Self Assessment Paper – 2

INFORMATICS PRACTICES (065)

Class-XII

UNSOLVED

Time Allowed: 3 hours **Maximum Marks : 70**

General Instructions :

1. *This question paper contains five sections, **Section A to E**.*
2. *All questions are compulsory.*
3. ***Section A** has 18 questions carrying 01 mark each.*
4. ***Section B** has 07 Very Short Answer type questions carrying 02 marks each.*
5. ***Section C** has 05 Short Answer type questions carrying 03 marks each.*
6. ***Section D** has 02 questions carrying 04 marks each.*
7. ***Section E** has 03 questions carrying 05 marks each.*
8. *All programming questions are to be answered using Python Language only.*

Section A

[1 Mark each]

1. When sending an Email, the _____ line describes the contents of the message. **1**

(i) To (ii) Cc
(iii) Subject (iv) Contents

2. Following are the impact of e-waste on the environment. Choose the odd one out. **1**

(i) Soil Pollution (ii) Water Pollution
(iii) Air Pollution (iv) Sound Pollution

3. Which of the following is not covered under IPR? **1**

(i) Music (ii) Insurance
(iii) Logo designed (iv) Invention

4. Write the output of the following SQL command. **1**

```
select substr("COMPUTER",3,4);
```

(i) MPUT (ii) PUTE
(iii) PU (iv) MP

5. Which among the following belongs to an "aggregate function"? **1**

(i) COUNT (ii) UPPER
(iii) LOWER (iv) All of the mentioned

6. The trademark product is denoted by _____ symbols. **1**

(i) ® or ™ (ii) ©
(iii) ! (iv) None of these

7. Which object do you get after reading a CSV file using pandas.read_csv()? **1**

(i) Dataframe (ii) Nd array
(iii) Char Vector (iv) None

8. Tishya, an accounts officer has written the following query to display the number of workers on contract from every department of her organization along with their department. She is experiencing a problem while running the query. **1**

```
SELECT COUNT(*), Dept FROM Emp WHERE Type = "CONTRACT";
```

Which of the following is a correct query to perform the given task?

(A) `SELECT COUNT(*), Dept FROM Emp WHERE Type = "CONTRACT" GROUP BY Dept;`
(B) `SELECT COUNT (), Dept FROM Emp WHERE Type = "CONTRACT" ORDER BY Dept;`
(C) `SELECT COUNT(*), Dept FROM Emp GROUP BY Dept;`
(D) `SELECT COUNT(), Dept FROM Emp WHERE Type = "CONTRACT" GROUP BY Dept;`

9. Predict the output of the following query: `INSTR ('JAVAT POINT', 'P');`
(i) MPUT (ii) PUTE
(iii) PU (iv) MP

10. Pandas Series is: 1
(i) 2 Dimensional (ii) 3 Dimensional
(iii) 1 Dimensional (iv) Multi-Dimensional

11. To apply a constraint to a table it is defined at: 1
(i) The Beginning of the CREATE<table> command
(ii) The end of the CREATE< table> command
(iii) Separately in next command
(iv) None of these

12. Series data is _____ but the size of Series data is _____. 1
(i) Immutable, mutable (ii) Mutable, immutable
(iii) Mutable, mutable (iv) Immutable, immutable

13. The trail that is automatically created when a person uses the internet on any digital devices like Laptops, smart phones, tablets, etc is called_____. 1
(i) Cyberbullying (ii) Phishing
(iii) Digital Footprint (iv) Digital Activity

14. To specify condition with a GROUP BY clause, Which clause is used? 1
(i) USE (ii) WHERE
(iii) HAVING (iv) LIKE

15. Repeaters work on the _____ layer. 1
(i) Network Layer (ii) Physical Layer
(iii) Application Layer (iv) All of the Above

16. When someone steals someone else's personal information to commit theft or fraud, it is called_____. 1
(i) Identity theft (ii) Hacking
(iii) Computer piracy (iv) Infringement

17. Directions: 17 and 18 are ASSERTION AND REASONING based questions. Mark the correct choice as 1

Assertion (A): The Internet is world wide system of computer networks i.e., network of networks.

Reasoning (R): All computer on the Internet, communicate with one another using POP/IMAP which is a basic protocol of the Internet.

(i) Both (A) and (R) are true and (R) is the correct explanation for (A)
(ii) Both (A) and (R) are true and R is not the correct explanation for (A)
(iii) (A) is True but (R) is False
(iv) (A) is false but (R) is True

18. **Assertion (A):** To delete a column from Pandas DataFrame, drop() method is used. 1

Reasoning (R): Columns are deleted by dropping columns with index label.

(i) Both (A) and (R) are true and (R) is the correct explanation for (A)
(ii) Both (A) and ® are true and R is not the correct explanation for (A)
(iii) (A) is True but (R) is False
(iv) (A) is false but (R) is True

Section B

[2 Marks each]

19. How is it easier to diagnose fault in Star topology than in Bus topology ? 2

OR

Sahil, a Class X student, has just started understanding the basics of Internet and web technologies. He is a bit confused in between the terms "World Wide Web" and "Internet". Help him in understanding both the terms with the help of suitable examples of each. (NCERT)

20. The python code written below has syntactical errors. Rewrite the correct code and underline the corrections made. 2

```
import panda as pd
data + [['Alex', 10], ['Bob', 12], ['Claske', 13]]
df = pd.DataFrame (Data, columns = ['Name','Age'])
Print(df)
```

21. Consider the given SQL string: 2

"International Labor Day"

Write suitable SQL queries for the following:

(i) Returns the string in upper case.

(ii) Returns the following string
"yaD robaL lanoitanretni"

22. Predict the output of the given Python code: 2

```
import pandas as pd
s=pd.Series ([1,2,3,4,5,6], index=['A', 'B', 'C', 'D', 'E','F'])
print (s[s%2==0])
```

23. What do you mean by cyber law ? 2

24. Carefully observe the following code: 2

```
import pandas as pd
Year1={'Q1':5000,'Q2':8000,'Q3':12000,'Q4': 18000}
Year2={'A' :13000,'B':14000,'C':12000}
totSales={1:Year1,2:Year2} df=pd.DataFrame(totSales)
print(df)
```

25. Explain the following SQL functions using suitable examples. 2

(i) MID() (ii) TRIM()

Section C

[3 Marks each]

26. Based on the SQL table PURCHASE, write suitable queries for the following: 3

TABLE: PURCHASE

CNO	CNAME	CITY	QUANITIY	DOP
C01	GURPREET	NEW DEIHI	150	2022-06-11
C02	MALIKA	HYDERABAD	10	2022-02-19
C03	NADAR	DALHOUSIE	100	2021-12-04
C04	SAHIB	CHANDIGARH	50	2021-10-10
C05	MEHEK	CHANDIGARH	15	2021-10-20

(i) Display the city wise average quantity.

(ii) Display the Cname and city from the Purchase table your date of purchase within 2022-06-11 TO 2023-01-04.

(iii) Display the records of the city Chandigarh in descending order as per quantity.

OR

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

(i) `SELECT LENGTH(CNAME) FROM PURCHASE WHERE QUANTITY>100;`

(ii) `SELECT CNAME FROM PURCHASE WHERE MONTH(DOP) = 3;`

(iii) `SELECT MOD (QUANTITY, DAY(DOP)) FROM PURCHASE WHERE CITY= 'CHANDIGARH';`

27. Create a DataFrame in Python from the given list: 3

```
[[101,'Gurman',98],[102,'Rajveer',95],[103,'Samar' ,96],[104,'Yuvraj',88]]
```

Also give appropriate column headings as shown below:

```
   Rno      Name    Marks
0  101     Gurman      98
1  102   Rajveer       95
2  103     Samar       96
3  104     Yuvraj      88
```

28. Write MySQL statements for the following: **3**

(i) To create a database named BAG.

(ii) To create a table named BOOK based on the following specification:

Column Name	Data Type	Constraints
BOOK_NO	Integer	Primary Key
BNAME	Varchar(20)	

29. Rohan,a management trainee of the bank was engaged to be married. The couple exchanged many e-mails using the company computers. After some time the two broke up and the girl created fraudulent e-mail ids such as "indianbarassociations" and sent e-mails to the boy's foreign clients. She used the bank's computer to do this. The boy's company lost a large number of clients and took the bank to the court. The bank was held liable for the e-mails sent using the bank's system. **3**

(i) Identify the type of cybercrime he is a victim of.

(ii) Under which act, he can lodge a complaint to the relevant authorities?

(iii) Suggest him any two precautionary measures which he should take in future while being online to avoid any such situations.

OR

List the guidelines to avoid plagiarism.

30. Consider the given DataFrame 'Stock': **AI 3**

	Name	Price
0.	Nancy Drew	150
1.	Hardy boys	180
2.	Diary of a wimpy kid	225
3.	Harry Potter	500

Write suitable Python statements for the following:

(i) Add a column called Special_Price with the following data: [135,150,200,440].

(ii) Add a new book named 'The Secret' having price 800.

(iii) Remove the column Special_Price.

Section D

[4 Marks each]

31. Riya manages database in a New office Delhi . For business purposes, she created a table named PRODUCT. Assist her by writing the following queries: **4**

Pid	PName	Category	Qty	Price
1	Keyboard	IO	15	450
2	Mouse	IO	10	350
3	Wifi-router	NW	5	2600
4	Switch	NW	3	3000
5	Moniter	O	10	4500
6	Printer	O	4	17000

Write SQL queries for the following:

(A) To display the records in decreasing order of price.

(B) To display category and category wise total quantities of products.

(C) To display the category and its average price.

(D) To display category and category wise highest price of the products.

32. Q4. Krishna, a data Analyst has designed the DataFrame df that contains the production data of four quarters at different units as shown below **4**

	Unit	Qtr1	Qtr2	Qtr3	Qtr4
0	U1	14000	15679	12568	10001
1	U2	15678	10067	10000	5698
2	U3	4567	3678	9876	9999
3	U4	6798	2458	12368	5678

Answer the following questions:

(i) Predict the output of the following python statement:

(a) `print(df.columns)`

(b) `print(df[0:2])`

(ii) Delete the second row from the DataFrame.

(iii) Write Python statement to add a new column Total_prod which is the total of all the four -quarter production of each unit.

OR

(option for part (iii) only)

Write Python statement to export the DataFrame to a CSV file named production.csv stored at d:\home.

Section E

[5 Marks each]

33. Write suitable SQL queries for the following: A I 5

(i) To calculate the exponent for 3 raised to the power of 2.

(ii) To display current date and time.

(iii) To round off the value 4.4787 to -2 decimal place.

(iv) To display the day name of "2023-11-07".

(v) To display the length of the string 'IPL#2023'.

OR

Seema has created following table name `WORLD_DATA`:

COUNTRY	October	November	December
India	1678	1212	2345
Pakistan	23232	12710	88989
Afghanistan	6758	10089	8979
Sri Lanka	12366	12123	9899

Help her in writing SQL queries to the perform the following task:

(i) Insert a new record in the table having following values:
["Chili",12365,25412,32564]

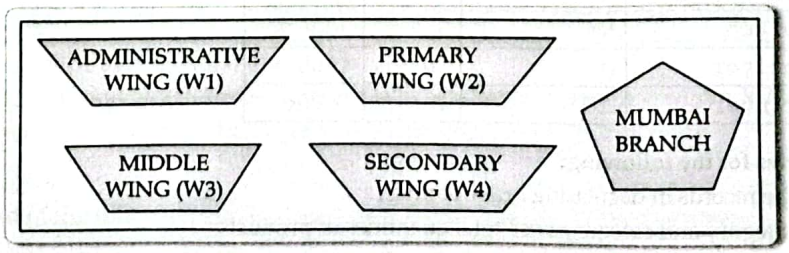
(ii) To change the value "Pakistan" to "Nepal" in Country. column.

(iii) To remove the name of those countries where the value is lesser than 10000 in the month of October.

(iv) To add a new column CAPITAL of suitable datatype.

(v) To display the records of all the countries in ascending order of their name.

34. ABC International school, Delhi has different wings Administrative Wing (W1), Primary Wing (W2), Middle Wing (W3), and Secondary Wing (W4), as shown in the diagram: A I 5



The school also has a branch in Mumbai. The school management wants to connect all the wings as well as all the computers of each wing (W1, W2, W3, W4)

Distance between the wings are as follows:

W3 to W1	85 m
W1 to W2	40 m
W2 to W4	25 m
W4 to W3	120 m
W3 to W2	150 m
W1 to W4	170 m

Number of computers in each of the wing:

W1	125
W2	40
W3	42
W4	60

(i) Suggest the topology and draw the most suitable cable layout for connecting all the wings of Delhi branch.

(ii) Suggest the kind of network required (out of LAN, MAN, WAN) for connecting

(a) Administrative Wing (W1) With Middle Wing (W3)

(b) Administrative Wing (W1) With the Mumbai Branch.

(iii) Suggest the placement of the following devices with Justification :

(a) Repeater

(b) Switch/ Hub

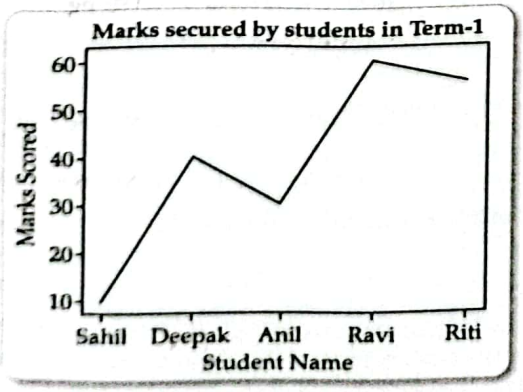
(iv) Due to pandemic school had to adopt Online classes. Suggest the protocol that is used for sending the voice signals over internet. Also, give an example of an application of WWW that helped the teachers to send messages instantly to the students.

(v) Suggest the suitable wing where we can set up the server.

35. Consider the following graph. Write the Python code to plot it. Also add the Title, label for X and Y axis. 5 A1 5

Use the following data for plotting the graph

```
smarks = [10, 40, 30, 60, 55]
sname = ["Sahil", "Deepak", "Anil", "Ravi", "Riti"]
```

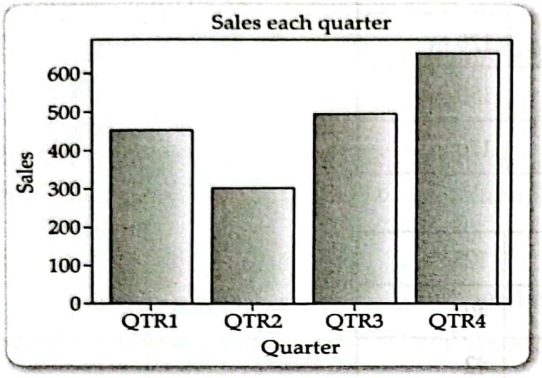


OR

Write Python code to draw the following bar graph representing the total sales in each quarter. Add the Title, Label for X-axis and Y-axis. 5

Use the following data for plotting the graph:

```
sales = [450, 300, 500, 650]
qtr = ["QTR1", "QTR2", "QTR3", "QTR4"]
```



❑❑❑

ANSWERS

Self Assessment Paper – 2

Informatics Practices

Section – A

1. Ans. Option (iii) is correct.

Explanation: The subject line of an email is the single line of text people see when they receive your email. This one line of text can often determine whether an email is opened or sent straight to trash, so make sure it's optimized toward your audience. **1**

2. Ans. Option (iv) is correct.

Explanation: Sound pollution cannot be an impact of e-waste on environment. **1**

3. Ans. Option (ii) is correct.

Explanation: Intellectual property rights include patents, copyright, industrial design rights, trademarks, plant variety rights, trade dress, geographical indications, and in some jurisdictions trade secrets. **1**

4. Ans. Option (i) is correct.

Explanation: The SUBSTR() function extracts some characters from a string.

Syntax

SUBSTR(string, start, length) **1**

5. Ans. Option (i) is correct.

Explanation: COUNT(*) returns the number of rows in a specified table, and it preserves duplicate rows. It counts each row separately. This includes rows that contain null values. **1**

6. Ans. Option (i) is correct.

Explanation: A trademark is a type of intellectual property consisting of a recognizable sign, design, or expression which identifies products or services of a particular source from those of others. **1**

Commonly Made Error

Some students get confused in different types of symbols used in Intellectual Property Rights (IPR).

Answering Tip

Students should learn all concepts with their symbols and uses.

7. Ans. Option (iv) is correct.

Explanation: Pandas read_csv() method is used to read CSV file into DataFrame object. The CSV file is like a two-dimensional table where the values are separated using a delimiter. **1**

8. Ans. Option (i) is correct

Explanation: GROUP BY clause is used to summarize the result set into groups defined in the query using aggregate function. Here the records are to be grouped according to the department and then count(*) is used to count the number of records in each group. **1**

9. Ans. Option (i) is correct.

Explanation: The SUBSTR() function extracts some characters from a string. Syntax SUBSTR(string, start, length) **1**

10. Ans. Option (iii) is correct.

Explanation: Pandas Series is one Dimensional Data Structure. **1**

11. Ans. Option (ii) is correct.

Explanation: The constraint that is to be applied to a complete table should be specified at the end of the CREATE <table> command. **1**

12. Ans. Option (ii) is correct.

Explanation: Data structures in Pandas can be mutated in the terms of value but not of size. **1**

13. Ans. Option (iii) is correct.

Explanation: Digital footprints are the marks of one's digital activity. **1**

14. Ans. Option (iii) is correct.

Explanation: A HAVING clause in SQL specifies that an SQL SELECT statement must only return rows where aggregate values met the specified conditions. After the aggregating operation, HAVING is applied, filtering out the rows that don't match the specified conditions. **1**

15. Ans. Option (ii) is correct.

Explanation: In computer networking, because repeaters work with the actual physical signal, and do not attempt to interpret the data being transmitted, they operate on the physical layer, the first layer of the OSI model. **1**

16. Ans. Option (i) is correct.

Explanation: Identify thieves increasingly use personal informational stolen from computers r computer networks, to commit fraud by using the data gained unlawfully. The... four types of identity theft include medical, criminal, financial and child identity theft. **1**

17. Ans. Option (iii) is correct.

Explanation: The Internet is a vast network that connects computers all over the world. Through the Internet, people can share information and communicate from anywhere with an Internet connection. **1**

All computer on the Internet, communicate with one another using TCP/IP, which is a basic protocol of the Internet. **1**

18. **Ans. Option (iii) is correct.**

Explanation: To delete a column from Pandas DataFrame, drop() method is used. Columns are deleted by dropping columns with column names. **1**

Section B

19. **Ans. In Star topology each node is directly connected to a central hub / switch, hence fault diagnosis becomes easy.**

In bus topology all the nodes are connected to the backbone cable. The signal travels through the entire length of the backbone and is received by the node for which it is intended. Hence, fault diagnosis is difficult. 2

OR

Ans, Difference between Internet and WWW:

S.No.	INTERNET	WWW
(i)	Internet is a global network of networks.	WWW stands for World Wide Web.
(ii)	Internet is a means of connecting a computer to any other computer anywhere in the world.	World Wide Web is a collection of information which is accessed via Internet.
(iii)	Internet can be viewed as a big book-store.	Web can be viewed as collection of books on that store.

Commonly Made Error

Sometimes Students think that Internet and WWW are same.

Answering Tip

Appropriate analogy can be used to explain the difference.

20. Ans:

```
import pandas as pd
data = [['Alex', 10], ['Bob', 12],
['Claske', 13]]
df = pd.DataFrame (data, columns =
['Name','Age'])
print(df)
```
2

21. Ans. **(i)**
```
SELECT UPPER("International Labor Day");
```
(ii)
```
SELECT LOWER(REVERSE("International Labor Day"));
```
1+1=2

22. Ans:

Output:

```
B    2
D    4
F    6
dtype: flat64
```
2

23. Ans. Any law that applies to the Internet and Internet related technologies. Cyber law is one of the newest areas of the legal system. This is because Internet technology develops at such a rapid pace. Cyber law provides legal protections to people using the Internet. This includes both businesses and everyday citizens. Understanding cyber law is of the utmost importance to anyone who uses the Internet. Cyber law has also been referred to as the law of the Internet. **2**

24. **(i)** The index labels of df will include Q1, Q2, Q3, Q4, A,B,C

(ii) The column names of df will be:1,2 2

25.

1. MID(): It extracts the specified number of characters from given string.
   Example:
   SELECT MID(' Welcome world,4,,4);
   Output:
   Come
2. TRIM(): It removes the leading and trailing spaces from the given string.
   Example:
   SELECT TRIM(' Welcome world ');
   Output:
   Welcome world 2

Section C

26. **(I)**
```
SELECT CITY, AVG(QUANTITY) FROM PURCHASE GROUP BY CITY;
```
(II)
```
SELECT THE CNAME,CITY FROM PURCHASE WHERE DOP BETWEEN '2022-06-11' AND '2023-01-04';
```
(III)
```
SELECT * FROM PURCHASE WHERE CITY = "CHANDIGARH" ORDER BY QUANTITY DESC;
```
3

OR

(i) 8

(ii) No Output

(iii) 0

15

27.

```
import pandas as pd
data=[[101,'Gurman',98],[102,'R
ajveer',95],[103,'Samar' ,96],
[104,'Yuvraj',88]]
df=pd.DataFrame(data,columns=['Rno','
Name','Marks'])
print(df)
```
3

28.

```
CREATE DATABASE BAG;
CREATE TABLE BOOK (BOOK_NUMBER INTEGER
PRIMARY KEY, BNAME VARCHAR(20) );
```
3

29. **(I)** Phishing

(II) PHISHING - A cyber crime, the provisions of information technology act, 2000.

(III) To Avoid Phishing Scams follow given

precautions:

Keep himself updated with the latest Phishing scams.

Think twice before clicking links.

Installing an anti-phishing toolbar or application.

Verifying the website's security.

Checking the online accounts regularly.

Keeping the Internet browser up to date.

Using updated Firewall.

Never sharing personal information to anonymous person, emails or websites. 3

OR

Ans. Follow the below given guidelines to avoid plagiarism:

- To avoid plagiarism, instead of copying the language of the book as it is, try to put it in your own language/words.
- One should have a clear understanding of plagiarism and its consequences, so that no one can perform it unintentionally.
- If copying someone else's work in our task, word for word, then do not forget enclosing it in quotes and also mention its source.
- Another way is to credit the original creator/ author.

30. **(i)** `Stock['Special_Price']=[135,150,200,400]`

(ii) `Stock.loc['4']=['TheSecret',800]`

(iii) `Stock=Stock.drop('Special_Price', axis=1)` 1 x 3 = 3

Section D

31. Ans. **(A)** select * from stock order by price desc;

(B) select category, sum(qty) from stock group by category;

(C) select category,avg(price) from stock group by category;

(D) select category, max(price) from stock group by category: 1 x 4 = 4

32. Ans. (i)

(a) `[Unit, Qtr1, Qtr2, Qtr3, Qtr4]`

(b)

	Unit	Qtr1	Qtr2	Qtr3	
0	U1	14000	15679	12568	10001
1	U2	15678	10067	10000	5698

(ii) `df.drop(1) OR df.drop(1,axis=0)`

(iii)
```
df["Total_prod"]=df["Qtr1"]
+["Qtr2"]+ ["Qtr3"]+ ["Qtr4"]  4
```

OR

```
df.to_csv("d:\home\production.
csv")
```

Section E

33. **(i)** `SELECT POWER(2,3);`

(ii) `SELECT NOW();`

(iii) `SELECT ROUND(4.4787 ,-2);`

(iv) `SELECT DAYNAME("2023-11-07");`

(v) `SELECT LENGTH("IPL#2023");` 5

OR

(i)
```
INSERT INTO WORLD_DATA VALUES("Chi
li",12365,25412,32564);
```

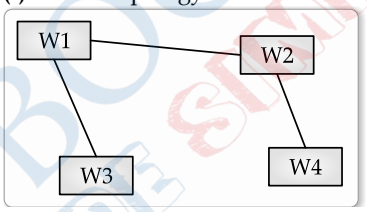
(ii)
```
UPDATE WORLD_DATA SET COUNTRY=
"NEPAL" where COUNTRY= "Pakistan";
```

(iii)
```
DELETE FROM WORLD_DATA WHERE
OCTOBER<10000;
```

(iv)
```
ALTER TABLE WORLD_DATA ADD CAPITAL
varchar(20);
```

(v)
```
Select * from WORLD_DATA ORDER BY
COUNTRY;
```

34. **(i)** Star topology



(ii) **(a)** LAN

(b) WAN

(iii) **(a)** Repeater should be placed in between wings W3 to W2 and W1 to W4 as distance is more.

(b) Hub/Switch should be placed in each wing to connect various computers together.

(iv) Protocol : VoIP

Example to send messages instantly: WhatsApp

(v) As per the 8020 rule we can set up the server on Administrative Wing (W1) , since this being contains maximum number of computers. 5

35.
```
Import matplotlib.pyplot as plt
smarks=[10,20,30,40,50]
sname=['sahil','deepak','anil','ravi'
,'riti']
plt.plot(sname,smarks)
plt.xlabel('Student Name')
plt.ylabel('Marks Scored')
plt.title('Marks secured by students
in Term-I')
plt.show()
```

OR

```
Import matplotlib.pyplot as plt
sales=[450,300,500,650]
qtr=['QTR1','QTR2','QTR3','QTR4']
plt.bar(qtr,sales)
plt.xlabel('quarter)
plt.ylabel('sales')
plt.title('Sales each quarter')
plt.show()
```