4	Raheem created a unique computer software and wants to protect his creation from being copied or used without his permission. He is considering to apply for legal protection. Which type of intellectual property protection should Raheem apply for, to safeguard his software ? (A) Copyright (B) Plagiarism (C) Trademark (D) Lease Appropriate option: (A) Copyright	MAIN	2025
5	Priya received an email that appeared to be from her bank, asking her to update her account information by clicking on a link. She clicked the link to enter her details, but immediately after, some amount was debited from her account. What type of cybercrime did Priya fall victim to ? Appropriate answer: (B) Phishing	MAIN	2025
6	Excessive screen time and poor posture can lead to : (A) Faster Internet Speeds (B) Eye strain and other health issues (C) Better vision and bone density (D) Improved physical health Appropriate option: (B) Eye strain and other health issues	MAIN	2025

7	Which out of the following cannot be included in digital footprint ? (A) Submitting the form online (B) Searching for your friend's address online (C) Walking on the beach (D) Online shopping Appropriate option: (C) Walking on the beach	COMP	2024
8	Emma is a student working on her research project. She finds a well-written paragraph on the Internet that perfectly explains the concept that she wants to include in her project. She copies and pastes the paragraph as it is into her research paper. Her research paper did not get selected due to plagiarism. What is the one way out of the following that Emma could have followed to avoid plagiarism in this case ? (A) Copying the content from a book in her college library. (B) Rewriting the paragraph in her own words and citing the original source. (C) Asking her friends for information and using it in her research paper, without mentioning her friend's input. (D) Posting the paper on her college website. Appropriate option: (B) Rewriting the paragraph in her own words and citing the original source	COMP	2024
9	For how long does a patent typically protect an invention? (A) 5 years (B) 10 years (C) 20 years (D) 50 years Appropriate option: (C) 20 years	COMP	2024
10	Which of the following is not a feature of Open-Source Software? (A) It can be shared with others without any licensing burden. (B) It is same as free software. (C) It can be downloaded on multiple devices. (D) Its source code is available for free distribution. Appropriate option: (B) It is same as free software.	COMP	2024

11	What is a common symptom of extended use of digital devices these days? (A) Improved eyesight (B) Enhanced physical fitness (C) Eye strain (D) Increased muscle strength Appropriate option: (C) Eye strain	COMP	2024
12	Ridhima purchased a license for a copy of a software and made additional copies without the permission of the copyright owner. This act of hers is known as. (i) Trademark Infringement (ii) Identity Theft (iii) Copyright Infringement (iv) Patent Appropriate option: (iii) Copyright Infringement	MAIN	2024
13	What can an individual do to enhance the privacy of data stored digitally? (i) Share sensitive information on social media platforms. (ii) Use your date of birth as your password. (iii) Regularly update software installed on your device. (iv) Download and install software from unknown sources. Appropriate option: (iii) Regularly update software installed on your device	MAIN	2024
14	_____ is the gaining of unauthorized access to data in a computer system. (i) Phishing (ii) Plagiarism (iii) Hacking (iv) Copyright violation Appropriate option: (iii) Hacking	MAIN	2024
15	Rama was unable to understand how the recruiters were able to know about her digital activity when she has not shared anything with them. The recruiters might have checked _____ of Rama. (i) Carbon Footprint (ii) Water Footprint (iii) Online print (iv) Digital Footprint	MAIN	2024

	Appropriate option: (iv) Digital Footprint		
16	The software that is free for anyone, and its source code is available for access, modification, correction, and improvement is called ._____ (i) Proprietary software (ii) Commercial software (iii) Free and Open source software (iv) Copyrighted software Appropriate option: (iii) Free and Open source software	MAIN	2024
17	_____ help in data protection through copyrights, patents and trademarks. (i) Data Privacy Right (ii) Right to Innovation (iii) Intellectual Property Rights (IPR) (iv) Right to Data Protection Appropriate option: (iii) Intellectual Property Rights (IPR)	MAIN	2024
	Q18 and Q19 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		
18	Assertion (A) : Hacking is a cyber crime. Reason (R) : To avoid hacking, one should not ®re the password with anyone. Appropriate option: (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).	COMP	2024
19	Assertion (A) : Cyber Bullying can have serious, emotional and psychological effects on victims. Reason (R) : Online Bullying is not a crime while offline bullying is a crime. Appropriate option: (C) (A) Is true and (R) is false	MAIN	2024
	2 MARK QUESTIONS		

1	Mention any two health concerns associated with excessive usage of technology. Suggestive value points: (i) Eye strain (ii) Sleep disorder (iii) Back/neck pain (iv) Mental health issues like anxiety, depression (v) Reduced attention span	COMP	2025
2	What is a digital footprint ? Also, provide two examples of how it's created. Suggestive value points: A digital footprint is the collection of data and information that you leave behind whenever you use digital devices or access the internet. Examples of how a digital footprint is created : (1) Social media activity (2) Online shopping (3) Browsing History (4) E-Mail and Messaging	COMP	2025
3	A small tech startup, is considering using open source software to develop their new project management tool. They are evaluating the benefits and potential challenges of adopting open source solutions. (i) Identify one key benefit of using open source software for the development of project management tool. (ii) Give any two examples of open source software. Suggestive value points: Using open-source software to develop a new project management tool offers the following benefits: ● Open-source softwares mostly have support of large communities that contribute to the software, documentation, and shared knowledge, which is useful during development. ● Open-source software eliminates dependence on a single vendor. ● Open-source software can be easily integrated with other open-source tools	MAIN	2025

	and systems, reducing compatibility issues. ● Open-source software often incorporates the latest technologies, innovations, and best practices, ensuring developers have access to the most advanced tools and techniques. ● As Open-Source software provides access to a variety of existing open-source libraries and frameworks, developers can speed up the development process by building upon existing solutions. ● Open-source software is mostly cost effective. Some Examples of open-source software: MySQL , PostgreSQL, Linux , Ubuntu, LibreOffice , OpenOffice , GIMP, Firefox, Chromium		
4	Give any two impacts on environment that are caused when e-waste is carelessly thrown or dumped in landfills or dumping grounds. Suggestive value points: Impacts of e-waste: ● Soil contamination: E-waste can leach toxic chemicals, such as lead, mercury, and cadmium, into the soil, contaminating it. ● Air pollution: Burning e-waste can release toxic fumes contributing to air pollution. ● Water pollution: E-waste can contaminate water posing a risk to the environment.	MAIN	2025
	3 MARK QUESTIONS		
1	Akshay is writing a research paper and directly copies several paragraphs from an online article without crediting the original author. (i) Identify the act of misconduct. (ii) Suggest one way to Akshay to avoid such misconduct. (iii) What is the significance of IPR ? Suggestive value points: (i) Akshay is committing plagiarism. (ii) Akshay can avoid plagiarism by properly citing (giving references) sources when using content of others. (iii) IPR are important for protecting creativity and innovating. They provide legal protection to authors, inventors and creators, allowing them to benefit from their work.	COMP	2025

2	Ravi is a student studying in grade 12. He frequently uses the internet for various activities such as social networking, online shopping, and to research for school projects. Recently, he noticed that he receives targeted advertisements based on his browsing history and is concerned about his digital footprints. Additionally, Ravi has encountered instances of cyberbullying and is unsure how to handle them. Help Ravi by answering the following questions: (i) What are digital footprints, and how are they created? (ii) Write any two net etiquettes that Ravi should follow to ensure respectful and responsible online behavior. (iii) How can Ravi protect himself from cyberbullying? Mention any one protective measure. Suggestive value points: i. Digital footprints refer to the trail of data and information that individuals leave behind during online activities. Following are some of the ways digital footprints are created: ● Browsing history: Every time a website is visited, the browser records the URL, date, and time of the visit. ● Search engine queries: When a search is performed online, the search engine records search term(s) and query. ● Social media interactions: Social media activities, such as posts, comments, likes, and shares, are recorded by the platform. ● Online purchases: When an online purchase is made, the retailer records transaction details, including name, address, and payment information. ● Surveillance cameras in public places can capture images and movements. ● RFID tags can capture movements and activities. ii. To ensure respectful and responsible online behavior, Ravi should follow the following Net etiquettes: ● Avoid using slang, jargon, or offensive language ● Avoid personal attacks, insults, or inflammatory language ● Consider others' perspectives and feelings Avoid spamming, trolling, or harassing others ● Be sensitive to cultural nuances and differences in online interactions	MAIN	2025

	● Protect personal information ● Use strong passwords ● Be cautious with links and attachments ● Be aware of online laws and regulations ● Report online harassment or abuse iii. Ravi should adopt following protective measures against cyberbullying: ● Avoid sharing personal information in public. ● Adopt safe privacy settings on Social Media accounts and Online Platforms ● Use strong passwords ● Be cautious with links and attachments ● Use two-factor authentication ● Block or report bullies ● Be cautious about accepting friend requests and connections from strangers		
3	Sarah works in a multinational IT firm. One day, she came to know that some mails were sent from her official mail account but she had not actually sent them. Based on the given information, answer the following questions : (i) Sarah is a victim of which type of cybercrime ? (ii) Write any two precautions that one should take to protect oneself from being the victim of cybercrime. (iii) Should Sarah immediately change the password of her email account ? Suggestive value points: (i) Hacking (ii) ● Keep strong password(s) and change them regularly. ● Do not click on any untrusted link(s) ● Do not share personal information with strangers. ● Always use updated Antivirus ● Always use licensed software. ● Lock or log off from the computer when you step away.	COMP	2024

	● Use secure Wi-Fi connection (iii) Yes, Sarah should immediately change the password of her email account .		
4	At a local electronics store, a new range of smartphones has been launched, creating a buzz among technology enthusiasts. However, the introduction of these new devices has also raised concerns about the increasing generation of e-waste in the community. Answer the following questions based on above extract : (i) Define e-waste. (ii) Give any one environmental challenge posed by e-waste, including its impact on air, water, and soil quality. (iii) Imagine you are a part of a local environment organization. Provide any two strategies that could be implemented to minimize the negative environmental effects of e-waste. Suggestive value points: i. E-Waste is the term used for electrical and electronic equipment and their parts that have been discarded as waste. ii. E-waste releases harmful pollutants into the air, contributing to air pollution and posing respiratory health risks. E-waste releases heavy metals in the groundwater making it toxic and unsafe for consumption. E-waste makes harmful chemicals leach into the soil and groundwater. These toxins persist in the soil for a long time adversely affecting ecosystems and human health. iii. ● Facilitate/Encourage the reuse of electronics by promoting donation, use of second-hand /refurbished equipment, exchanges. ● Promote policies and initiatives that support the right to repair electronics. ● Launch educational campaigns to raise awareness about the environmental impacts of e-waste and promote Reuse, Recycle and Reduce	COMP	2024
5	Police officials arrested four members of an interstate gang for allegedly duping many people from different states on the pretext of providing them with holiday packages after creating fake websites of Tours and Travels. The cyber criminals sent fraudulent emails containing links to fraudulent websites	MAIN	2024

	created by them. The victim in his complaint told police that he was offered a holiday package to Dubai for a total of 10 times in the next 10 years and was charged ₹ 1.45 lakh through his credit card. Answer the following questions pertaining to the given news byte : (i) Identify the type of cybercrime mentioned in above case. (ii) Which Act deals with such crimes in India ? (iii) Suggest any one precaution that can be taken to avoid falling prey to such criminals. Suggestive value points: (i) ● Phishing ● Internet Fraud (ii) IT Act 2000 OR Information Technology Act 2000 (iii) ●Ensure the website used is a trustworthy ● Provide your personal/sensitive information only to reliable sources ● Keep your browser up to date ●Use firewalls ● Use Antivirus Software ● Avoid installing pirated software ● Always download software from known and secure websites ● Always update software ● Use strong password(s) and change it periodically ● Do not use cookies from unknown sites ● Perform online transactions from known and secure sites ● Always secure wireless network(s) with strong password(s) and regularly change it/them		
6	ABC Electronics, a popular electronics retail chain, has been a prominent player in the market for years. However, recent concerns over environmental degradation and e-waste have prompted the company to rethink its strategies and practices. As the newly appointed sustainability manager, you've been asked to answer the following questions (i) Considering the environmental concerns associated with e-waste, outline any one negative impact of the electronic products on the environment. (ii) Gopal is a college student who recently bought his new smartphone from ABC electronics. He's excited about the new features and improved performance of his new device. However, he's now left with his old smart phone, which is still functional but considered outdated. Suggest him any one action that he can take for his old smartphone	MAIN	2024

	(iii) Provide any one recommendation on how ABC Electronics can responsibly manage its e-waste while minimizing harm to the environment Suggestive value points: i. ● Release toxic pollutants ● Health hazards ● Degradation of environment ● Soil pollution ● Water pollution ● Air pollution ii. Donate the old phone OR Sell the old phone OR Reuse the old phone OR Refurbish the old phone iii. Reduce the e-waste by extending the lifespan of devices through proper maintenance. OR Reuse the devices whenever possible. OR Recycle the e-waste components.		
	4 MARK QUESTIONS		
	-NIL-		
	5 MARK QUESTIONS		
	-NIL-		