MODEL SET – 2

Class: XII   M.M: 70
Sub.: Info. Practices   Duration: 03 Hrs.

General Instructions:

- Please check this question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 4 questions (29 to 32). Each question carries 3 Marks.
- Section D consists of 2 case study type questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

Section-A (21 x 1 = 21 Marks)

1. State whether the following statement is True or False:
   Slicing can be used to extract a specific portion from a Pandas Series
2. Which of the following 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)
3. 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.
4. Which of the following SQL function returns the number of values in the specified column ignoring the NULL values ?
   (A)   COUNT(*)   (B)   COUNT(columnname)
   (C)   LENGTH(*)   (D)   LENGTH(columnname)
5. We need to exhibit proper manners and etiquettes while being online. Pick up one such net etiquette from the following :
   (A)   Do not share the expertise   (B)   Respect privacy and diversity
   (C)   Feed the troll   (D)   Copyright violation
6. 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
7. Which of the following commands will show the total number of rows and columns present in a DataFrame named as **df**?
   (A)   df.size   (B)   df.shape   (C)   df.Shape   (D)   df.shape()
8. What will be the output of the following query ?
   ```
   SELECT SUBSTR("Swachh Survekshan",2,4);
   ```
   (A)   wac   (B)   wach   (C)   shan   (D)   achh

9. 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
```

(C)
```
Jan  -  31
Feb  -  28
Mar  -  31
Apr  -  30
dtype: int64
```

(D)
```
Jan   Feb   Mar   Apr
 |     |     |     |
31    28    31    30
dtype: int64
```

10. 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.

11. Find the output of the following SQL queries :
   `Select INSTR("Data Science","ie");`
   (A)   8   (B)   5   (C)   True   (D)   False

12. Which of the following Internet services is used for instant messaging ?
   (A)   Chat   (B)   Email   (C)   WWW   (D)   Python

13. Which of the following Python statements is used to import data from a CSV file into a Pandas DataFrame *(Note: pd is an alias for pandas)*?
   (A)   pd.open_csv('filename.csv')   (B)   pd.read_csv('filename.csv')
   (C)   pd.load_csv('filename.csv')   (D)   pd.import_csv('filename.csv')

14. E-Waste contains _____ that causes respiratory disorders and brain damage.
   (A)   Cadmium   (B)   Beryllium   (C)   Lead   (D)   Mercury

15. While creating a Series using a dictionary, the keys of the dictionary become:
   (A)   Values of the Series   (B)   Indices of the Series
   (C)   Data type of the Series   (D)   Name of the Series

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

	SQL Function		Description
P.	MAX()	1.	Find the position of a substring in a string.
Q.	SUBSTRING()	2.	Returns the maximum value in a column.
R.	INSTR()	3.	Sorts the data based on a column.
S.	ORDER BY	4.	Extracts a portion of a string.

   (A)   P-2, Q-4, R-3, S-1   (B)   P-2, Q-4, R-1, S-3
   (C)   P-4, Q-3, R-2, S-1   (D)   P-4, Q-2, R-1, S-3

17. What will be the output of the Python program mentioned below ?
```
import pandas as pd
df=pd.DataFrame(['Apple','Banana','Orange','Grapes','Guava'])
print(df[2:4:2])
```
(A)   `0`

         `2 Banana`

(B)   `0`

         `2 Orange`

(C)   `0`

         `2 Banana`

         `4 Grapes`

(D)   `Empty DataFrame`

         `Columns: [0]`

         `Index: []`

18. Which Matplotlib plot is best suited to represent changes in data over time?
    (A) Bar plot   (B) Histogram   (C) Line plot   (D) Histogram & Bar plot

19. _____is a service that allows to put a website or a web page on the Internet.
    (A) Web Server   (B) Web Browser
    (C) Web Hosting   (D) Domain Name System

Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as:

    (A)   Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A)

    (B)   Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)

    (C)   Assertion (A) is True, but Reason (R) is False

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

20. ***Assertion (A) :*** We can add a new column in existing DataFrame.
    Reason (R) : DataFrame are size mutable.

21. ***Assertion (A):*** In SQL, INSERT INTO is a Data Definition Language (DDL) Command.
    Reason (R): DDL commands are used to create, modify, or remove database structures, such as tables.

Section-B (7 x 2 = 14 Marks)

22. What is a DataFrame? Also, give a suitable example to support your answer

OR

What does the term **'library'** signify in Python? Mention one use for each of the following libraries:

☞ Pandas   ☞ Matplotlib

23. Sudhir once opened an unknown website and entered his personal details such as email id, password, bank account number, etc. Now he has noticed his email inbox is being flooded with useless mails from that site. In relation to this, answer the following questions:

    (a)   What kind of cyber threat is this?

    (b)   Give justification to your answer to part (a)

24. (a)   There is a column C1 in table T1. The following two statements:
    SELECT COUNT(*) FROM T1; and **SELECT COUNT(C1) FROM T1;** are giving different outputs. What may be the possible reason?

    (b)   If STR = "INFORMATICS PRACTICES" and STR1 = " FOR CLASS XII", then give the SQL command to display the output as:
        "INFORMATICS PRACTICE FOR CLASS XII"

25. What is the difference between **Static** and **Dynamic** website?

OR

What is Internet and how does it differ from World Wide Web (WWW)?

26. Define the term Primary Key in a database. Explain how it is different from a Candidate Key.

27. Mention two health concerns associated with excessive use of technology.
28. Parul is writing a Python program to create a DataFrame using a list of dictionaries. However, her code contains some mistakes. Identify the errors, rewrite the correct code, and underline the corrections 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)
```

OR

```
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   Engineer
1   Rozer   34    Male    Analyst
2   Fazal   28    Male  Developer
```

Section-C (4 x 3 = 12 Marks)

29. O. P. Jindal School is replacing their old computer with a new one. The school decided to throw the old computer in a nearby empty field/plot.
    (a) Explain any one potential environmental hazard associated with improper e-waste disposal.
    (b) Suggest one responsible way to the school for proper disposal of their old computer.
    (c) Describe the importance of recycling in e-waste management.
30. Write a Python program to create the following DataFrame **FLATS** using a list of dictionaries.

	Location	Status	Price
0	Mayur Vihar	Semi-furnished	1.0cr
1	Saket	Furnished	1.5cr
2	Gurugram	Furnished	1.3cr
3	Noida	Unfurnished	70lac

OR

Write a Python Program to create a Pandas Series **SER1** as shown below using a dictionary. Note that the left column indicates the indices and the right column displays the data.

JH	RNC
BH	PTN
UP	LCK
OD	BBSR
MIZ	IZW

31. (a) Write an SQL statement to create a table named DOCTOR, with the following specifications:

Field Name	Data Type	Constraints
Doc_ID	char(4)	Primar Key
Doc_Name	varchar(30)	Not Null
Doc_Speciality	varchar(30)	
MobileNo	varchar(10)	
Address	varchar(30)	
Salary	integer	

(b) Write SQL Query to insert the following data in the DOCTOR Table:

D101, Dr. Rumaesha Sheikh, Cardiology, 99xxxxxxxx, Ranchi, 78000

32. Consider the following tables **GAMES** and **PLAYER**.

Table: GAMES

GCode	GameName	Number	PrizeMoney	ScheduledDate
101	Kabaddi	2	5000	2017-01-23
102	Badminton	2	12000	2023-12-12
103	Table Tennis	4	8000	2024-02-14
105	Chess	2	9000	2025-01-01
108	Table Tennis	4	25000	2024-03-10

Table: PLAYER

PCode	Name	GCode
1	Ravi Shankar	101
2	Amir	108
3	Jatin	101
4	Shahrukh	103

Write SQL commands for the following:

(a) To display details of those games which have PrizeMoney more than 7000.

(b) To display the content of the Table GAMES in ascending order of ScheduledDate.

(c) To display games names along with name of the players.

OR

Consider the following tables FACULTY and COURSES as below:

Table: FACULTY

F_ID	FNAME	LNAME	HIREDATE	SALARY
102	Manoj	Sabharwal	2012-10-12	12000
103	Praveen	Arora	2014-12-15	9000
104	Sanjeev	Sharma	2016-01-01	14000
105	Rashmi	Malhotra	2000-01-02	20000
106	Nitin	Srivastava	2013-12-12	10000

Table: COURSES

| C_ID	F_ID	CNAME	FEES
C21	102	Boolean Algebra	14000
C22	106	Computer Network	20000
C21	104	C++	18000
C24	106	Human Biology	25000
C25	102	Bio Tech	30000
C26	103	Computer Tech	40000

Write SQL commands for the following:

(a) To display details of those faculty members whose salary is more than 12000

(b) To display the details of courses whose fees is in between 15000 to 50000 (both values included)

(c) To display faculty's first name and last name from the table FACULTY and course name from the table COURSES whose fees is greater than 20000.

Section-D (2 x 4 = 8 Marks)

33. During a test, Anvi has to fill in the blanks in a Python program that generates a bar chart. The bar chart represents the roll number of students and their marks in a test as below.
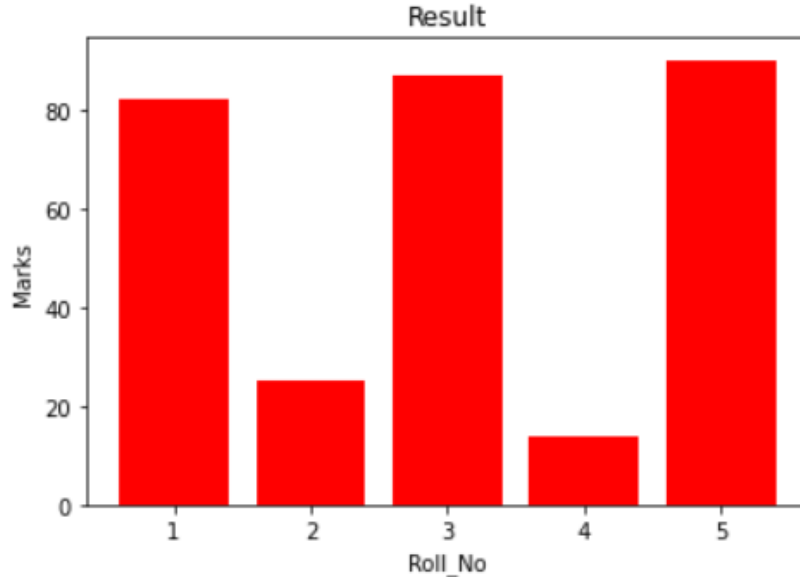
Help Anvi to complete the code as below:

```
import _____ as pl
Roll = [1,2,3,4,5]
Marks = [82,25,87,14,90]
pl.bar(Roll , _____ ,color='red', label='MT-4')
pl.title('_____')
pl.xlabel('Roll_No')
pl.ylabel('_____')
pl.show()
```

34. Consider the following table ITEMS:

SNo	Itemname	Type	Price	Stockdate
1	Chaises	Living	11500.58	2020-02-19
2	Accent Chairs	Living	31000.67	2021-02-15
3	Baker Racks	Kitchen	25000.623	2019-01-01
4	Sofa	Living	7000.3	2020-10-18
5	Nightstand	Bedroom	NULL	2021-07-23

Write SQL queries for the following:
(a) Display all the records in descending order of Stockdate.
(b) Display the Type and total number of items of each Type.
(c) Display the least price.
(d) Display the Itemname with their price rounded to 1 decimal place.

OR

Consider the following table SALESMAN:

Scode	Sname	Area	Qtysold	Dateofjoin
S001	Ravi	North	120	2015-10-01
S002	Sandeep	South	105	2012-08-01
S003	Sunil	NULL	68	2018-02-01
S004	Subh	West	280	2010-04-01
S005	Ankit	East	90	2018-10-01
S006	Raman	North	NULL	2019-12-01

Predict the output for the following SQL queries:

(a)   SELECT MAX(Qtysold), MIN(Qtrysold) FROM SALESMAN;

(b)   SELECT COUNT(Area) FROM SALESMAN;

(c)   SELECT LENGTH(Sname) FROM SALESMAN WHERE MONTH(Dateofjoin)=10;

(d)   SELCT Sname FROM SALESMAN WHERE RIGHT(Scode,1) = 5;

Section-E (3 x 5 = 15 Marks)

35. AWESOME Private Ltd, Dehradun is a company that deals with hardware components. They have different divisions HR (A1), Sales (A2), Production (A3) and Marketing (A4). The layout of the Dehradun branch is :
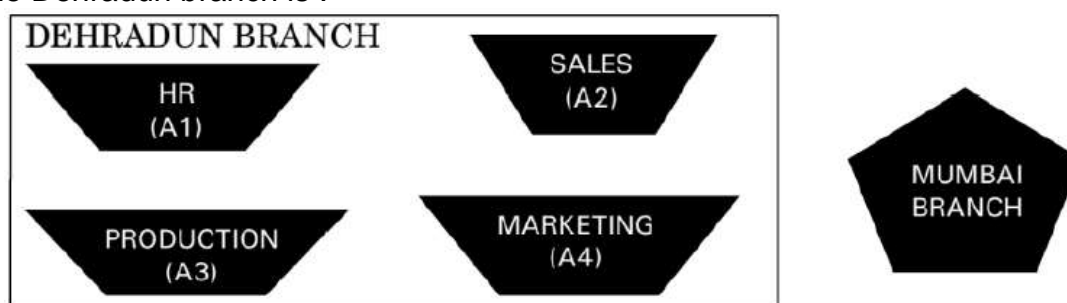
The company also has a branch in Mumbai. The management wants to connect all the divisions as well as the computers of each division (A1, A2, A3, A4).

Distance between the wings are as follows :

A3 to A1	32m
A1 to A2	53m
A2 to A4	29m
A4 to A3	110m
A3 to A2	750m
A1 to A4	200m
Dehradun Head Office to Mumbai Office	1656 KM

Number of computers in each wing :

A1-70, A2-140, A3-55, A4-70

Based on the above specifications, answer the following questions :

(a) Name the topology and draw the most efficient cable layout for connecting all the divisions of the Dehradun branch.

(b) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting Production (A3) with Sales (A2).

(c) Suggest the placement of the server. Explain the reasons for your selection.

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

(e) The company wants to do a collaborative project where the employees of Dehradun and Mumbai would collaborate and do the project. Therefore, the HR planned a series of webinars that employees could attend from their devices being online. Suggest the protocol that helped to send the voice signals over the Internet.

Also, give an example of a video conferencing software that helps to connect all the employees.

36. Consider the following DataFrame **Genre**:

	Book_Code	Type	Num_Copies
0	F	Fiction	300
1	NF	Non Fiction	290
2	D	Drama	450
3	P	Poetry	760
4	FT	Folk Tale	600

Write Python statements for the DataFrame **Genre** to:
(a) Print the first two rows of the DataFrame **Genre.**
(b) Display **Type** of all the Books.
(c) Remove the column Num_Copies.
(d) Display the data of the '**Book_Code**' column from indexes 2 to 4 (both included)
(e) Rename the column name **'Type'** to **'Genre_Type'**.

37. Consider the following table EMPLOYEE:

Employee_id	First_name	Last_name	Salary	Joining_date	Department
E101	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

Write suitable SQL queries to perform the following task:
(a) Change the department of **Shivam** to IT in the table EMPLOYEE.
(b) Remove the record of **Alisha** from the table EMPLOYEE.
(c) Add a new column **Experience** of integer type in the table EMPLOYEE.
(d) Display first name and salary of all the employees whose name starts with "A".
(e) Display each Department name and its corresponding average salary.

OR

Write suitable SQL query for the following:
(a) Round the value of **pi (3.14159)** to two decimal places.
(b) Calculate the remainder when 127 is divided by 8.
(c) Display the number of characters in the word **'O. P. Jindal School'**.
(d) Display the first 5 characters from the word **'Tribes of Jharkhand'**.
(e) Display details from **'email'** column (attribute), in the **'Students'** table, after removing any leading and trailing spaces.

_____✧✧✧✧_____