BRAIN INTERNATIONAL SCHOOL

PRACTICE PAPER 1

CLASS – XII **Maximum Marks:70**

SUBJECT - INFORMATICS PRACTICES (Code No. 065) **Time Allowed: 3 Hrs.**

General Instructions:

- All questions are compulsory.
- The examination paper contains five sections, from Section A to Section 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 questions (33 to 34). Each question carries 4 Marks.
- Section E consists of 3 questions (35 to 37). Each question carries 5 Marks.
- There is no overall choice. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- All programming questions are to be answered using Python Language only.
- In case of MCQ, text of the correct answer should also be written.

Q No.	Section-A (21 x 1 = 21 Marks)	Marks
1	State whether the following statement is True or False: Series are capable of holding homogeneous datatype only.	1
2	Which function in Python allows you to rename the column or row indices in a dataframe? (a) reindexed() (b) changerow() (c) rename() (d) None of the above	1
3	While performing mathematical operations on series objects, non-matching indices are filled with: (a) Null (b) Blank (c) Nan (d) Zero	1
4	Which of the following command is used to display first two rows of a DataFrame 'DF' ? (a) DF.head() (b) DF.header() (c) DF.head(2) (d) DF.Head(2)	1

5	When a Dataframe is created from list of dictionaries, then dictionary keys will become _____ (a) Row labels (b) Default numeric value (c) Column labels (d) None of the above	1
6	Identify the function to remove a column from an existing dataframe? (a) df. remove (col_name) (b) df. drop (col_name, axis =1) (c) df. del (axis =0, col_name) (d) df. delete (col_name, axis=1)	1
7	Which of the following function is used to import a dataframe from a csv file? (a) to_csv( ) (b) read_csv( ) (c) import_csv( ) (d) export_csv( )	1
8	State True / False. In SQL, a table can have more than one primary key?	1
9	What will be the output of the following SQL query: SELECT ROUND (20.294,2); (a) 20.29 (b) 20.28 (c) 20.30 (d) 21.29	1
10	The length( ) function SQL returns: (a) Position of a character in string (b) Total number of characters in the string (c) Index of the last character in the string (d) None of the above	
11	Which one of the following functions is used to count the no of rows in a given table in MySQL? a) COUNT (*) b) CARDINALITY ( ) c) COUNT (Column name) d) None of the above	
12	The aggregate function avg ( ) returns _____ from a set of values in an SQL table. (a) Total (b) Mean (c) Mode (d) Difference	
13	Which SQL clause allows dividing the SQL table into groups? a) group by b) group c) order by d) having	

14	Pick the odd one out of the following? a) update b) select c) drop d)delete	
15	Varsha has set up her own company to sell her own range of clothes on Instagram. What type of intellectual property can she use to show that the clothes are made by her company. a) Patents b) Copyright c) Trademark d) Design	
16	Which among the following is identified as plagiarism? (a) Paraphrasing text with proper citation (b) Creating original content based on research (c) Citing sources correctly in a bibliography (d)Quoting someone's work without proper citation	1
17	Identify the networking device that regenerates and re broadcast signals in a network (a) Router (b) Modem (c) Hub (d)Repeater	1
18	Which among the following topology has Central Node dependency? a) Bus b) Star c) Tree d) Mesh	1
19	An online discussion group that allows direct live communication is known as: (a) WebCrawler (b) Hyperlink (c) e-Mail (d) Chat group	1
	Q-20 and Q-21 are Assertion (A) and Reason (R) Type questions. Choose the correct option as: (a) Both A and R are True, and R correctly explains A. (b) Both A and R are True, but R is not the reason of A. (c) A is True, but R is False. (d) A is False, but R is True.	
20	Assertion (A): We can add a new column in an existing dataframe using .at or .loc methods. Reasoning (R): When we reassign new values to an existing column in a data frame, the previous values are overwritten.	1

21	Assertion (A): Update is an SQL command used to change the contents in the table. Reasoning (R): The update command is a DDL command in SQL.		1
Q No.	**Section-B (7X2 = 14 Marks)**		**Marks**
22	(a)	What is a series with respect to Python Pandas? How is it different from a list? **OR**	2
	(b)	Define the term "Boolean Indexing" in python pandas with an example.	
23	Explain any two Data frame attributes with an example.		2
24	Explain the term Free and Open-Source software with an example.		2
25	(a)	State two differences between Static and Dynamic web pages. **OR**	2
	(b)	State one difference between Web server and Web browser. Also give an example for a Web Browser.	
26	Write SQL queries to perform the following: I. Display the position of occurrence of string "BO" in string "FIRST PREBOARD". II. Display day of the month for date 20th September 2007		2

27	(a)	Write the output of the following code:
		`import pandas as pd`
		`s1=pd.Series(['Sita', 'Gita', 'Rita'],index=[101,102,103])`
		`s2= pd.Series ([16, 17, 19] ,index=[101,102,103])`
		`s3= pd.Series ([81.0, 80.0, 68.0] ,index=[101,102,103])`
		`data = {'Name': s1, 'Age':s2,'Marks': s3}`
		`df = pd.DataFrame(data)`
		`df.drop(index=101, inplace=True)`
		`print(df)`
		[OR]
			2

	(b)	Write the output of the following code:
		`import pandas as pd`
		`s1 = pd.Series([10, 20, 30, 40], index = ['A', 'B', 'C', 'D'])`
		`s2= pd.Series([5, 10, 15], index = ['B', 'C', 'D'])`
		`print (s1+s2)`	

28	How does prolonged use of digital devices affect mental health, and what is one way to reduce these effects?		2
Q No	**Section -C (4 x 3 = 12 Marks)**		**Marks**
29	Identify the type of cybercrime for the following situations: (i) A person complains that Rs. 5 lacs have been fraudulently stolen from his / her account online through some online transactions in three days using NET BANKING. (ii) A person complains that his/her debit/credit card is safe with him still somebody has done shopping /ATM transaction on this card. (iii) A person complains that somebody has created a fake profile of Facebook and defaming his/her character with abusive comments and pictures.		3

30 (a) Write a Python program to create a Pandas Series as shown below using a dictionary, Note that left column indicates the indices and the right column are the values in the series.

Biscuit	50
Ice cream	60
Bread	70
Bun	80

OR

(b) Write a Python program to create the Pandas Data Frame displayed below using a list of dictionaries. 3

	Rollno	Name	Age	Marks	Class
10	100	Anand	16	92	12
20	200	Kirshna	15	86	11
30	300	Malik	16	79	12
40	400	Pranshu	14	95	10

31 (a) Write an SQL statement to create a table named PRODUCT, with the following specifications: 2+1=3

Column Name	Data type	Constraints
Product_id	Numeric	Primary Key
Product_Name	Varchar(20)	Not Null
Specification	Varchar(15)	
Rate	Numeric	

(b) Write an SQL Query to delete the column Specification from the table called PRODUCT.

32 A Srikanth, a database administrator created the following tables GAMES and TRAINER as shown below:

Table : GAMES

Gcode	Gname	Type	Prizemoney	Scheduledate
G100	Basket Ball	Outdoor	10000	15-Dec-2023
G200	Foot Ball	Outdoor	15000	20-Jan-2024
G300	Chess	Indoor	9000	19-Mar-2023
G400	Table Tennis	Indoor	8000	25-Dec-2023
G500	Cricket	Outdoor	20000	17-Feb-2024

B

Table: TRAINER 3

Tid	T_Name	Gcode
T101	Max	G300
T102	Rudy	G400
T103	Robert	G100

Write suitable SQL query for the following.

I. Display the total prize money for each type of game.

II. Display the Gcode, Prize money along with Trainer Name for all the trainers.

III. To increase the prize money by 500 where game name is Basket Ball.

OR

Consider the following table and write the output of the following SQL Queries.

Table : Flowers

F_id	F_Name	Price	Qty
F101	Hibiscus	300	30
F102	Marigold	250	25
F103	Rosews	450	35
F104	Jasmin	400	30

I. Which attribute in the above table you will choose as Primary key? Justify your answer.

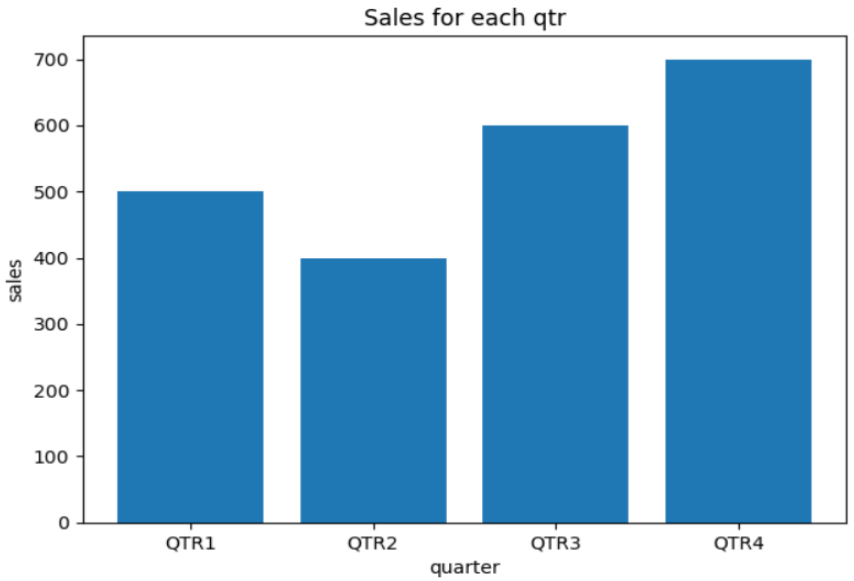
II. Write an SQL query to add a new column "Total_amount" of numeric datatype.

III. Give the output of following SQL query:

Select F_Name, Price from Flowers where Qty > 27 orde4r by F_Name desc;

Q No.	Section-D (2X4 = 8 Marks)	Marks
33	Ananya, a company manager who view the sales of the company in quarter wise. She tries to display the data in matplotlib library using python code. She missed some of the code so she got wrong answer. Help Ananya, to write code correctly and get the output in the form of bar chart. The details of the company and the sample output will be shown below:	4

Quarter	Sales
Qtr1	500
Qtr2	400
Qtr3	600
Qtr4	700




```
import _____as plt      # Statement1

sales =[500, 400, 600, 700]

qtr=['QTR1','QTR2', 'QTR3', 'QTR4']
plt _________ (qtr, sales)                  # Statement 2
plt _____________('quarter')                # Statement 3
plt.ylabel('sales')
plt.title(' _____________________ ')        # Statement 4
plt.show()
```

	i. Write the suitable code for the import statement in the blank space in the line marked as Statement-1. ii. Fill in the blank in Statement-2 with the name of the function to draw a bar chart with suitable Python code. iii. Fill in the blank in Statement-3 with the name of the function to set the label on the x-axis. iv. Refer the graph shown above and fill the blank in Statement-4 with suitable Chart Title.	

34 Nisha, a store manager has created the following table Product: **4**

Table: Product

P_id	Pname	Price
P1001	Notebook	60
P1002	Eraser	10
P1003	Sharpener	15
P1004	Marker	20
P1005	Pencil	25

Write appropriate SQL queries for the following:

I. Display the Product id and their Price sorted in descending order.
II. Display the product name in uppercase whose price is more than 50.
III. Display the maximum price from the Product table.
IV. Display the names of all the products whose Pname has a character 'e' anywhere in its name.

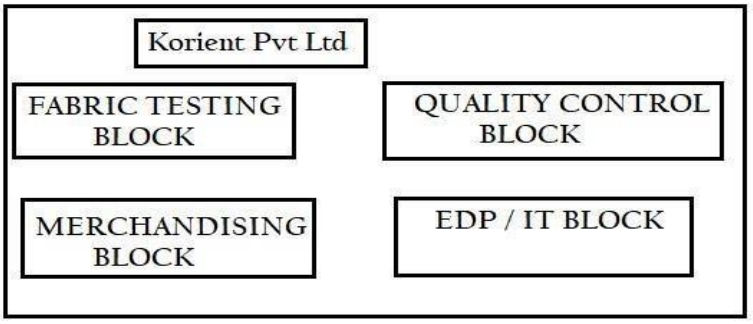
[OR]

Consdering the above table product, write the output of the SQL queries:

i. Select Pname, length(Pname) from product where Price>20;
ii. Select lower(Pname) from product where price between 30 and 70;
iii. Select sum(Price) from product;
iv. Select P_id,Pname from product where Pname like "%r";

Q No.	**Section-E (3X5 = 15 Marks)**	**Marks**

35 Korient Pvt Ltd, Bangalore has four blocks as shown in the below diagram and is now planning to set up a network. 5



Distance between each block (in meters) is given as follows:

Merchandising to Fabric Testing	40
Merchandising to Quality Control	80
Merchandising to EDP / IT	120
Fabric testing to Quality Control	40

The number of computers in each block is as follows:

Merchandising	15
Fabric Testing	25
EDP / IT	120
Quality Control	40

	(a) Which device would you suggest to connect each computer in each of the given blocks? (b) Suggest the most suitable block to install the server. Justify your answer. (c) Suggest the ideal cable layout for connecting these blocks physically. (d) Suggest the placement of the 'Repeater' in the layout with a justification. (e) The company is planning to connect the Bangalore Branch office to its Mysore Head office, which is 350 km away. Which type of network will be formed?			
36	Consider the DataFrame df shown below. Name Price Rating 0 Note Book 100 5 1 Project File 120 7 2 Pen Drive 325 6 3 IP Book 500 3 Write Python statements for the DataFrame df to: a. Print the first two rows of the DataFrame df. b. Display titles of all the books. c. Display the data of the 'Name' column from indexes 1 to 3 (both included). d. Rename the column name 'Name' to 'Title'. e. Remove the column rating.			5
37	(a)	Write suitable SQL query for the following: a) To display the substring 'BASE' from the main string 'DATABASE'. b) To display the month name from the date "25/10/2025". **c)** To remove the leading and trailing spaces in the string " PRE BOARD ". d) To display the current date. e) To convert the text in the 'Pname' column (attribute) of the 'Product' table in uppercase.		5
		OR		
	(b)	Write suitable SQL query for the following: a) To display the square of 5. b) To display the first four characters from the string "I Love Python" c) To round off the value 40.4567 to 2 decimal place. d) To convert the E_Name column of Employee table to uppercase. e) To display the names of those employees whose joining month is April in the Employee table.		

BRAIN INTERNATIONAL SCHOOL

PRACTICE PAPER 2

CLASS: XII **MAX MARKS : 70**

SUB: INFORMATICS PRACTICES **TIME : 3 Hrs.**

General Instructions:

1. This question paper contains five sections, Section A to E.
2. All questions are compulsory.
3. **Section A** have 21 questions carrying 01 mark each.
4. **Section B** has 07 Very Short Answer type questions carrying 02 marks each.
5. **Section C** has 04 Short Answer type questions carrying 03 marks each.
6. **Section D** has 02 Case study type 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.

Q	**SECTION-A**	Marks
1.	Which device is used to connect two different networks and route packets between them? i. Hub ii. Router iii. Repeater iv. Switch	1
2.	Shruti received an email that appeared to be from a popular social media platform, requesting her to click a link to reset her password. The link directed her to a fraudulent website designed to capture her login credentials. This situation is an example of which type of cybercrime? (i) Cyber Bullying (ii) Violation of Intellectual Property Rights (iii) Hacking (iv) Phishing	1
3.	Unsolicited commercial emails is known as .....? i. Spam ii. Malware iii. Virus iv. Worms	1
4.	Find the output for the SQL statement: SELECT SUBSTR("DataScience2025", 5, 6); i. Science ii. Scienc iii. aScien iv. taScie	1
5	What is the output of the following SQL statement? SELECT ROUND(4567.89, -2); i. 4500 ii. 4600 iii. 4567 iv. 4570	1

6.	Which of the following is Net Etiquette? i. Be Ethical ii. Be Responsible iii. Be Respectful iv. All of the above	1
7.	Which keyword is used to sort the result of an SQL query in **ascending order**? i. ASCEND ii. ASC iii. ASCE iv. UP	1

8.	Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query:
	SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5
	GROUP BY DEPT;
	Which of the following is a correct query to perform the given task?
	i. SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5GROUP BY DEPT;
	ii. SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*) > 5 GROUP BY DEPT;
	iii. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*) > 5;
	iv. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) > 5;
		1

9.	Which SQL function is used to calculate the **total sum** of values in a numeric column? i. TOTAL() ii. SUM() iii. COUNT() iv. AVG()	1
10.	Which of the following Python statements is used to write a Pandas DataFrame df to a CSV file? (i) df.to_csv() (ii) df.write_csv() (iii) df.to_table() (iv) df.export_csv()	1
11.	CSV stands for: i. Column Separated Value ii.Class Separated Value iii.Comma Separated Value iv. Comma Segregated Value	1
12	Which of the following device is used for converting digital signals from a computer into analog signals for transmission over a telephone line. (i) Modem (ii) Switch (iii) Repeater (iv) Router	1
13	Stealing someone else's intellectual work and representing it as own, is called _____. (i) Intellectual steal (ii) Plagiarism (iii) Pluckism (iv) Pickism	1
14	What is the output of the following SQL statement? SELECT DAY('2023-07-15'); i. 7 ii. 15 iii. 2023 iv. 202	1

15	The act of fraudulently acquiring someone's personal and private information, such as online account names, login information and passwords is called as__. i. Phishing ii. Identity Theft iii. Plagiarism iv. all the above	1
16	Which Matplotlib function is used to set the **title** of a graph? i. plt.label() ii. plt.xlabel() iii. plt.title() iv. plt.plot()	1
17	How can you retrieve the **first 3 rows** of a DataFrame df? i) df.head(3) ii) df.tail(3) iii) df.iloc[:3] iv) Both i and iii	1
18	Which of the following is **not a valid method** to get summary statistics of a DataFrame df? i) df.describe() ii) df.info() iii) df.stats() iv) df.mean()	1
19	Which of the following is a correct way to create a Pandas Series? i) pd.Series([1, 2, 3, 4]) ii) pd.Series(1, 2, 3, 4) iii) pd.Series{'a': 1, 'b': 2, 'c': 3} iv) pd.Series(1, 2, 3)	1
Q20 and 21 are ASSERTION AND REASONING based questions. Mark the correct choice as 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		
20	**Assertion (A):** The output of print(df) and print(df.loc[:]) will be same for a DataFrame df. **Reason (R):** The statement print(df.loc[:]) will display all rows and columns of the DataFrame df, thus showing the entire data	1
21	**Assertion (A):** The INSERT INTO command is a DML (Data Manipulation Language) command. **Reason (R):** DML commands are used to insert, update or delete the data stored in a database	1
	SECTION-B	
22	Briefly explain the basic concepts of a web server and web hosting. **OR** Rati is doing a course in networking. She is unable to understand the concept ofURL. Help her by explaining it with the help of suitable example.	2

23 A table `Students` has columns: `RollNo, Name, Marks, Grade`. Suppose there are 6 students, and 2 students have `Grade = NULL`. **2**

- Command1: `SELECT COUNT(*) FROM Students;`
- Command2: `SELECT COUNT(Grade) FROM Students;`

Question: Explain the outputs.

24 What is the difference between the order by and group by clause when used along with the **Select** statement. Explain with an example. **2**

25 **2**

The following code has syntax errors. Rewrite the correct code:

```
Import pandas as pd
data = {"Name":["Alice","Bob","Charlie"],"Age":[25,30,22]}
df = Pd.dataframe(data)
Print(df.head())
```

26 Define cyber bullying and give two examples of how it can occur online. **2**

27 Given two series S1 and S2 **2**

S1		S2	
A	39	A	10
B	41	B	10
C	42	D	10
D	44	F	10

Find the output for following python pandas statements?a. S1[: 2]*100

b. S1 * S2

28 Consider the following DataFrame, DF **2**

RollNo	Name	Class	Section	CGPA
S1	Riya	IX	B	9
S2	Rahul	X	C	8.5
S3	Sneha	IX	A	8.8
S4	Aditya	X	D	9.1

Write commands to :

i. Add a new column `Stream` with values `(Science, Arts, Commerce, Science)`

ii. Add a new row with values `(5, Tanya, X, B, 9.3, Arts)`.

SECTION -C

29 **3**

ID	BRAND	TYPE	Q1_SALES	Q2_SALES
1	Samsung	Smartphone	45000	50000
2	Samsung	Feature	20000	25000
3	Apple	Smartphone	40000	42000

	4	Apple	Feature	5000	7000	
	5	Xiaomi	Smartphone	30000	35000	
	6	Xiaomi	Feature	10000	12000	

i. Display **type-wise average sales** in the first quarter (Q1_SALES).

ii. Display **brand-wise highest sales** in the second quarter (Q2_SALES).

iii. Display all **records in descending order of second-quarter sales**.

30 Write a Python program to create a Pandas Series as shown below using a ndarray, where the subject names are the indices and the corresponding marks are the values in the series. 3

Mathematics 85
Science 90
English 78
History 88

OR

Write a Python program to create the Pandas DataFrame displayed below using a list of dictionaries.

	Course	Duration
0	Data Science	12
1	Artificial Intelligence	18
2	Web Development	6

31 Identify the type of cybercrime for the following situations: 3

i. A person receives an email claiming to be from their bank asking for login credentials. The person unknowingly shares the details and money is stolen from their account.

ii. Someone hacks into a person's social media account and posts offensive content in their name.

iii. A person repeatedly receives threatening and harassing messages on WhatsApp from unknown numbers.

OR

As a responsible citizen, suggest **three safe practices for protecting personal data online**. Explain each in detail.

32	Consider the following sql table 'automobile'	3

index	company	body-style	wheel-base	num-of-cylinders	price	Dateofmanufacture
0	bmw	sedan	101.234	four	16925	1998-03-27
1	bmw	sedan	101.261	six	20970	1999-05-23
2	honda	sedan	96.538	four	12945	2000-03-02
3	honda	sedan	96.519	four	10345	2001-02-01
4	toyota	hatchback	95.727	four	5348	1999-03-01
5	toyota	hatchback	95.173	four	6338	2000-05-11

Write SQL queries using SQL functions to perform the following operations:

i. Display company name and wheel-base after rounding off to nearest ten's decimal places.
ii. Display the position of occurrence of the string "dan" in body style.
iii. Display the year of manufacturing for sedan;

OR

Helps Abhay to Compare Having clause and Order by clause with the help of example?

SECTION -D

33 Preeti manages database in a blockchain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries: **table : CRYPTO_TXNS** [4]

ID	USER	COINS	HASH	TXN_DATE
1	Alice	5	HJ34K	2021-01-15
2	Bob	12	RT67L	2021-05-20
3	Charlie	8	PL89M	2022-03-10
4	Diana	20	QW45N	2022-05-25
5	Evan	15	ZX12P	2023-02-14

Write SQL queries to:

i. Display the **year of the first transaction**.
ii. Display the **month of the latest transaction**.
iii. Display **all transactions done in March**.
iv. Count the **total number of transactions in 2021**.

34 Consider the following DataFrame **StudentDF** with row index **S1, S2, S3, S4** [1+1=2]

	RollNo	Name	Class	Section	Percentage	Stream
S1	101	Riya	XI	A	85.6	Science
S2	102	Arjun	XII	B	91.3	Commerce
S3	103	Meena	XI	C	78.9	Humanities
S4	104	Karan	XII	A	95.2	Science

Based on the above dataframe answer the following:

A. Predict the output
   i. StudentDF.T
   ii. StudentDF[::-1]
B. Print **Name**, **Stream**, and **Percentage** for students **S2** and **S4**.

OR

Print the **Name** and **Class** of students having **Percentage greater than 90**.

SECTION-E

35 Write the SQL functions which will perform the following operations: [5]

i. To display the **current year** from the system date.
ii. To **convert** a string "Incredible" into **uppercase**.
iii. To display the **length** of a string "Education".
iv. To **extract the first three characters** from a column CityName.
v. To **find the absolute value** of a number stored in variable num.

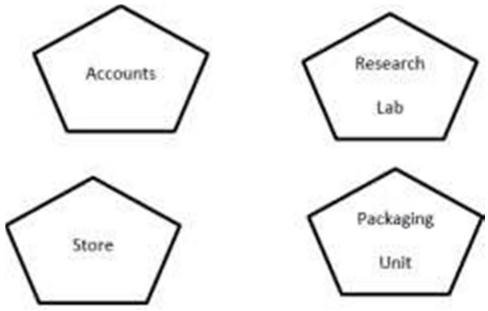
OR

Define the following functions

i. LTRIM() ii.MID() iii. MOD() iv. NOW() v. INSTR()

36	SHARMA Medicos Center has set up its new center in Delhi . It has four buildings as shown in thediagram given below:	5

Number of Computers	
Accounts	25
Reseach Lab	100
Store	15
Packaging Unit	60



Distance between various building are as follows:

Dept to dept	**Distance (m)**
Account to reseach lab	55m
Account to Store	150m
Store to Package Unit	160m
Packaging unit to Research lab	60m
Accounts to Packaging unit	125m
Store to Research Lab	180m

As a network expert, provide the best possible answer for the following queries:

i. Suggest a cable layout of connections between the buildings.

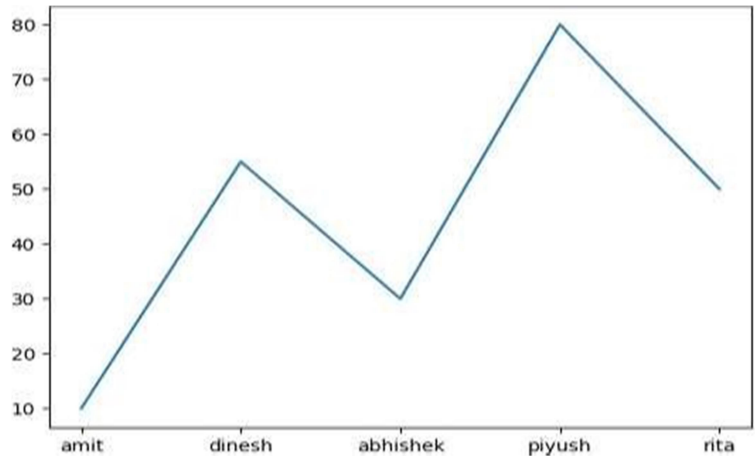
ii. Suggest the most suitable place (i.e. buildings) to house the server of this organization.

iii. Suggest the placement of the following device with justification:

a) Repeater b) Hub/Switch

iv. Suggest a system (hardware/software) to prevent unauthorized access to or from the network.

v. The company is planning to link its head office situated in Delhi with the offices in hilly areas. Suggest a way to connect it economically.

37	Observe the following figure. Identify the coding for obtaining this as output.  Also give suitable python statement to save this chart OR Write a Python program to display a bar chart of the popularity of programming LanguagesData: Programming languages: Java, Python, PHP, JavaScript, C#, C++ Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7 Also give suitable python statement to save this chart	5