KENDRIYA VIDYALAYA SANGATHAN

Raipur Region

STUDENT SUPPORT MATERIAL

session 2020-21

तत् त्वं पूषन् अपावृणु

केन्द्रीय विद्यालय संगठन

Class XII

Informatics practices

KENDRIYA VIDYALAYA SANGTHAN

REGIONAL OFFICE, RAIPUR

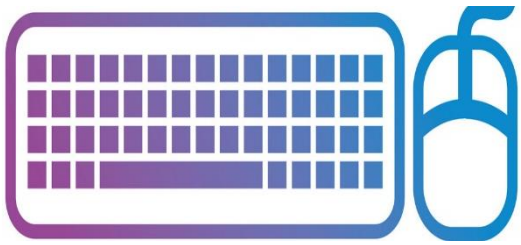
An Autonomous Body under the Ministry of Education, Government of India

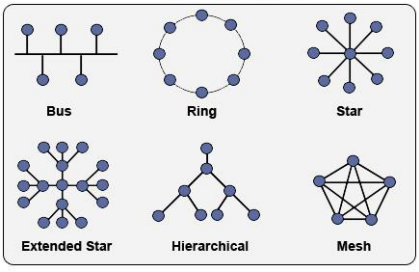
STUDENT SUPPORT MATERIAL

INFORMATICS PRACTICES

SESSION 2020-21

CLASS-XII





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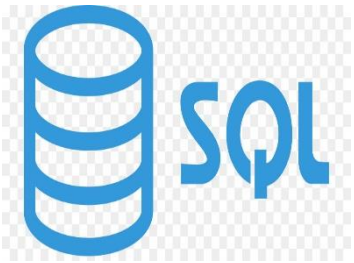

STUDENT SUPPORT MATERIAL

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Informatics Practices

CLASS XII

Code No. 065

2020-2021

1. Prerequisite: Informatics Practices – Class XI

2. Learning Outcomes

   At the end of this course, students will be able to:

   - Create Series, Data frames and apply various operations.
   - Perform aggregation operations, calculate descriptive statistics.
   - Visualize data using relevant graphs.
   - Design SQL queries using aggregate functions.
   - Import/Export data between SQL database and Pandas.
   - Learn terminology related to networking and internet.
   - Identify internet security issues and configure browser settings.
   - Explain the impact of technology on society including gender and disability issues.

3. **Distribution of Marks and Periods**

Unit No	Unit Name	Marks	Periods Theory	Periods Practical	Total Period
1	Data Handling using Pandas and Data Visualization	30	50	40	90
2	Database Query using SQL	25	30	22	52
3	Introduction to Computer Networks	7	12	2	14
4	Societal Impacts	8	14	-	14
	Project	-	-	10	10
	Practical	30	-	-	-
	Total	100	106	74	180

Unit Wise syllabus

Unit 1: Data Handling using Pandas and Data Visualization Data Handling using Pandas –I
Introduction to Python libraries- Pandas, Matplotlib. Data structures in Pandas - Series and Data Frames. Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing.
Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing; Joining, Merging and Concatenation.
Importing/Exporting Data between CSV files and Data Frames.
Data handling using Pandas – II
Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance. DataFrame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting.
Handling missing values – dropping and filling. Importing/Exporting Data between MySQL database and Pandas. Data Visualization
Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram, pie chart, frequency polygon, box plot and scatter plot.
Customizing plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.

Unit 2: Database Query using SQL
Math functions: POWER (), ROUND (), MOD ().
Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).
Querying and manipulating data using Group by, Having, Order by.
Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN

Unit 3: Introduction to Computer Networks
Introduction to networks, Types of network: LAN, MAN, WAN. Network Devices: modem, hub, switch, repeater, router, gateway

Network Topologies: Star, Bus, Tree, Mesh.
Introduction to Internet, URL, WWW and its applications- Web, email, Chat, VoIP.
Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website.
Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Unit 4: Societal Impacts
Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.
E-waste: hazards and management.
Awareness about health concerns related to the usage of technology.

Project Work
The aim of the class project is to create tangible and useful IT application. The learner may

identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about functioning of the organization, and how data are generated, stored and managed. The learner can take data stored in csv or database file and analyze using Python libraries and generate appropriate charts to visualize. If an organization is maintaining data offline, then the learner should create a database using MySQL and store the data in tables. Data can be imported in Pandas for analysis and visualization.

Learners can use Python libraries of their choice to develop software for their school or any other social good. Learners should be sensitized to avoid plagiarism and violation of copyright issues while working on projects. Teachers should take necessary measures for this. Any resources (data, image etc.) used in the project must be suitably referenced.

The project can be done individually or in groups of 2 to 3 students. The project should be started by students at least 6 months before the submission deadline.

Practical Marks Distribution

S.No.	Unit Name	Marks
1	Programs using Pandas and Matplotlib	8
2	SQL Queries	5
3	Practical file (minimum of 20 programs based on Pandas , 5 based on Matplotlib and 20 SQL queries must be included)	5
4	Project Work (using concepts learned in class XI and XII)	7
5	Viva-Voce	5
	TOTAL	30

4. Suggested Practical List

5.1 Data Handling

1. Create a pandas series from a dictionary of values and an ndarray
2. Given a Series, print all the elements that are above the 75th percentile.
3. Create a Data Frame quarterly sales where each row contains the item category, item name, and expenditure. Group the rows by the category, and print the total expenditure per category.
4. Create a data frame based on ecommerce data and generate descriptive statistics (mean, median, mode, quartile, and variance)
5. Create a data frame for examination result and display row labels, column labels data types of each column and the dimensions
6. Filter out rows based on different criteria such as duplicate rows..
7. Find the sum of each column, or find the column with the lowest mean.
8. Locate the 3 largest values in a data frame.
9. Subtract the mean of a row from each element of the row in a Data Frame.
10. Replace all negative values in a data frame with a 0.
11. Replace all missing values in a data frame with a 999.
12. Importing and exporting data between pandas and CSV file
13. Importing and exporting data between pandas and MySQL database

5.2 Visualization

14. Given the school result data, analyse the performance of the students on different parameters, e.g subject wise or class wise.
15. For the Data frames created above, analyze and plot appropriate charts with title and legend.
16. Take data of your interest from an open source (e.g. data.gov.in), aggregate and summarize it. Then plot it using different plotting functions of the Matplotlib library.

5.3 Data Management

17. Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
18. Insert the details of a new student in the above table.
19. Delete the details of a particular student in the above table.
20. Use the select command to get the details of the students with marks more than 80.
21. Create a new table (order ID, customer Name, and order Date) by joining two tables (order ID, customer ID, and order Date) and (customer ID, customer Name, contact Name, country).
22. Create a foreign key in one of the two tables mentioned above
23. Find the min, max, sum, and average of the marks in a student marks table.
24. Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
25. Create a new table (name, date of birth) by joining two tables (student id, name) and (student id, date of birth).
26. Write a SQL query to order the (student ID, marks) table in descending order of the marks.

5.4 Introduction to Computer Networks

27. Download, install and configure browser.

DEDUCTED PORTION
Informatics Practices - 065
CLASS XII

Topics

Unit-1 Data handling using Pandas – II

Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance.

Data Frame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting.

Handling missing values – dropping and filling. Importing/Exporting Data between MySQL database and Pandas. Data Visualization , pie chart, frequency polygon, box plot and scatter plot.

: color, style (dashed, dotted), width;

4. Unit Wise syllabus

; Joining, Merging and Concatenation. Unit 2:

Database Query using SQL

Practical

- Create a data frame based on ecommerce data and generate descriptive statistics (mean, median, mode, quartile, and variance)
- Create a data frame for examination result and display row labels, column labels data types of each column and the dimensions
- Filter out rows based on different criteria such as duplicate rows.
- Find the sum of each column, or find the column with the lowest mean.
- Locate the 3 largest values in a data frame.
- Subtract the mean of a row from each element of the row in a Data Frame.
- Replace all negative values in a data frame with a 0.
- Replace all missing values in a data frame with a 999.
- Importing and exporting data between pandas and CSV file
- Importing and exporting data between pandas and MySQL database
- 5.3 Data Management
- Create a new table (order ID, customer Name, and order Date) by joining two tables (orderID, customer ID, and order Date) and (customer ID, customer Name, contact Name, country).
- Create a foreign key in one of the two tables mentioned above
- Create a new table (name, date of birth) by joining two tables (student id, name) and (student id, date of birth).

5.4 Introduction to Computer Networks

- Download, install and configure browser.

KENDRIYA VIDYALAYA SANGATHAN REGIONAL OFFICE RAIPUR
SPECIAL REVISION PLAN FOR LATE BLOOMERS
CLASS XII INFORMATICS PRACTICES
WITH EFFECT FROM 01/04/2021 TO 30/04/2021

Day	Unit Name	Topic	Sub-Topic	Marks of Topic as per CBSE Sample Paper
Day-1	UNIT 1-DATA HANDLING USING PANDAS	Creating Series	-creating empty series Objects -creating series from Python Sequence -creating series from ndarray -from scalar value	1
Day-2	UNIT 1-DATA HANDLING USING PANDAS	selection, indexing and Slicing in Series, operations on series objects	-accessing individual elements using the index - retrieving subset of series objects by extracting slices -applying formulas in the extracted slices of series - modifying elements of series objects -head and tail functios -vector and arithmetic operations on Series objects -filtering entries, sorting	7
Day-3	UNIT 1-DATA HANDLING USING PANDAS	Data Frame and its creation	-creating dataframe from 2D dictionary -from a list of dictionaries/lists -from 2D ndarray -from another dataframe object	3
Day-4	UNIT 1-DATA HANDLING USING PANDAS	Dataframe attributes	-Common dataframe attributes like index, columns, axes, dtypes, size, shape, values, empty, ndim, T(transpose)	2
Day-5	UNIT 1-DATA HANDLING USING PANDAS	Fetching of subsets using Names	use of loc -to access a row -to access multiple rows -to access selective columns -to access range of columns from range of rows	4
Day-6	UNIT 1-DATA HANDLING USING PANDAS	Adding/modifying values in dataframe	-to add a new column to the dataframe - to change the values of a particular column - to add/modify the row with new values -modifying a single cell	5
Day-7	UNIT 1-DATA HANDLING USING PANDAS	Deleting/ renaming columns	-deleting rows/columns in a dataframe - renaming rows and columns using rename	2
Day-8	**TEST OF UNIT 1 DATA HANDLING USING PANDAS (SERIES AND DATAFRAME)**			

Day-9	UNIT 1-DATA HANDLING USING PANDAS	Data Visualization using matplotlib, types of charts	-purpose of plotting -line plot -bar graph -histogram	3
Day-10	UNIT 1-DATA HANDLING USING PANDAS	Customizing plots	-drawing and saving plots -adding labels -adding title -adding legend in plots	2
Day-11	**TEST OF UNIT 1 DATA HANDLING USING PANDAS (DATA VISUALIZATION)**			
Day-12	UNIT 2-DATABASE QUERY USING SQL	Database concepts and Basic SQL commands	Introduction to database concepts. Concept of domain, relation, tuple, attribute, degree, cardinality, key, primary key, candidate key, alternate key and foreign key; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, LIKE, NULL /IS NULL	4
Day-13	UNIT 2-DATABASE QUERY USING SQL	Group by and having clauses	ORDER BY, GROUP BY, HAVING;	5
Day-14	UNIT 2-DATABASE QUERY USING SQL	Aggregate functions	SUM ( ), AVG ( ), COUNT ( ), MAX ( ) and MIN ( );	5
Day-15	UNIT 2-DATABASE QUERY USING SQL	Text functions	Substr(), Instr(), Left(), Right(), Mid(), Trim()	7
Day-16	UNIT 2-DATABASE QUERY USING SQL	More SQL functions	Math functions, Date functions	9
Day-17	**TEST OF UNIT 2 QUERYING USING SQL**			
Day-18	UNIT 3-INTRODUCTION TO COMPUTER NETWORKS	Transmission media and network devices	Transmission media. Modem, Router, Switch, Gateway. Focus on only definition and functioning part of each topic	2
Day-19	UNIT 3-INTRODUCTION TO COMPUTER NETWORKS	Network topologies and types of protocols	Bus, Star, Tree, Mesh. LAN, WAN, MAN. HTTP, SMTP, POP. Different protocols, Focus on definition and Full form of each topic	5

Day-20	UNIT 3- INTRODUCTION TO COMPUTER NETWORKS	Website and web browsers and threats to mail.	Emails, junk mails, spams, Cookies, Protection using Firewall, https;(HTTP); Domain Names; URL; Website, Web browser, Webservers, webhosting	1
Day-21	UNIT 4- SOCIETAL IMPACTS	IPR, Plagiarism, Types of software	Short notes on Digital footprints, intellectual property rights, plagiarism, net etiquettes, types of softwares- free, oss, freeware, shareware etc.	6
Day-22	UNIT 4- SOCIETAL IMPACTS	Network Security, Cyber law and Crimes	India IT Act, Cyber Law, hacking,cyber crimes and its types.	1
Day-23	UNIT 4- SOCIETAL IMPACTS	E-waste management, Health issues	E-waste management, disposal process and advantages. Awareness on health concerns-Physical and mental	3
Day-24	**TEST OF UNIT 3 & 4 NETWORKING AND SOCIETAL IMPACTS**			
Day-25	**3 HRS TEST ON FULL SYLLABUS**			

KENDRIYA VIDYALAYA SANGATHAN
RAIPUR REGION
CLASS XII SUBJECT INFORMATICS PRACTICES
DAY WISE REVISION PLAN FOR LATE BOLLMERS
TOTAL NO OF DAYS-35
DURATION 1 HOUR DAILY

Date	Day	Unit	Topic	Subtopics	Marks as per CBSE Sample Paper
01.02.2021	Monday	Unit 1- Data handling using Pandas	Introduction to Python Libraries, Data structures in Pandas Series and Data frames	-Import of Pandas library -Introduction to the basics of data structure in Python -Key difference between a series and dataframe object	
02.02.2021	Tuesday	Unit 1- Data handling using Pandas	Creating Series	-creating empty series Objects -creating series from Python Sequence -creating series from ndarray -from scalar value	1
03.02.2021	Wednesday	Unit 1- Data handling using Pandas	selection, indexing and Slicing in Series, operations on series objects	-accessing individual elements using the index - retrieving subset of series objects by extracting slices -applying formulas in the extracted slices of series - modifying elements of series objects -head and tail functions -vector and arithmetic operations on Series objects -filtering entries -sorting	7

04.02.2021	Thursday	Unit 1- Data handling using Pandas	Data Frame and its creation	-creating dataframe from 2D dictionary -from a list of dictionaries/lists -from 2D ndarray -from another dataframe object	3
05.02.2021	Friday	Unit 1- Data handling using Pandas	Dataframe attributes	-Common dataframe attributes like index, columns, axes, dtypes, size, shape, values, empty, ndim, T(transpose)	2
06.02.2021	Saturday	Unit 1- Data handling using Pandas	Operations on rows and columns	-selecting/ accessing a column -selecting accessing multiple columns	1
08.02.2021	Monday	Unit 1- Data handling using Pandas	Fetching of subsets using Names	use of loc -to access a row -to access multiple rows -to access selective columns -to access range of columns from range of rows	3
09.02.2021	Tuesday	Unit 1- Data handling using Pandas	Adding/modifying values in dataframe	-to add a new column to the dataframe - to change the values of a particular column - to add/modify the row with new values -modifying a single cell	5
10.02.2021	Wednesday	Unit 1- Data handling using Pandas	Deleting/ renaming columns	-deleting rows/columns in a dataframe - renaming rows and columns using rename - arguments like index	2

11.02.2021	Thursday	Unit 1- Data handling using Pandas	CSV files and dataframes, Importing/exporting data between CSV files and dataframes	-concept of CSV files and how to create them -loading data from CSV to dataframe -reading from CSV file to dataframe -reading CSV files and specifying own column names - dataframe index labels from CSV - reading specified no of rows from CSV files	
12.02.2021	Friday	**1 HR TEST ON SERIES AND DATAFRAME**			
15.02.2021	Monday	Unit 1- Data handling using Pandas	Data Visualization using matplotlib, types of charts	-purpose of plotting -line plot -bar graph -histogram	3
16.02.2021	Tuesday	Unit 1- Data handling using Pandas	Customizing plots	-drawing and saving plots -adding labels -adding title -adding legend in plots	2
17.02.2021	Wednesday	**1 HR TEST ON DATA VISUALIZATION**			
18.02.2021	Thursday	Unit 2- Database Query using SQL	Math functions	-mod() -power() -round() -truncate() -sign() -sqrt()	5
19.02.2021	Friday	Unit 2- Database Query using SQL	Text Functions for changing case	-char() -concat() -lower/Lcase() -substr() -upper/Ucase()	
20.02.2021	Saturday	Unit 2- Database Query using SQL	Text Functions for positioning and Trim	-instr() -length() -left() -right() -mid()	7
22.02.2021	Monday	Unit 2- Database Query using SQL	Date functions	curdate(),date(),month(), monthname(), day(), year(), dayname(), dayofmonth(), dayofweek(),	4

				dayofyear(),now(),sysdate()	
23.02.2021	Tuesday	Unit 2- Database Query using SQL	Aggregate functions	AVG, COUNT, MAX, MIN, SUM	5
24.02.2021	Wednesday	Unit 2- Database Query using SQL	Querying and manipulating data	Use of select clause, where, -insert -update and set -condition based on range, list, pattern matching	3
25.02.2021	Thursday	Unit 2- Database Query using SQL	Querying and manipulating data using, group by, having and order by	-difference between where and having clause -use of group by -use of orderby	5
26.02.2021	Friday	**1 HR TEST ON SQL**			
27.02.2021	Saturday	Unit 3- Introduction to computer networks	Introduction to networks: LAN , MAN,WAN, transmission media	-client, server, node concept -types of network- LAN,MAN,WAN	2
01.03.2021	Monday	Unit 3- Introduction to computer networks	Network Topologies: Star, Bus, Tree, Mesh	-star, bus, tree, mesh topology -advantages and disadvantages of topologies	4
02.03.2021	Tuesday	Unit 3- Introduction to computer networks	Network Devices: Modem Hub, Switch, Repeater, Router, Gateway	-modem -hub and switch -difference between hub and switch -repeater and its use -bridge -router -gateway	2
03.03.2021	Wednesday	Unit 3- Introduction to computer networks	Introduction to Internet:URL, WWW and its applications- web, email,chat,VoIP	-world wide web -difference between server and web server -URLs -elements of URL, domain -VoIP	3
04.03.2021	Thursday	Unit 3- Introduction to computer networks	Website: Introduction, Difference between a Website and webpage, Static and	-web browser -email, spam, junk mail -protocols like IMAP, POP3, SMTP,HTTP	1

			Dynamic webpage, Webserver, hosting of website		
05.03.2021	Friday	Unit 3- Introduction to computer networks	Webbrowser: Introduction, Commonly used web browsers, browser settings, addons, plugins, cookies	-web browser -email, spam, junk mail -plugins, addons -cookies -protocols like IMAP, POP3, SMTP,HTTP	2
06.03.2021	Saturday	**1 HR TEST ON COMPUTER NETWORKS**			
08.03.2021	Monday	Unit 4- Societal impacts	Digital footprints, netiquettes, Data Protection, Intellectual Property Rights	-digital footprint -managing digital footprint -net and communication etiquettes -Email etiquettes Ethical Issues -Intellectual Property rights - Digital Property rights	5
09.03.2021	Tuesday	Unit 4- Societal impacts	Plagiarism, Licensing and copyright, FOSS	-Plagiarism -Free software -open Source software	2
10.03.2021	Wednesday	Unit 4- Societal impacts	Cybercrime, Cyberlaws, hacking, phishing, Cyberbullying, Overview of Indian IT Act	-Cyber Crime -hacking, spoofing, Phishing -Cyber trolls -Cyber Bullying -Cyber Stalking -Scams -Cyber law and IT acts	1
11.03.2021	Thursday	Unit 4- Societal impacts	E waste: Hazards and management	E-waste management -E-waste disposal process -benefits of e-waste recycling	1
12.03.2021	Friday	Unit 4- Societal impacts	Awareness about health concerns related to the usage of technology	Health concerns with Technology Usage -impact on hearing, bones, joints -Mental health issues	2
13.03.2021	Saturday	**1 HR TEST ON SOCIETAL IMPACTS**			

KENDRIYA VIDYALAYA SANGATHAN

RAIPUR REGION

CLASS XII SUBJECT INFORMATICS PRACTICES
DAY WISE REVISION PLAN FOR BRIGHT LEARNERS
TOTAL NO OF DAYS-35 DURATION 1 HOUR DAILY

Date	Day	Unit	Topic	Subtopics	Marks as per CBSE Sample Paper
01.02.2021	Monday	Unit 1- Data handling using Pandas	Introduction to Python Libraries, Data structures in Pandas Series and Dataframes, Creating Series	-Import of Pandas library -Introduction to the basics of data structure in Python -Key difference between a series and dataframe object -creating empty series Objects -creating series from Python Sequence -creating series from ndarray -from scalar value	1
02.02.2021	Tuesday	Unit 1- Data handling using Pandas	series object attributes	- common attributes like index, values, dtype, shape, nbytes, ndim, size, itemsize, hasnans, empty	
03.02.2021	Wednesday	Unit 1- Data handling using Pandas	selection, indexing and Slicing in Series, operations on series objects	-accessing individual elements using the index - retrieving subset of series objects by extracting slices -applying formulas in the extracted slices of series - modifying elements of series objects -head and tail functios -vectorand arithmetic operations on Series objects -filtering entries -sorting	7

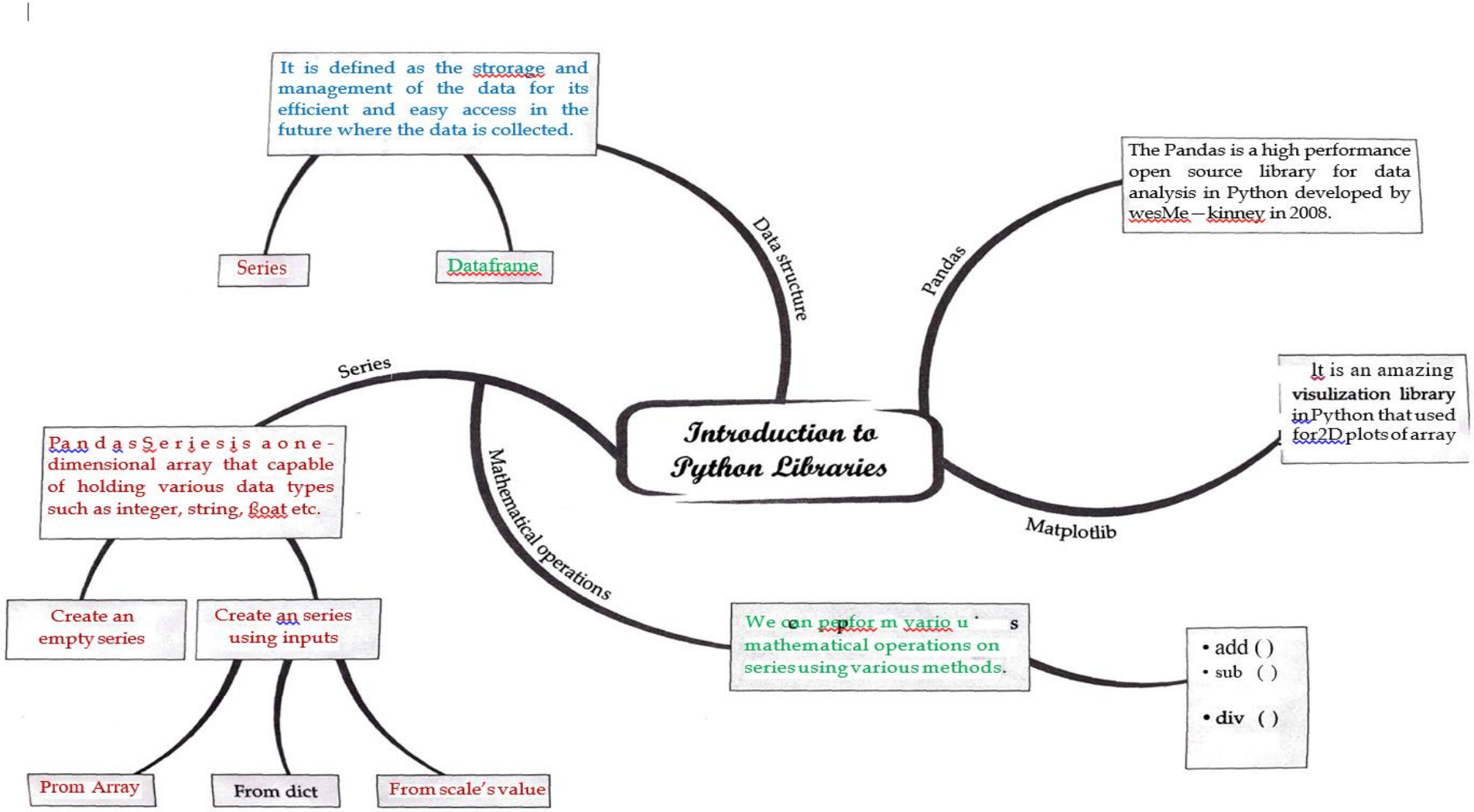
04.02.2021	Thursday	Unit 1- Data handling using Pandas	Data Frame and its creation	-creating dataframe from 2D dictionary -from a list of dictionaries/lists -from 2D ndarray -from 2Ddictionary with values as Series objects -from another dataframe object	3
05.02.2021	Friday	Unit 1- Data handling using Pandas	Dataframe attributes	-common dataframe attributes like index, columns, axes, dtypes, size, shape, values, empty, ndim, T(transpose)	2
06.02.2021	Saturday	Unit 1- Data handling using Pandas	Operations on rows and columns Fetching of subset using names	-selecting/ accessing a column -selecting accessing multiple columns use of loc -to access a row -to access multiple rows -to access selective columns -to access range of columns from range of rows	3
08.02.2021	Monday	Unit 1- Data handling using Pandas	Fetching of subsets using Index	use of iloc -to extract the dataframe subsets using indexes of rows and columns like dataframe slices	1
09.02.2021	Tuesday	Unit 1- Data handling using Pandas	Adding/modifying values in dataframe	-to add a new column to the dataframe - to change the values of a particular column - to add/modify the row with new values -modifying a single cell	5
10.02.2021	Wednesday	Unit 1- Data handling using Pandas	Deleting/ renaming columns	-deleting rows/columns in a dataframe - renaming rows and columns using rename - arguments like index, implace - boolean indexing - creating dataframe with boolean indexing	2

11.02.2021	Thursday	Unit 1- Data handling using Pandas	CSV files and dataframes, Importing/exporting data between CSV files and dataframes	-concept of CSV files and how to create them -loading data from CSV to dataframe -reading from CSV file to dataframe -reading CSV files and specifying own column names - dataframe index labels from CSV - reading specified no of rows from CSV files -reading from CSV files having seperator other tha comma	
12.02.2021	Friday		**1 HR TEST ON SERIES AND DATAFRAME**		
15.02.2021	Monday	Unit 1- Data handling using Pandas	Data Visualization using matplotlib, types of charts	-purpose of plotting -line plot -bar graph -histogram	3
16.02.2021	Tuesday	Unit 1- Data handling using Pandas	Customizing plots	-drawing and saving plots -adding labels -adding title -adding legend in plots	2
17.02.2021	Wednesday		**1 HR TEST ON DATA VISUALIZATION**		
18.02.2021	Thursday	Unit 2- Database Query using SQL	Math functions	-mod() -power() -round() -truncate() -sign() -sqrt()	5
19.02.2021	Friday	Unit 2- Database Query using SQL	Text Functions for changing case	-char() -concat() -lower/Lcase() -substr() -upper/Ucase()	
20.02.2021	Saturday	Unit 2- Database Query using SQL	Text Functions for positioning and Trim	-ltrim(), rtrim(), trim() -instr() -length() -left() -right() -mid()	7

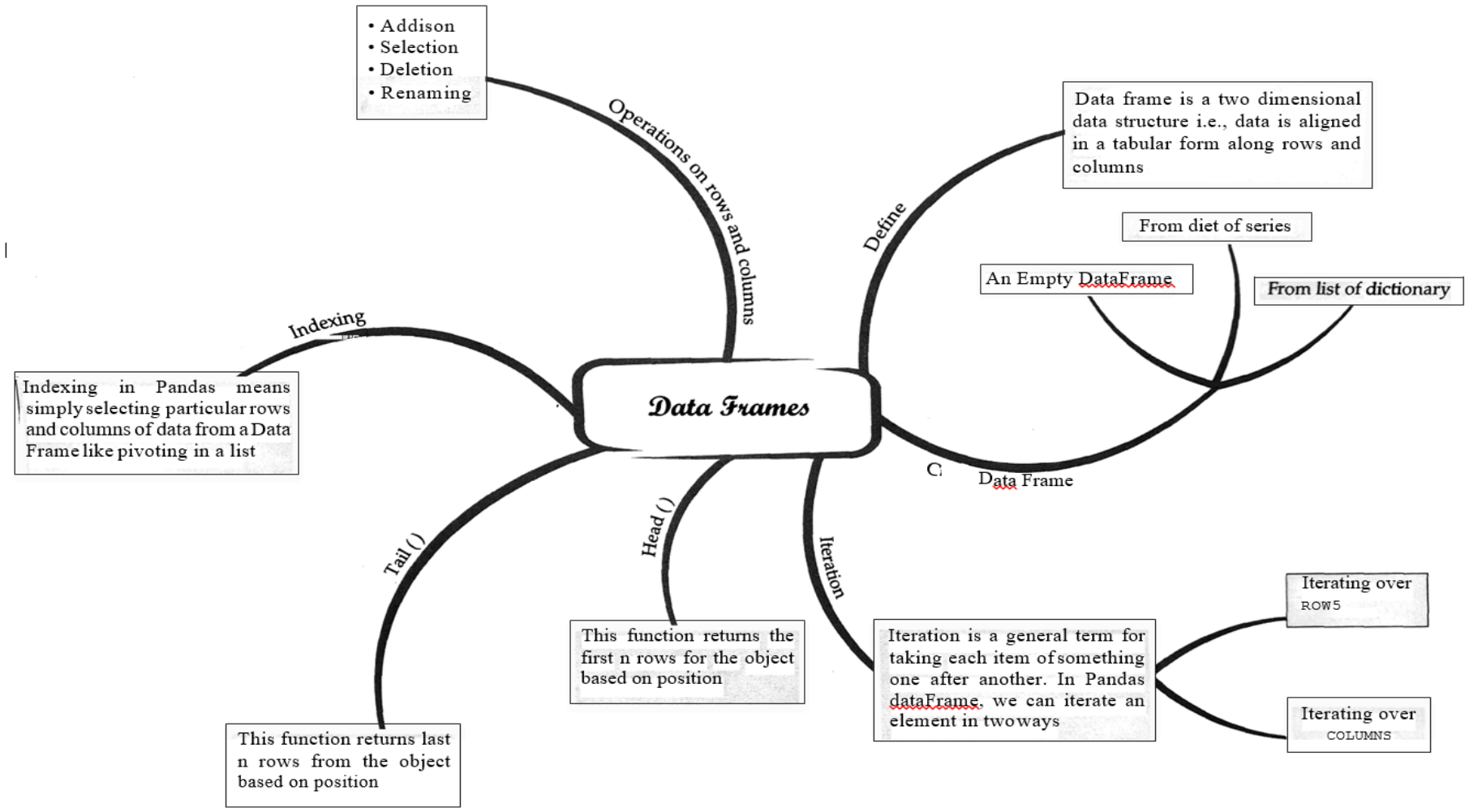
22.02.2021	Monday	Unit 2- Database Query using SQL	Date functions	curdate(),date(),month(), monthname(), day(), year(), dayname(), dayofmonth(), dayofweek(), dayofyear(),now(),sysdate()	4
23.02.2021	Tuesday	Unit 2- Database Query using SQL	Aggregate functions	AVG, COUNT, MAX, MIN, SUM	5
24.02.2021	Wednesday	Unit 2- Database Query using SQL	Querying and manipulating data	Use of select clause, where, -insert -update and set -condition based on range, list, pattern matching	3
25.02.2021	Thursday	Unit 2- Database Query using SQL	Querying and manipulating data using, group by, having and order by	-difference between where and having clause -use of group by -use of orderby	5
26.02.2021	Friday	**1 HR TEST ON SQL**			
27.02.2021	Saturday	Unit 3- Introduction to computer networks	Introduction to networks: LAN , MAN,WAN, transmission media	-client, server, node concept -types of network- LAN,MAN,WAN	2
01.03.2021	Monday	Unit 3- Introduction to computer networks	Network Topologies: Star, Bus, Tree, Mesh	-star, bus, tree, mesh topology -advantages and disadvantages of topologies	4
02.03.2021	Tuesday	Unit 3- Introduction to computer networks	Network Devices: Modem Hub, Switch, Repeater, Router, Gateway	-modem -hub and switch -difference between hub and switch -repeater and its use -bridge -router -gateway	2
03.03.2021	Wednesday	Unit 3- Introduction to computer networks	Introduction to Internet:URL, WWW and its applications- web, email,chat,VoIP	-world wide web -difference between server and web server -URLs -elements of URL, domain -VoIP	3
04.03.2021	Thursday	Unit 3- Introduction to computer networks	Website: Introduction, Difference between a Website and webpage, Static and Dynamic webpage, Webserver, hosting of website	-web browser -email, spam, junk mail -protocols like IMAP, POP3, SMTP,HTTP	1

05.03.2021	Friday	Unit 3- Introduction to computer networks	Webbrowser: Introduction, Commonly used web browsers, browser settings, addons, plugins, cookies	-web browser -email, spam, junk mail -plugins, addons -cookies -protocols like IMAP, POP3, SMTP,HTTP	2
06.03.2021	Saturday	**1 HR TEST ON COMPUTER NETWORKS**			
08.03.2021	Monday	Unit 4- Societal impacts	Digital footprints, netiquettes, Data Protection, Intellectual Property Rights	-digital footprint -managing digital footprint -net and communication etiquettes -Email etiquettes Ethical Issues -Intellectual Property rights - Digital Property rights	5
09.03.2021	Tuesday	Unit 4- Societal impacts	Plagiarism, Licensing and copyright, FOSS	-Plagiarism -Free software -open Source software -copyright and other licenses	2
10.03.2021	Wednesday	Unit 4- Societal impacts	Cybercrime, Cyberlaws, hacking, phishing, Cyberbullying, Overview of Indian IT Act	-Cyber Crime -hacking, spoofing, Phishing -Cyber trolls -Cyber Bullying -Cyber Stalking -Scams -Cyber law and IT acts	1
11.03.2021	Thursday	Unit 4- Societal impacts	E waste: Hazards and management	E-waste management -E-waste disposal process -benefits of e-waste recycling	1
12.03.2021	Friday	Unit 4- Societal impacts	Awareness about health concerns related to the usage of technology	Health concerns with Technology Usage -impact on hearing, bones, joints -Mental health issues	2
13.03.2021	Saturday		**1 HR TEST ON SOCIETAL IMPACTS**		

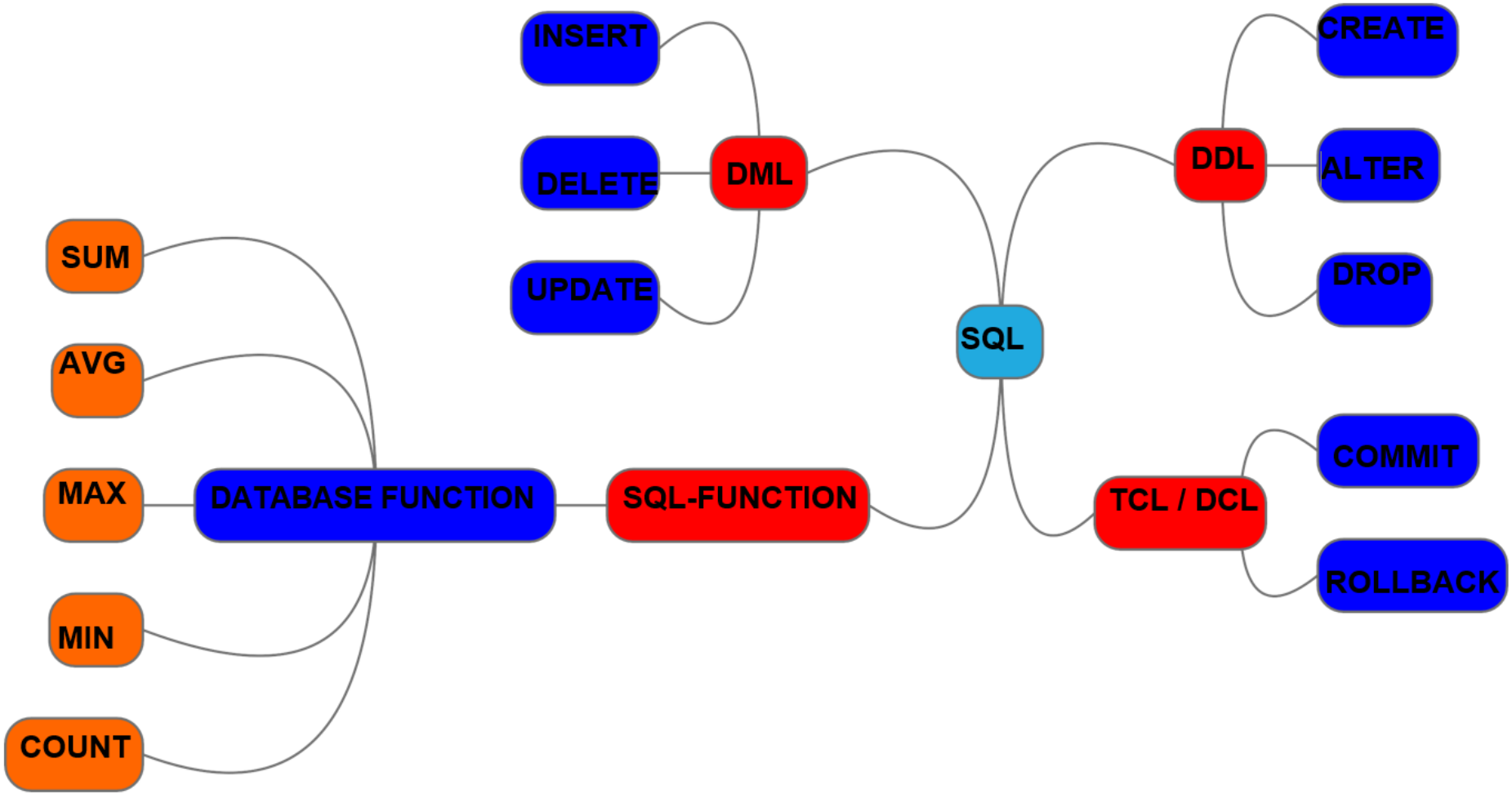
Mind Map for Pandas Library



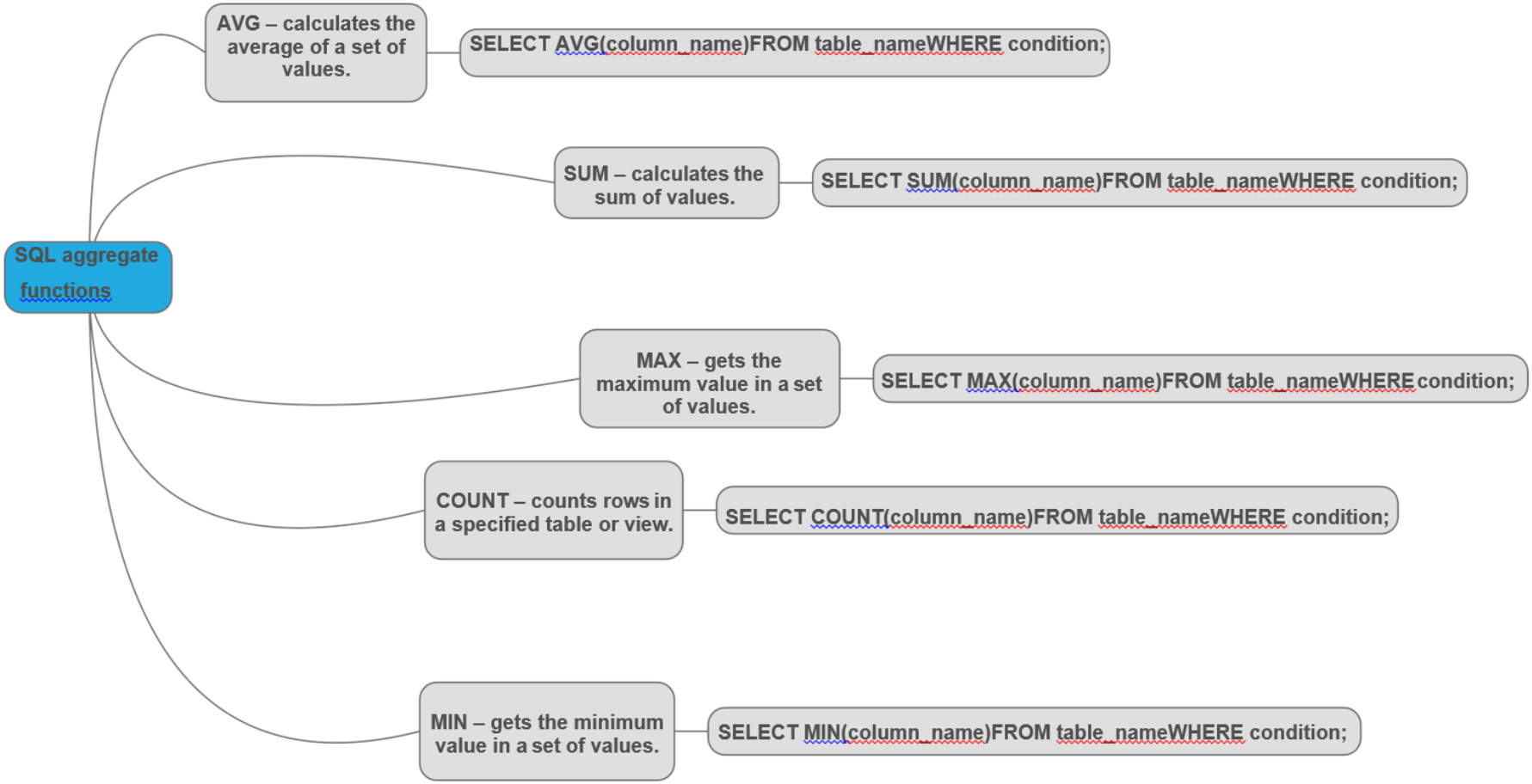
Mind Map Pandas DataFrame -II



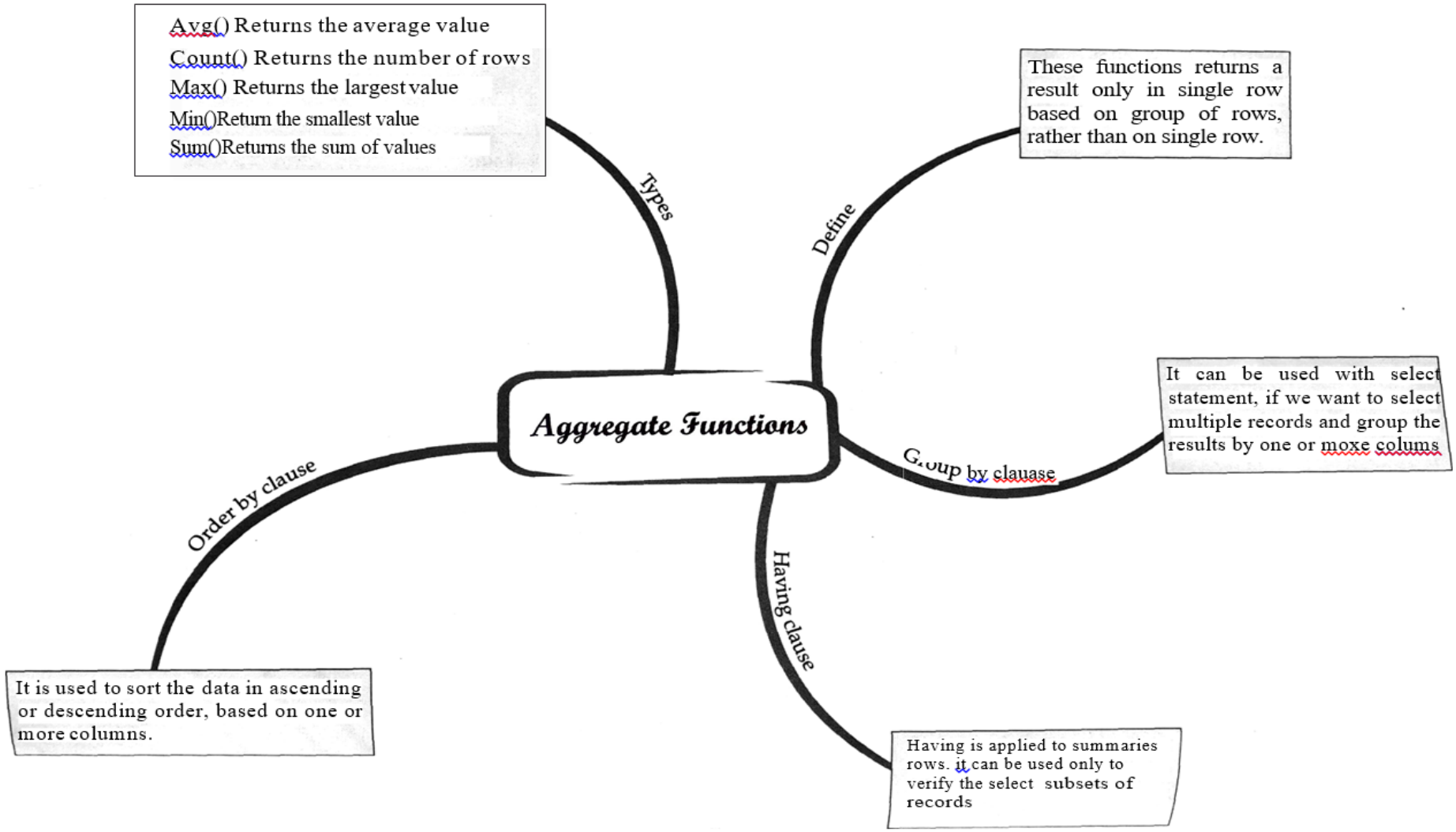
Mind Map MySQL Category of Commands



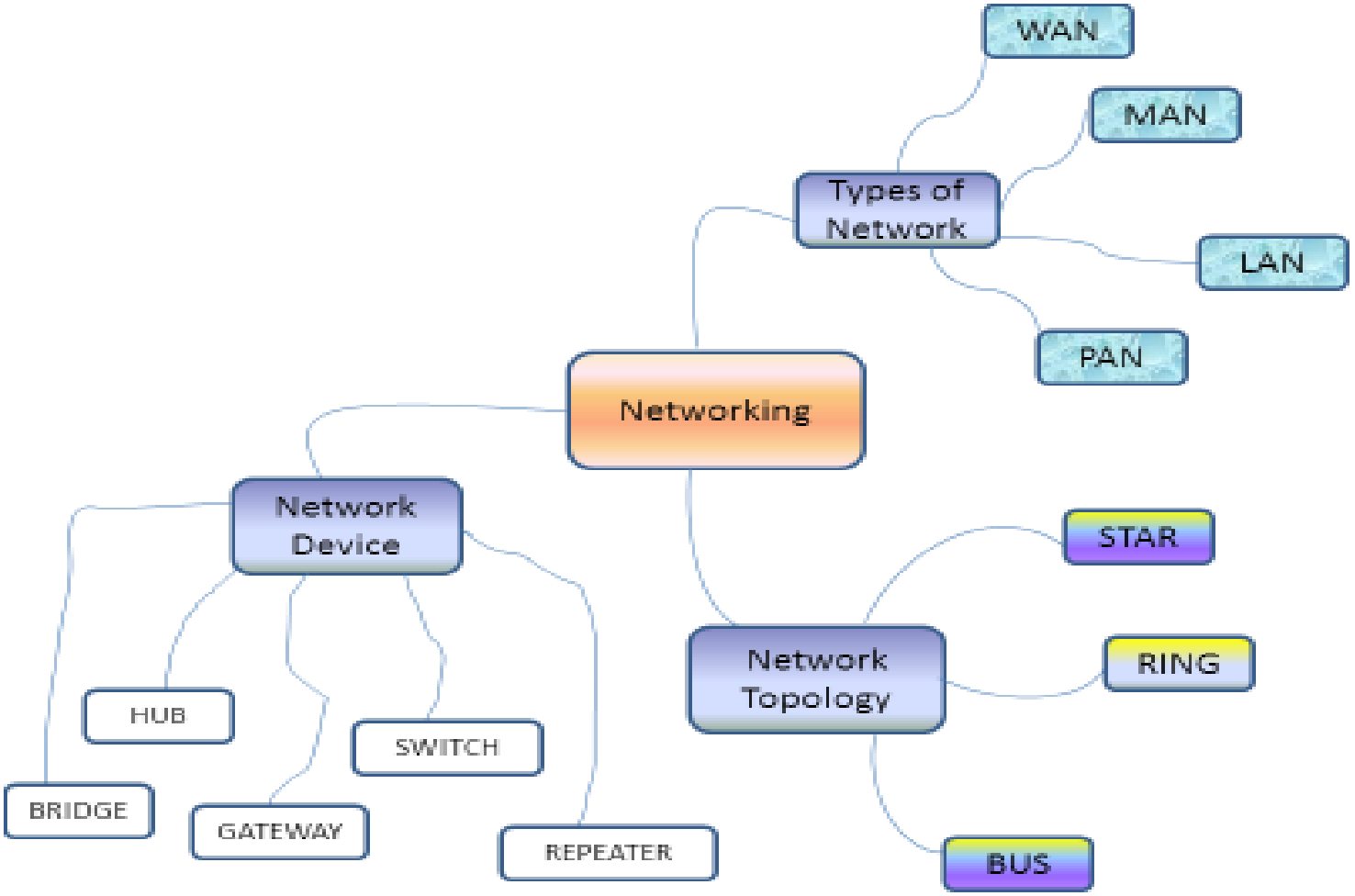
Mind Map MySQL Aggregate Queries



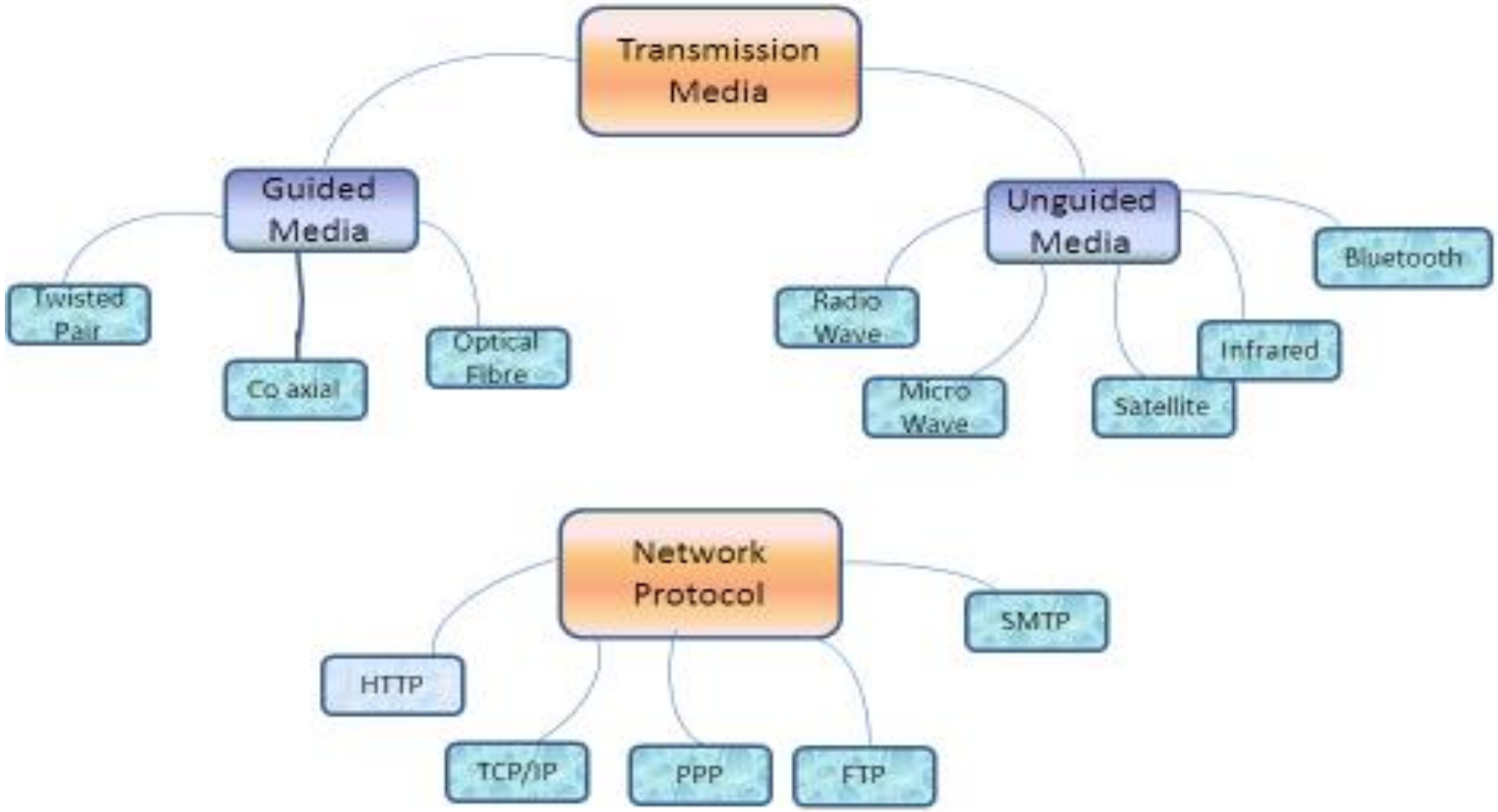
Mind Map MySQL Aggregate function



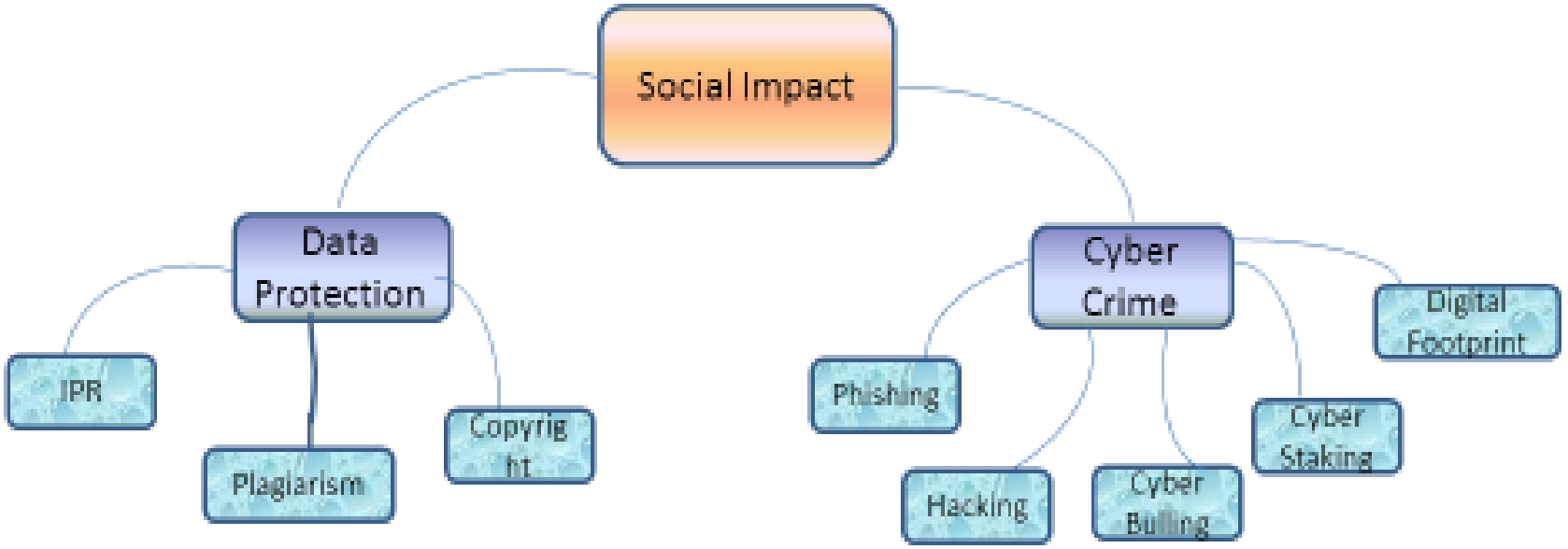
Mind Map Networking - I



Mind Map Networking – II



Mind Map Social Impact –III



E-Waste Management

E-Waste Management includes the following activities

- **Collection of E-Waste**
- **Sorting of E-Waste**
- **Processing of E-Waste**
- **Repairing of E-Waste**
- **Recycling**
- **Dismantling**
- **Component Recovery from E-Waste**
- **Residual Disposal of E-Waste**


E-waste Types
Mouse, Keyboards, and Other Electronic Devices
Personal Electronic Devices
Monitors and Laptops
Cell Phones
Audio/Video Equipment
Televisions
Scanners and Copiers

CHAPTER – DATA HANDLIN USING PANDAS-I

VSA – Very Short Answer Question (for 1 Mark)

Q.1 _____ is a one dimensional labelled array capable of holding any data type.
Ans. Series

Q.2 If data is an ndarray, _____ must be of same length as data.
Ans. Index

Q.3 Pandas was developed by _____in 2008
Ans. Wes Mckinney.

Q.4 _____ is used for 2D plots of array in Python.
Ans. matplotlib.

Q.5 Pandas provides _____ data structures for processing the data.
Ans. Two

Q.6 _____ function is used to add series and other, elements wise.
Ans. add()

Q.7 head() function is used to get the _____ n rows.
Ans. First

Q.8 if data is _____, an index must be provided.
Ans. Scalar value

Q.9 Given a Pandas series called Sample, the command which will display the last 3 rows is_____.
Ans. print(Sample.tail(3))

Q.10 Given a Pandas series called Sequences, the command which will display the first 4 rows is _____.
Ans. print(Sequence.head(4))

Q.11 ~~_____ method in Pandas does not raise errors for multiple entries of a row, column combinations~~.
~~Ans.pivot_table( )~~

Q.12 Given the following Series T1 and T2:

T1		T2	
A	10	A	80
B	40	B	20
C	34	C	74
D	60	D	90

Write the command to find the sum of series T1 and T2
Ans. print(T1+T2)

Q.13 Given the following Series S1 and S2:

S1		S2	
A	10	A	5
B	20	B	4
C	30	C	6
D	40	D	8

Write the command to find the multiplication of series S1 and S2
Ans. print(S1*S2)

Q.14 Give the output of the following program:

```
import numpy as np
arr=np.array([21,22,23,24,25,26,27,28,29,30])
print(arr[4:9])
```

a. [25 26 27 28 29] b. [25 29] c. 25 26 29] d. None of these
Ans. a. [25 26 27 28 29]

Q.15 _____ is a two dimensional structure storing heterogeneous mutable data.
Ans. DataFrame

Q.16 Mention the different types of data structure in Pandas.
Ans. The two data structures which are supported by Pandas library are Series and DataFrames.

Q.17 Which command is used to import matplotlib?
Ans. import matplotlib.pyplot as plt

Q.18 How to create empty series
Ans. Series_Object = pandas.Series()

Q.19 Define add() function in Series ()
Ans. add() function is used to add series and other elements wise
Syntax : Series.add(other,fill_value=None, axis=0)

Q.20 What do mean by clear code API
Ans. The clear API of the Pandas allows you to focus on the core part of the code.

SA – Short Answer Question (for 2 Marks)

Q.1 List two key features of Pandas.
Ans. The two features of Pandas are :

(i) It can process a variety of data set in different formats : time series, tabular heterogeneous arrays and matrix data.

(ii) If facilitates loading and importing data from varied sources such as CSV and DB/SQL.

Q.2 What are the benefits of Pandas ?
Ans. Benefits of Pandas are :

(i) Data representation : It ca easily represent data in form naturally suited for data analysis via its DataFrame and series data structures in a concise manner.

(ii) Data sub setting and filtering : It provides for easy sub setting and filtering of data, procedures that are a staple of doing analysis.

Q.3 What is series ? Explain with an example.
Ans. Pandas series is one dimensional labelled array capable of holding data of any type (integer, string, float, Python objects etc.) The axis labels are collectively called index.
Example :

```
import pandas as pd
data=pd.Series([1,2,3,4,5])
print(data)
```

Q.4 Consider the following Series : Subject

INDEX	MARK
ENGLISH	75
HINDI	78
MATHS	82
SCIENCE	86

Write a program in Python Pandas to create a Series.
Ans.

```
import pandas as pd
subject=pd.Series([75,78,82,86],index=['ENGLISH','HINDI','MATHS','SCIENCE'])
```

Q5. Consider the following Series object, “company” and its profit in Crores

TCS	350
Reliance	200
L&T	800
Wipro	150

(i) Write the command which will display the name of the company having profit>250.

(ii) Write the command to name the series as Profit.

SA – Short Answer Question (for 3 Marks)

Q. 1 Consider two objects a and b.
a is a list whereas b is a Series. Both have values 10,20,25,50.

What will be the output of the following two statements considering that the above objects have been created already

a. print(a*2) b. print(b*2)

Justify your answer.
Ans.
a. will give the output as:

[10,20,25,50,10,20,25,50]

b. will give the output as

0 20
1 40
2 50
3 100

Justification: In the first statement a represents a list so when a list is multiplied by a number, it is replicated that many number of times.
The second b represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.

Q.2 Explain the data structure in Pandas
Ans. Data structure is defined as the storage and management of the data for its efficient and easy access in the future where the data is collected, modified and the various types of operations are performed on the data respectively.
Pandas provides two data structures for processing the data, which are described below :

(i) **Series** : It is an one dimensional object similar to an array, list or column in a table. It will assign a labelled index to each item in the series. By default, each item will receive an index label from 0 to N, where N is the length of the series minus one.

(ii) **DataFrame :** It is a tabular data structure comprised of rows and columns. Data Frame is defined as a standard way to store data and has two different indexes i.e., row index and column index.

Q.3 What is slicing ?
Ans. Slicing is a powerful approach to retrieve subsets of data from a Pandas object. A slice object is built using a syntax of start : end : step, the segments representing the first item, last item and the increment between each item that you would like as the step.

Q.4 Define the following terms
(i) .loc[ ] (ii) .iloc [ ]
Ans. .**loc [ ] :**This attribute is used to access a group of rows and columns by label(s) or a Boolean array in the given series object.
Syntax : Series.loc
.iloc[ ] : This attributes enables purely integer location based indexing for selection by position over the given series object.
Syntax : Series.iloc

CHAPTER – DATAFRAME

VSA – Very Short Answer Question (for 1 Mark)

Q.1 DataFrame is _____ dimensional data structure
Ans. two

Q.2 In DataFrame, _____ is used for the row label.
Ans. Index

Q.3 _____ is a general term for taking each item of something, one after another.
Ans. Iteration.

Q.4 _____ function return last n rows from the object based on position.
Ans. tail( )

Q.5 _____ can also be known as subset section.
Ans. ~~Indexing~~

Q.6 Boolean indexing helps us to select the data from the DataFrame using_____.
Ans. boolean vector.

Q.7 CSV file are the _____
Ans. Comma Separated Values.

Q.8 _____ function is used to import a CSV file to DataFrame format.
Ans. read_CSV( )

Q.9 Hitesh wants to display the last four rows of the dataframe df and has written the following code :
df.tail( )
but last 5 rows are being displayed. Identify the errors and rewrite the correct code so that last 4 rows get displayed.
Ans. df.tail(4)

Q.10 Consider the following Python code and write the output for statement.

```
import  pandas as pd
values=["India", "Canada"]
code=["IND", "CAN"]
df=pd.DataFrame(values,Index=Code,columns=['Country']
```

Ans.

Code	Country
IND	India
CAN	Canada

Q.11 The teacher needs to know the marks scored by the student with roll number 4. Help her to identify the correct set of statement/s from the given options :

```
a. df1=df[df['rollno']==4]
    print(df1)
```

b. df1=df[rollno==4]
print(df1)
c. df1=df[df.rollno=4]
print(df1)
d. df1=df[df.rollno==4]
print(df1)

Ans.
a. df1=df[df['rollno']==4]
print(df1)
d. df1=df[df.rollno==4]
print(df1)

Q.12
In Pandas the function used to delete a column in a DataFrame is
a. remove
b. del
c. drop
d. cancel

Ans. (b) del

Q.13 _____ function applies the passed function on each individual data element of the dataframe.

a. apply() b. applymap() c. pivot() d. pivot_table()

Ans. a. apply()

Q.14 Which of the following statement/s will give the exact number of values in each column of the dataframe?

i. print(df.count())
ii. print(df.count(0))
iii. print(df.count)
iv. print(df.count(axis='index'))

Choose the correct option:

a. both (i) and (ii)
b. only (ii)
c. (i), (ii) and (iii)
d. (i), (ii) and (iv)

Ans. a. both (i) and (ii)

Q.15 Which of the following command will display the column labels of the DataFrame?

a. print(df.columns()) b. print(df.column()) c. print(df.column) d. print(df.columns)

Ans. **a.** print(df.columns()) or d. print(df.columns)

Q.16 State True / False:
A dataframe cannot be created using another dataframe.

Ans. False

Q.17 Which method is used to access vertical subset of a dataframe.?
(i) Iterrows()
(ii) Iteritems()
(iii) Itertuples()
Ans.(ii) Iteritems( )

Q.18 State whether True or False
a. A series object is size mutable.
b. A Dataframe object is value mutable
Ans. a. False
b. True

Q.19 Define the iterrows()
Ans. iterrows() returns the iterator yielding each index value along with a series containing the data in each row.

Q.20 Which function is used to export DataFrame to a CSV file ?
Ans. To export a Pandas DataFrame to a CSV file, use to_CSV function.
Syntax : to_CSV(parameter)

SA – Short Answer Question (for 2 Marks)

Q.1What are the operation on Pandas DataFrame?
Ans. We can perform the following advanced operation on the DataFrame as

- Assignment
- Selection
- Pivoting
- Sorting

Aggregation

Q.2 Given the Output of the code
>>>import pandas as pd
>>>a= pd.DataFrame([1,1,1,None],index=[‘a’, ‘b’, ‘c’ , ‘d’], column = [‘One’])
>>>print(a)
Ans.

	One
a	1.0
b	1.0
c	1.0
d	NaN

Q.3 Explain DataFrame. Can it be considered as 1D Array or 2D Array
Ans. DataFrame is two dimensional array with heterogeneous data usually represented in tabular format. It can be considered as 2D array.

Q.4 Write the output of the following code
import pandas as pd
data=[‘a’, ‘b’, ‘c’, ‘d’, ‘e’]
df = pd.DataFrame(data)
print(df)
Ans. Output

0 a
1 b
2 c
3 d
4 e

Q.5 Write the output of the following code
import pandas as pd
data = [[‘Alex’,10], [‘Bob’,12], [‘Clarke’,13]]
df = pd.DataFrame(data,columns = [‘Name’ , ‘Age’])
print(df)

Ans.	Name	Age
0	Alex	10
1	Bob	12
0	Clarke	13

Q.6 Write the output of the following code
>>>import pandas as pd
>>>data = [[‘Alex’,10], [‘Bob’,12], [‘Clarke’,13]]
>>>df = pd.DataFrame(data,columns = [‘Name’ , ‘Age’],dtype=float)
>>>print(df)

Ans.	Name	Age
0	Alex	10.0
1	Bob	12.0
0	Clarke	13.0

Q.7 Write a Python code to create a dataframe with appropriate headings from the list given below :
[‘S101’, ‘Amy’ ,70]
[‘S102’, ‘Bandhi’ ,69]
[‘S103’, ‘Cathy’ ,75]
[‘S104’, ‘Gundoho’ ,82]

Ans. import pandas as pd
data =[[‘S101’, ‘Amy’ ,70],[‘S102’, ‘Bandhi’ ,69],[‘S103’, ‘Cathy’ ,75],[‘S104’, ‘Gundoho’ ,8
df=pd.DataFrame(data,columns=[‘ID’, ‘NAME’, ‘MARKS’])
print(df)

LA – Long Answer Question (for 4 Marks/5 marks)

Q.1 Write the code in Pandas to create the following Data Frames.

	Df1			Df2	
	Mark1	Mark2		Mark1	Mark2
0	10	20	0	10	15
1	40	45	1	20	25
2	15	30	2	25	30
3	40	70	3	50	30

Write the commands to do the following operations on the DataFrames given below :

(i) To add DataFrames Df1 and Df2

(ii) To subtract Df2 from Df1

(iii) To Rename column Mark1 as Marks1 in both the DataFrame Df1 and Df2

(iv) To Change index label of Df1 from 0 to zero and from 1 to one.

Ans.

```
import numpy as np
import pandas as pd
Df1=pd.DataFrame({'Mark1' :[10,40,15,40],'Mark2' : [20,45,30,70]})
Df2=pd.DataFrame({'Mark1' :[10,20,25,50],'Mark2' : [15,25,30,30]})
print(Df1)
print(Df2)
```

(i) print(Df1.add(Df2))

(ii) print(Df1.sub(Df2))

(iii)
```
Df1.rename(columns={'Mark1' : 'Marks1'}, inplace =True)
print(Df1)
```

(iv)
```
Df1.rename(columns={0: 'zero',1: 'one'}, inplace =True)
print(Df1)
```

Q.2 Consider the following DataFrame emp and answer the any four questions from (i) to (v)

Empno	Name	Dept	Salary	Experience (in years)
1	Ram Singh	IT	15000	2.5
2	Shyam Singh	HR	18000	3
3	Nidhi Gupta	IT	9000	2
4	Pooja Sharma	EXE	24000	8
5	Rohan Malik	HR	20000	6

(i) Write down the command that will give the following output.

```
Empno 5
Name Rohan Malik
Dept HR
Salary 20000
Experience 6
dtype: object
```

a. print(emp.max)

b. print(emp.max())

c. print(emp.max(axis=1))

d. print(emp.max,axis=1)

(ii) CEO needs to know the salary of the employee with empno 4. Help him to identify the correct set of statement/s from the given options:

a.
```
emp1=emp[emp['empno']==4]
print(emp1)
```

b.
```
emp1=emp[emp]
print(emp1)
```

c.
```
emp1=emp[emp.empno=4]
print(emp1)
```

d.
```
emp1=emp[emp.empno==4]
print(emp1)
```

(iii) Which of the following statement/s will give the exact number of values in each column of the dataframe?

i i. print(emp.count())
ii ii. print(emp.count(0))
iii iii. print(emp.count)
iv iv. print(emp.count(axis='index'))

Choose the correct option:

a. both (i) and(ii)
b. only(ii)
c. (i), (ii) and(iii)
d. (i), (ii) and(iv)

(iv) Which of the following command will display the column labels of the DataFrame?

a. print(emp.columns())
b. print(emp.column())
c. print(emp.column)
d. print(emp.columns)

(v) Mr. Satvik Ahuja, the CEO wants to add a new column, the rating of the performance of employees with the values, 'A', 'A', 'B', 'A', 'B', to the DataFrame. Help him choose the command to do so:

a. emp.column=['A','A','B','A','B']
b. emp['Performance']=['A','A','B','A','B']
c. emp.loc['Performance']= ['A','A','B','A','B']
d. Both (b) and (c) are correct

Ans.

(i) b. print(emp.max())

(ii) a. emp1=emp[emp['empno']==4]
print(emp1)
d.emp1=emp[emp.empno==4]
print(emp1)

(iii) a. both (i) and (ii)

(iv) d. print(emp.columns)

(v) b. emp['Performance']=['A','A','B','A','B']

Q.3 A dataframe fdf stores data about passengers, Flights and Years. First fews of the dataframe are shown below.

	Year	Months	Passengers
0	2009	January	112
1	2009	February	118
2	2009	March	132
3	2009	April	129
4	2009	May	121

Using the above DataFrame, Write commands for the following:

(a) Compute total passengers per Year

(b) Compute average passengers per Month.

Ans.

(i) fdf.pivot_table(index='year', value='passengers', aggfunc='sum')
(ii) fdf.pivot_table(index='month', values='passengers', aggfunc='mean')

Q.4 Give the output of the following code:

```
import numpy as np
import pandas as pd
dict={'Name':pd.Series(['Anu','Abhishek','Rajeev','Ritu']),'Age':pd.Series([26,25,24,31]),
'Score':pd.Series([87,67,89,55])}
df=pd.DataFrame(dict)
print("Dataframe contents are")
print(df)
print(df.count())
```

OR

Cls1

	Eng	Maths	Hindi
0	43	42	40
1	23	41	53
2	65	57	62
3	12	14	17

Cls2

	Eng	Maths	Hindi
0	32	53	31
1	54	21	65
2	31	73	36
3	21	51	43

Write the code in Pandas to create the above dataframes and write the command to perform following operations on the dataframes Cls1 and Cls2:

(i) To subtract Cls2 from Cls1.

(ii) To add Cls1 and Cls2.

(iii) To rename column Hindi as Science in Cls1.

(iv) To change the index label of Cls1 from 2 to two and from 3 to three.

Ans.

```
Dataframe contents are
Name Age Score
0 Anu 26 87
1 Abhishek 25 67
2 Rajeev 24 89
3 Ritu 31 55
Name 4
Age 4
Score 4
dtype: int64
```

OR

```
import numpy as np
import pandas as pd
Cls1=pd.DataFrame({'Eng':[43,23,65,12],'Maths':[42,41,57,14],
'Hindi':[40,53,62,17]})
Cls2=pd.DataFrame({'Eng':[32,54,31,21],'Maths':[53,21,73,51],
'Hindi':[31,65,36,43]})
(i) print(Cls1.subtract(Cls2))
(ii) print(Cls1.add(Cls2))
(iii) Cls1.rename(columns={'Hindi':'Science'},inplace=True)
(iv) Cls1.rename(index={2:"Two",3:"Three"},inplace=True)
```

Q.5 Suppose a data frame contains information about student having columns rollno, name, class and section.
Write the code for the following:
(i) Add one more column as fee
(ii) Write syntax to transpose data frame.
(iii) Write python code to delete column fee of data frame.
(iv) Write the code to append df2 with df1
(v) Display data of 1st to 3rd rows

Ans.
(i) Df1['fee']=([100,200,300])
(ii) Df1=Df1.T
(iii) del Df1['fee']
(iv) Df2=Df2.append(Df1)
(v) data.iloc[1:4]

CHAPTER – DATA VISUALIZATION

VSA – Very Short Answer Question (for 1 Mark)

Q.1 The matplotlib Python library developed by _____
Ans. John Hunter

Q.2 _____ is amodule in the matplotlib package.
Ans. Pyplot

Q.3 The matplotlib API is imported using the _____.
Ans. standard convention

Q.4 The _____ is bounding box with ticks and labels.
Ans. axes

Q.5 The _____ can be plotted verticall or horizontally.
Ans. bar chart

Q.6 Histograms are used to show a/an _____.
Ans. distribution

Q.7 To add a tittle in a chart, _____ function is used.
Ans. tittle()

Q.8 A bar graph uses bars to compare data among _____.
Ans. different categories.

Q.9 What is Pylab?
Ans. Pylab is a package that combine numpy,scipy ad matplotlib into a single namespace.

Q.10 Mr.Sanjay wants to plot a bar graph for the given set of values of subjects on x-axis and number of students who opted for that subject on y-axis.
Complete the code to perform the following operation

(i) to plot the bar graph in statement 1
(ii) to display the graph in statement 2

```
x = ['HINDI', 'ENGLISH', 'SCIENCE' , 'SST']
y=[10,20,30,40]
_____ # statement 1
_____# statement 2
```

Ans. (i) plt.bar(x,y)
(iii) plt.show( )

Q.11 How to import matplotlib?
Ans. form matplotlib import pyplot as plt.

Q.12 Which of the following is not a valid chart type?
a. line
b. bar
c. histogram
d. statistical

Ans. d.statistical

Q.13 The command used to show legends is
a. display()
b. show()
c. legend()
d. legends()

Ans. c.legend()

Q.14 The command used to give a heading to a graph is _____
a. plt.show()
b. plt.plot()
c. plt.xlabel()
d. plt.title()
Ans. d.plt.title()

Q.15 Using Python Matplotlib _____ can be used to count how many values fall into each interval
a. line plot
b. bar graph
c. histogram
Ans. c. histogram

Q.16 Mr. Harry wants to draw a line chart using a list of elements named LIST. Complete the code to perform the following operations :
(i) To plot a line chart using the given LIST
(ii) To give a y-axis label to the line chart named sample number.

```
import matplotlib.pyplot as PLINE
LIST=[10,20,30,40,50,60]
_____ #statement 1
```

_____ #statement 2
Ans. (i) PLINE.plot(LIST)
(iii) PLINE.ylabel("Sample number")

Q.17 In matplotlib, what is ticks?
Ans. A standard graph shows the marks on the axis, in matplotlib library, it is called ticks.

Q.18 What is the use of label in plotting?
Ans. Label is used to add labels or names to respective x and y axis.

Q.19 _____ are specified as consecutive, non overlapping intervals of a variable, mainly used in histograms.
i) Series
ii) Bins
iii) Gaps
iv) Axis

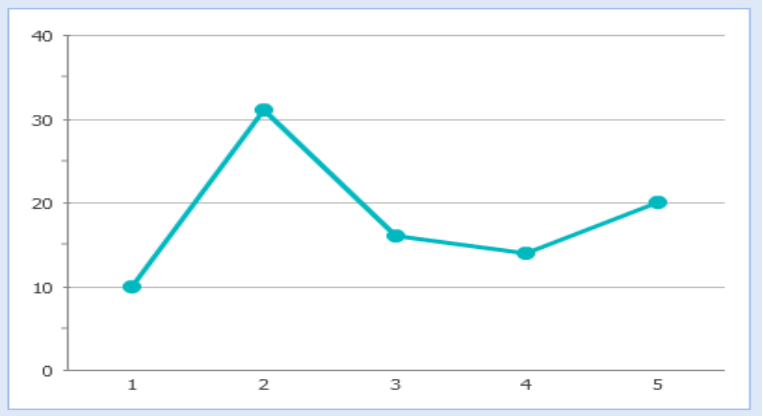
Ans. ii) Bins

Q.20 Assuming that a line chart is plotted on x and y axis, write the command to give title as 'New Graph' using **Plt** object

Ans. Plt.title('New Graph')

SA – Short Answer Question (for 3 Marks)

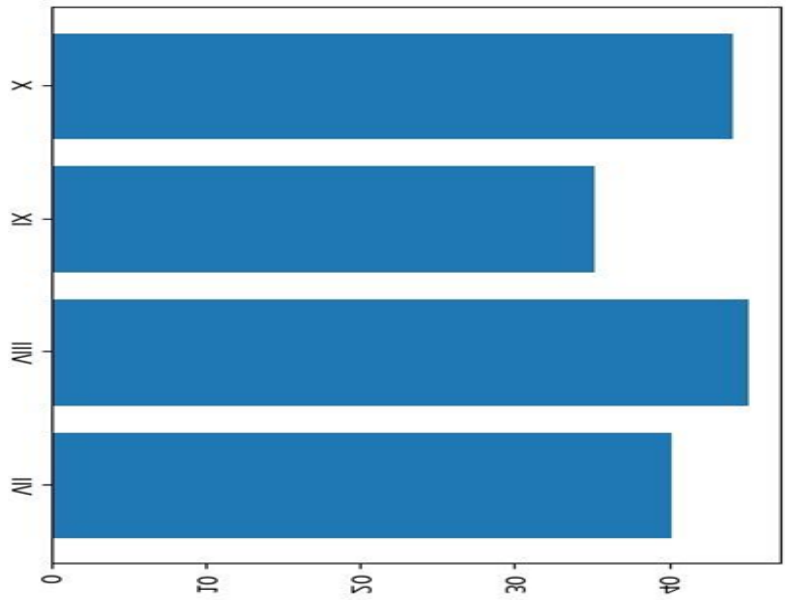
Q.1 Consider the following graph. Write the code to plot it.



Ans.

```
import matplotlib.pyplot as plt
a = [0,1,2,3,4,5]
b = [10,31,26,24,20]
plt.plot(a,b)
plt.show()
```

Q.2 Write code to draw the following bar graph representing the number of students in each class.



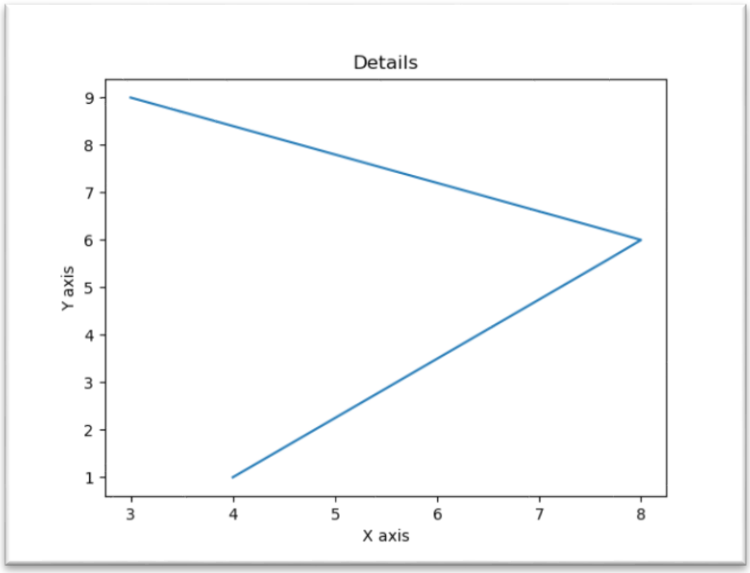
Ans.

```
import matplotlib.pyplot as plt
Classes = ['VII','VIII','IX','X']
Students = [40,45,35,44]
plt.barh(classes, students)
plt.show()
```

Q. 3 What will be the output of the follwing code ?

```
From matplotlib import pyplot as plt
X=[4,8,3]
Y=[1,6,9]
plt.plot(X,Y)
plt.title(‘Details)
plt.ylabel(‘Y axis’)
plt.xlabel(‘X axis’)
plt.show( )
```

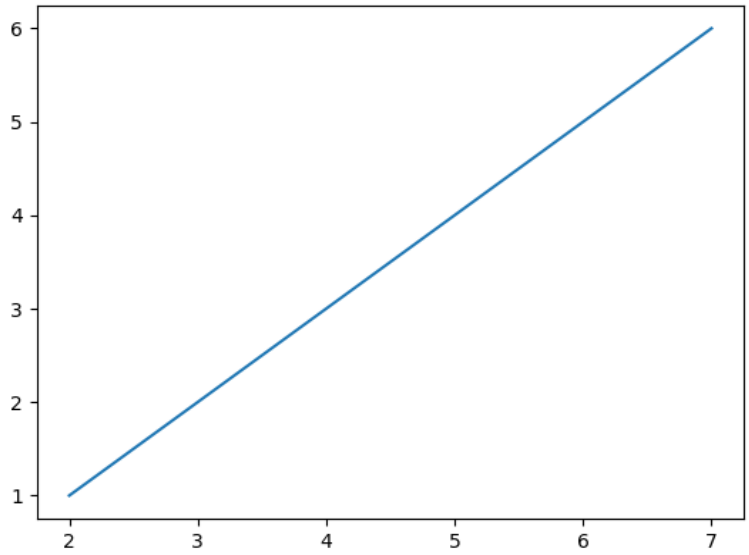
Ans.



Q.4 Write the output graph of :

```
import matplotlib.pyplot as p
x=[2,3,4,5,6,7]
y=[1,2,3,4,5,6]
p.plot(x,y)
p.show()
```

Ans.



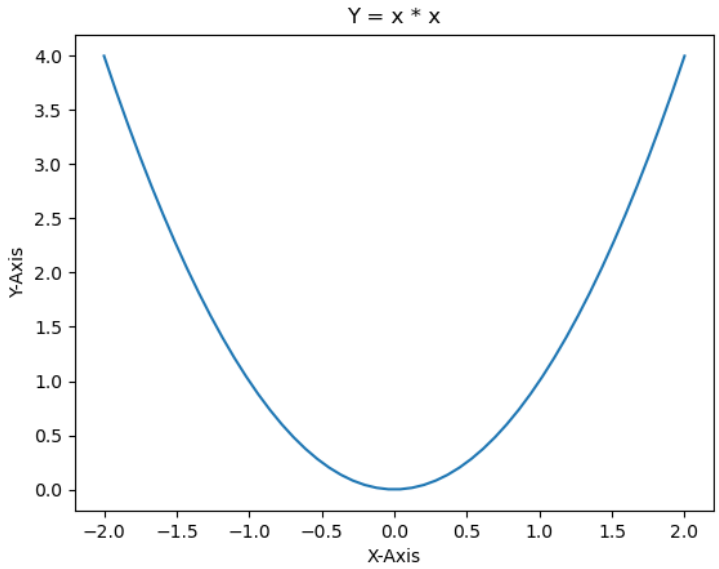
Q.5 Write code to plot a line graph showing the relation between channel name and its TRP rating (4 channels). Include the titles and formatting of your choice. The font size of the x and y labels should be 15 and font color should be green

Ans.

```
import matplotlib.pyplot as p
x=["Sony","Star","SAB","Zee"]
y=[60,40,55,35]
p.plot(x,y, linestyle=":")
p.title('TRP of various channels')
```

```
p.xlabel('Name of Channel',fontsize="15",color="green")
p.ylabel('TRP',fontsize="15",color="green")
p.show()
```

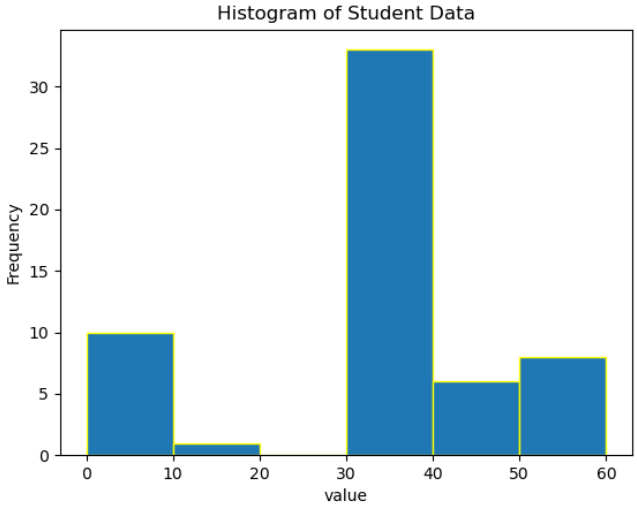
Q.6 Consider the following graph. Write a program in python to draw it along with proper labeling of X-axis, Y-axis and Title for the line Chart of your choice.



Ans.

```
import numpy as np
import matplotlib.pyplot as plt
x=np.linspace(-2, 2,50)
y=x*x
plt.plot(x,y)
plt.title('Y = x * x')
plt.xlabel('X-Axis')
plt.ylabel('Y-Axis')
plt.show()
```

Q.7 Consider the following graph. Write a program in python to draw it. (Height of Bars are 10,1,0,33,6,8)



Ans.

```
import numpy as np
import matplotlib.pyplot as plt
plt.hist([0,10,20,30,40,50],bins=[0,10,20,30,40,50,60],weights=[10,1,0,33,6,8],edgecolor='ye
llow')
plt.title('Histogram of Student Data')
plt.xlabel('value')
plt.ylabel('Frequency')
plt.show()
```

CHAPTER – DATA BASE QUERY USING SQL

VSA – Very Short Answer Question (for 1 Mark)

Q.1 _____ is a synonym for SUBSTRING().
Ans. MID()

Q.2 _____ function returns the length of the string in bytes
Ans. LENGTH()

Q.3 LEFT () FUNCTION returns _____ if any argument is NULL.
Ans. NULL

Q.4 Mathematical Function returns _____ values
Ans. Numeric

Q.5 INSTR() function takes _____ arguments.
Ans. two

Q.6 LTRIM () function remove the _____ spaces from the characters of a string.
Ans. leading

Q.7 ROUND() function rounds up the number to the upward or downward whichever the _____ whole number.
Ans. nearest
Q.8 The command can be used to makes changes in the structure of a table in SQL.
Ans. ALTER

Q.9 Write the SQL command that will display the time and date at which the command got executed.
Ans. SELECT SYSDATE( )

Q.10 Write the output of the following SQL command.
select round (49.88);
a. 49.88
b. 49.8
c. 49.0
d. 50
Ans. d.50

Q.11 Insert into student values(1,'ABC','10 Hari Nagar') is a type of which command :
i) DML
ii) DDL
iii) TCL
iv) DCL
Ans. i) DML

Q.12 What will be the output of - select mid('Pyhton Programming',3,9);
i) ton Progr
ii) ton Progr
iii) hton Prog
iv) htonProg
iii) hton Prog

Q.13 Write the output of the following SQL command.
SELECT ROUND(458.46,1);
i) 458
ii) 458.5
iii) 459
iv) 458.6
Ans. ii) 458.5

Q.14 In case, the date is NULL, DAY() function returns_____
Ans. NULL

Q.15 Name the function in MySQL, which is used to remove trailing and leading blank space from a string.
Ans. TRIM()

Q.16 Name the function used to give the first occurrence of string 2 in string 1
Ans. INSTR()

Q.17 Write the ouput
SELECT MOD(14,3)
Ans. 2

Q.18 Write the ouput of the following SQL query
SELECT POW(INSTR('My_Database' , '_'),2);
Ans. 9

Q.19 The statement in SQL which allows to change the definition of a table is
(a) UPDATE
(b) ALTER
(c) INSERT
(d) SELECT
Ans. (b) ALTER

Q.20 Write a SQL Command to Create a new table NewStudent from existing Table Student.
Ans. CREATE TABLE NewStudent as Select * from Student;

SA – Short Answer Question (for 2 Marks)

Q.1 Write the output of the following SQL queries :
(i) SELECT MID('visit India',6,5)
(ii) SELECT ROUND(89.387,2);
Ans.
(i) Indi
(ii) 89.39

Q.2 Write the output of the following SQL queries :
(i) SELECT MID('Board Examination',2,4)
(ii) SELECT INSTR('INFORMATION FORM', 'FOR');
Ans.
(i) oard
(ii) 3

Q.3 Write the output of the following SQL queries :
(i) SELECT RIGHT('Software',2)
(ii) SELECT MID('HONESTY WINS',3,4)
Ans.
(i) re
(ii) NEST

Q.4 Write the output of the following SQL queries :
(i) SELECT LENGTH('NETWORK','ING')
(ii) SELECT INSTR('INTER NATIONAL', 'NA');
Ans.
(i) 10
(ii) 6

Q.5 Mention any 4 numeric function in MySQL.
Ans.
ROUND ( )
MOD( )
POWER( )
TURNCATE( )

Q.6 What will be output of following SQL query :
(i) SELECT ROUND(124.44) + MOD(1200.87,3);
(ii) SELECT MOD(30.500,5)+ROUND(100.50,1);
Ans.
(i) 124.87
(ii) 101.000

Q.7 Differentiate between SUBSTR() and INSTR( )
Ans.

SUBSTR( )	INSTR( )
• It is used to extract a set of character from a string by specifying the starting position and end position and length of characters to be fetched. • SELECT SUBSTR('Hello',2,3); **Output** ell	• It is used to find the position of any particular character in a word which returns numeric value • SELECT INSTR('Hello', 'e'); **Output** **2**

Q.8 Differentiate between NOW() and SYSDATE( )
Ans.

NOW( )	SYSDATE( )
• It gives the current time and date of when you entered the fuction. • NOW () can store the date value on timestamp.	• It gives the date and time after the code is executed. • SYSDATE() can store all on this field.

Q.9 What is the difference between CURDATE() and DATE() functions?
Ans.

CURDATE()	DATE( )
• It return the current date. • e.g. SELECT CURDATE(); **Output** 2021-01-20	• It extract the date part of time expression • e.g. SELECT CURDATE('2021-01-20' 03:16:45); **Output** 21-01-20

Q.10 Consider the table Hotel given below :

TABLE : HOTEL

EmpId	Category	Salary
E101	Manager	60000
E102	Executive	65000
E103	Clerk	40000
E104	Manager	62000
E105	Executive	50000
E106	Clerk	35000

Mr.Vinay wanted to display average salary of each category. He entered the following SQL statement. Identify error(s) and rewrite the correct SQL statement.
SELECT Category, Salary FROM Hotel GROUP By Category;
Ans. Correct statement
SELECT Category, AVG(Salary) FROM Hotel GROUP BY Category;

Q.11 Consider the table Hotel given below :

TABLE : Company

EmpId	Department	Salary
E101	Personnel	60000
E102	Accounts	65000
E103	Marketing	40000
E104	Personnel	62000
E105	Personnel	50000
E106	Marketing	35000

Identify error(s) in the folliwng SQL statement, to display average salary of each department. Rewrite the correct SQL Statement
SELECT Department, Salary FROM Company GROUP By Department;
Ans. Correct Statement :
SELECT Department, AVG(Salary) FROM Company GROUP BY Department;

Q.12 Gopi Krishna is using a table Employee. It has the following Columns :
Code, Name, Salary, Deptcode
SELECT Deptcode,Max(Salary) FROM EMPLOYEE;
But he did not get the desired result. Rewrite the above query with necessary changes to help him get the desired result.
Ans.

SELECT Deptcode, Max(Salary)
FROM Employee GROUP BY Deptcode;

Q. 13 Consider the table organization

OrgCode	Salary
C101	13000
C102	5000
C103	7000
C104	4000

(i) With SQL, how can you find the number of rows(records) in the Organization table?

(ii) What output will be displayed by the following SQL statement:
Select AVG(Salary) FROM Organization;

Ans.

(i) SELECT COUNT(*) FROM Organization;

(ii) 7250

Q.14 Consider the table Teacher given below :

TeacherId	Department	Periods
T101	Science	32
T102	Null	30
T103	Mathematics	34

What will be the output of the following queries on the basis of the above table:

(i) SELECT COUNT(Department) From Teacher;

(ii) SELECT COUNT(*) FROM Teacher;

Ans.

(i) 2

(ii) 3

LA – Long Answer Question (for 4 Marks)

Q.1 Consider the following table Activity. Write SQL Commands for the statement (i) to (ii) and output for SQL queries (iii) to (iv)

ACTIVITY

PID	PARTICIPANT	GRADE	EVENT	POINTS	EVENDATE	HOUSE
101	Amit Dubey	A	Running	200	2018-12-19	Gandhi
102	Shivraj Singh		Hopping Bag	300	2019-01-12	Bose
103	Raj Arora	B	Skipping	200	2018-12-19	Gandhi
104	Kapil Raj	A	Bean Bag	250	2018-12-19	Bhagat
105	Deepshikha Sen	A	Obstacle	350	2018-03-31	Bose
106	Saloni Raj		Egg & Spoon	200	2018-12-20	Bose

(i) To display names of Partipants and points in descending order of points.

(ii) To display House wise total points scored along with House name.

(iii) SELECT AVERAGE(POINTS) FROM Activiy WHERE HOUSE= 'Gandhi' or HOUSE= 'Bose' ;

(iv) SELECT COUNT(DISTINCT POINTS) FROM Activity;

Ans.

(i) SELECT PARTICIPANT, POINTS FROM Activity ORDER BY POINTS DESC;

(ii) SELECT HOUSE, Sum(POINTS) FROM Activity GROUP BY HOUSE;

(iii) 250
(iv) 4

Q.2 Write the SQL query command for (a) and Output for (b),(c),(d) based on following tables:

TABLE : Book

Book_Id	Book_Name	Author_Name	Publisher	Price	Type	Quantity
C0001	Fast Cook	Lata Kapoor	Oswal	355	Cookery	5
F0001	The Tears	William Hopkins	First Publ.	650	Fiction	20
T0001	My First C++	Brain & Brooke	Oswal	350	Text	10
T0002	C++ Brain works	A.W.Rossaine	TDH	350	Text	15
F0002	Thunderbolts	Anna Roberts	First Publ.	750	Fiction	50

(i) Display the names and price from books in ascending order of their prices.
(ii) SELECT COUNT(*) FROM Book;
(iii) SELECT MAX(Price) FROM Book WHERE Quantity >=15;
(iv) SELECT COUNT(DISTINCT Publisher) FROM Book WHERE Price>=400;

Ans.
(i) SELECT Book_Name,Price FROM Book ORDER BY Price ASC;
(ii)

COUNT(*)
5

(iii)

MAX(Price)
750

(iv)

COUNT(DISTINCT Publisher)
1

Q.3 Give the output of following SQL statement based on table GRADUATE.

Table : GRADUATE

S_No	NAME	STIPEND	SUBJECT	AVERAGE	DIV
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP.SC.	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CHEMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I
9	RUBINA	500	COMP.SC.	62	I
10	VIKAS	400	MATHS	57	II

(i) SELECT MIN(AVERAGE) FROM GRADUATE WHERE SUBJECT= ‘PHYSICS’;
(ii) SELECT SUM(STIPEND) FROM GRADUATE WHERE DIV= ‘II’;
(iii) SELECT AVG(STIPEND) FROM GRADUATE WHERE AVERAGE>=65;
(iv) SELECT COUNT(DISTINCT SUBJECT) FROM GRADUATE;

Ans. (i)

MIN(AVERAGE)
63

(ii)

SUM(STIPEND)
800

(iii)

AVG(STIPEND)
450

(iv)

COUNT(DISTINCT SUBJECT)
4

Q.4 Give the output for the following queries based on table GARMENT :

Table : GARMENT

GCODE	GNAME	SIZE	COLOUR	PRICE
111	TShirt	XL	Red	1400.00
112	Jeans	L	Blue	1600.00
113	Skirt	M	Black	1100.00
114	Ladies Jacket	XL	Blue	4000.00
115	Trousers	L	Brown	1500.00
116	Ladies Top	L	Pink	1200.00

(i) SELECT COUNT(DISTINCT SIZE) FROM GRAMENT;
(ii) SELECT AVG(PRICE) FROM GRAMENT;
(iii) SELECT GNAME,COLOUR FROM GRAMENT WHERE SIZE='M';
(iv) SELECT GANEME,COLOUR FROM GRAMENT WHERE PRICE>=3000;

Ans. (i)

COUNT(DISTINCT SIZE)
3

(ii)

AVG(PRICE)
1800

(iii)

GNAME	COLOUR
Skirt	Black

(iv)

GNAME	COLOUR
Ladies Jacket	Blue

Q.5 Consider the table EXAM given below :

Table : EXAM

NO	NAME	STIPEND	SUBJECT	AVERAGE	DIVISION
1	KARAN	400	ENGLISH	68	FIRST
2	AMAN	680	MATHEMATICS	72	FIRST
3	JAVED	500	ACCOUNTS	67	FIRST
4	BISHAKH	200	INFORMATICS	55	SECOND
5	SUGANDHA	400	HISTORY	35	THIRD
6	SUPARNA	550	GEOGRAPHY	45	THIRD

Write SQL commond for

(i) To list the names of those students who have obtaind DIVISION as FIRST in the ascending order of NAME.

(ii) To count the number of students who have either accounts or informatics as subject.

Give output of the following:

(iii) SELECT AVG(STIPEND) FROM EXAM WHERE DIVISION= 'THIRD';

(iv) SELECT COUNT(DISTINCT SUBJECT) FROM EXAM;

(v) SELECT MIN(AVERAGE) FROM EXAM WHERE SUBJECT='ENGLISH';

Ans.

(i) SELECT NAME FROM EXAM WHERE DIVISION= 'FIRST' ORDER BY NAME ;

(ii) SELECT COUNT(*) FROM EXAM WHERE SUBJECT IN('ACCOUNTS', 'INFORMATICS');

(iii)

AVG(STIPEND)
475

(iv)

COUNT(DISTINCT SUBJECT)
6

(v)

MIN(AVERAGE)
68

Q.6 Consider the following tables

Table : STOCK

ICODE	INAME	DCODE	QTY	UNITPR	STKDATE
444	Drawing Copy	101	110	21	31-July-2010
445	Sharpener Camlin	102	235	3	01-Aug-2010
450	Eraser Natraj	101	40	2	17-Aug-2010
452	Gen Pen Montex	103	50	5	30-Dec-2009
457	Geometry Box	101	35	45	15-Nov-2009
467	Parker Premium	102	60	205	27-Oct-2009
469	Office File	103	32	25	13-Sep-2010

Write SQL Commands for the following statements:

(i) To Display details of all items in the STOCK table in descending order of stkdate.

(ii) To display minimum unit price of items for each dealer individually as per dealer code from the table stock.

Give Output

(iii) SELECT COUNT(DISTINCT DCODE) FROM STOCK;

(iv) SELECT MAX(SKTDATE) FROM STOCK ;

Ans.

(i) SELECT * FROM STOCK ORDER BY STKDATE DESC;

(ii) SELECT DCODE,MIN(UNITPR) FROM STOCK GROUP BY DCODE;

(iii)

COUNT(DISTINCT DCODE)
3

(iv)

MAX(SKTDATE)
13-SEP-2010

CHAPTER – INTRODUCTION TO COMPUTER NETWORKS

Very Short Answer Question (for 1 Mark)

Q.1 _____ Topology is based on a central network which acts as hub.
Ans. Star

Q.2 _____ is larger than LAN and smaller than WAN
Ans. MAN

Q.3 A computer network can categorized by their
Ans. Size

Q.4 _____ connects multiple computer networking devices together
Ans. Hub

Q.5 Gateway is network device used to connect two or more _____ netoworks.
Ans. dissimilar

Q.6 In _____ topology, single cable is used to connect all the workstations.
Ans. Bus

Q.7 Repeaters work on the _____ layer.
Ans. Physical

Q.8 _____ network is owned by a single organization.
Ans. LAN (Local Area Network)

Q.9 What is a purpose of server in a network?
Ans. A Server manages network resources in a network.

Q.10 What is the purpose of switch in a network?
Ans. Switch is used to connect multiple LANs together.
Q.11 What is the name of the network topology in which each node is connected independently using a switch?
Ans. Star Topology.

Q.12 Expand WAN and MAN
Ans.
WAN – Wide Area Network
MAN – Metropolitan Area Network

Q.13 Two students in the same class sitting inside the same room have connected their laptops using Bluetooth for working on a group presentation.
Ans, PAN (Personal Area Network)

Q.14 Which type of network out of LAN, PAN and MAN is formed, when you connect two mobile using Bluetooth to transfer a video?
Ans. PAN (Personal Area Network)

Q.15 Which device is used to connect all computers inside a lab?
Ans. Hub or Switch

Q.16 Expad the following
(i) LAN (ii) PAN
Ans.
LAN- Local Area Network
PAN- Personal Area Network.

Q.17 Internet is an example of which topology:
Star, Mesh , Tree, Bus
Ans. Mesh

Q.18 _____ Network device is a broadcast device.
Ans. Hub

Q.19 Which of the following is not a Geographically type of network?
LAN, MAN, PAN, TAN, Wi Max, WAN
Ans. TAN

Q.20 To prevent unauthorized access to and / or from the network, a system known as _____, can be implemented by hardware and / or software.
Ans. Firewall

SA – Short Answer Question (for 2 Marks)

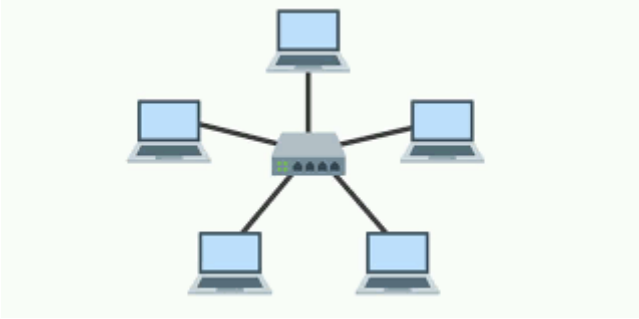
Q. 1 What is a node ?
Ans. Any system or a device connected to a network is called a node. For example, if a network connects 5 computers, a server and a printer, there are 7 nodes in the network.

Q.2 What is a server?
Ans. A server is a computer or system that provides resources, data, services or programs to other computers, known as clients over a network. A server may be designed to do a single task such as mail server, which accepts and store email and then provides it to a requesting client.

Q.3 Alisa needs a network device that should regenerate the signal over the same network before the signal becomes too weak or corrupted.
Chris needs a network device to connect two different networks together that work upon different networking models so that the two networks can communicate properly.
Name the devices that should be used by Alisa and Chris.
Ans. Alisa → Repeater
Chris→ Gateway

Q.4 A Say, "In this network topology, on malfunctioning node does not affect that rest of the network and it is easy to add and remove nodes".
B Say "In this network topology, cable length required is less but if the main cable encounters some problem, whole network breaks down.
Name the topologies A and B are talking about.
Ans. A→ Star Topology.
B→Bus Topology.

Q.5 Identify the topology shown below. Write two advantages of this topology.



Ans. Star topology
Two advantages are as follows :
(i) Easy to install
(ii) Easy to diagnose the fault.

Q.6 Identify the following devices :
(i) An intelligent device that connects several nodes to form a network and redirects the received information only to intended node(s).
(ii) A device that regenerates(amplifies) the received signal and retransmits it to its destination.

Ans. (i) Router
(iii) Repeater

Q.7 Why is switch is called an intelligent hub ?
Ans. Switches learn the location of the device that they are connected to almost instantaneously. The net result is that most network traffic only goes where it needs to rather than to every port. On busy networks, this can make the network significantly faster.

Q. 8 XYZ consultancy is planning to link its branch office in Delhi to its head office in London. Write one way to connect. What type of network (out of LAN/WAN/MAN) will be formed.
Ans. (i) Satellite communication
(iii) WAN (Wide Area Network)

Q.9 What is the differences between LAN and WAN ?
Ans.

	LAN (Local Area Network)	**WAN (Wide Area Network)**
(i)	It is owned by a private organization.	It is owned by multiple Organizations.
(ii)	Diameter of less than a few kms.	Span entire countries.

Q.10 What is the difference between PAN and LAN?
Ans.

	PAN	**LAN**
(i)	PAN stands for Personal Area Network	LAN stands for Local Area Network
(ii)	It spans a few meters	It Spans upto a km.

LA – Long Answer Question (for 4 Marks)

Q.1 ABC Pvt. Ltd. Is setting up the network in the Bengaluru. There are four departments named as Market, Finance, Legal and Sales.
Distance between various Departments building is as follows :

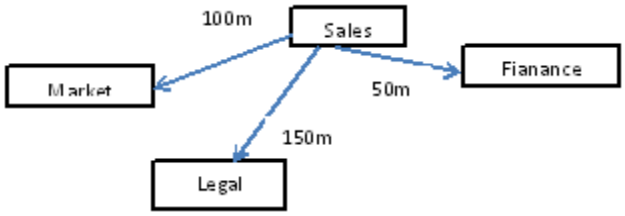
From	To	Distance
Market	Finance	80 mt
Market	Legal	180 mt
Market	Sales	100 mt
Legal	Sales	150 mt
Legal	Finance	100 mt
Fianance	Sales	50 mt

Number of computers in the buildings :

Building	No. of Computers
Market	20
Legal	10
Finance	08
Sales	42

(i) Suggest a cable layout of connections between the departments building and specify the topology.
(ii) Suggest the most suitable building to place server by giving suitable reason.
(iii) Suggest the placement of (i) modem (ii) hub/switch in the network.
(iv) The organization is planning to link its sales counter situated in various part of the same city, which type of network out of LAN, WAN, MAN will be formed? Justify your answer.

Ans.



(i) Star topology should be used.
(ii) Sales is the most suitable building to place the server because it has maximum number of computers.
(iii) Each Building should have hub/switch and modem in case internal connection is required.
(iv) MAN (Metropolian Area Network) as this network can be carried out in a city network.

Q.2 Delhi Public School in Meerut is starting up the network between its different wings. There are four building named as S, J, A and H. The distance between various buildings is as follows :

From	To	Distance
A	S	200 m
A	J	150 m
A	H	50 m
S	J	250 m
S	H	350 m
J	H	350 m

Number of computers in the buildings :

Building	No. of Computers
S	130
J	80
A	160
H	50

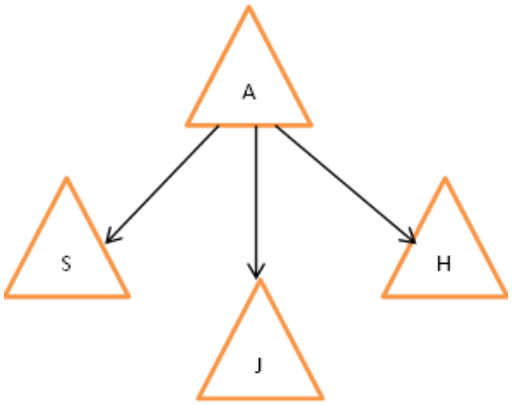
(i) Suggest the cable layout of connections between the buildings.
(ii) Suggest the most suitable place (i.e. building) to house the server of this school, provide a suitable reason.
(iii) Suggest the placement of the following devices with justification
- Repeater
- Hub/Switch

(iv) The organization also has enquiry office in another city about 50-60 km away in hilly region. Suggest the suitable transmission media to inter-connect school and enquiry office out of the following :

- Fibre optic cable.
- Micro wave.
- Radio wave.

Ans

(i)



(ii) Server can be placed in the A building as it has the maximum number of computers

(iii) Repeater can be placed between A and S buildings as the distance is more than100 m

(iv) Radio waves can be used in hilly region as they can travel through obstacles.

Q.3 Rovenza Communication International (RCI) is an online corporate training provider company for IT related course. The company is setting up their new campus in Kolkata. You as a network expert have to study the physical locations of various blocks ad the number of computers to be installed. In the planning phase, provide the best possible answers for the queries (i) to (iv) raised by them.

Block to block distance (in meters)

From	To	Distance
Administrative	Finances	60
Administrative	Faculty studio	120
Finances	Faculty studio	70

Expected computers to be installed in each block

Building	No. of Computers
Administrative	20
Finances	40
Faculty studio	120

(i) Suggest the most appropriate block, where RCI should plan to install the server.

(ii) Suggest the most appropriate block to block cable layout to connect all three blocks for efficient communication.

(iii) Which type of network out of the following is formed by connecting the computers of these three blocks
A. LAN B.MAN C.WAN

(iv) Which wirless channel out of the following should be opted by RCI to connect to students from all over the world>

A. Infrared B.Microwave C. Staellite.

Ans.

(i) Faculty Studio.

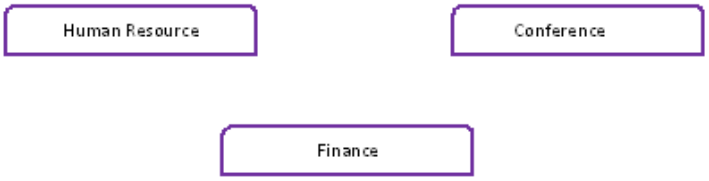
(ii)

(iv) LAN (Local Area Network)

(v) Satellite connection

Q.4 XYZ is professional consultancy company. The company is planning to set up their new offices in India with its hub at Pune. As a network adviser, you have to understand their requirement and suggest them to best available solutions. Their queries are mentioned as (i) to (iv) below :

Physical Location of the blocks of XYZ



Block to block distance (in meters):

From	To	Distance
Human Resource	Conference	110
Human Resource	Finance	40
Conference	Finance	80

Expected number of computers to be installed in each block

Building	No. of Computers
Huma Resource	25
Fianance	120
Confernce	90

(i) What will be the most appropriate block, where XYZ should plan to install their server?

(ii) Draw a block diagram showing cable layout to connect al the buildings in the most appropriate manner for efficient communication.

(iii) What will be the best possible connectivity out of the following you will suggest to connect the new setup of offices in Chennai with its London based office.

- Satellite link
- Infrared
- Ethernet Cable.

(iv) Which of the following device will be suggested by you to connect each computer in each of the buildings?

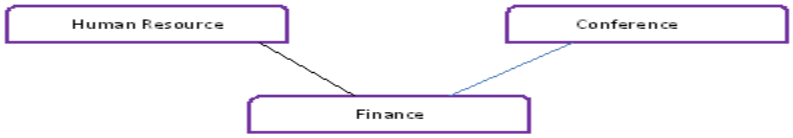
- Switch

- Modem
- Gateway

Ans

(i) Finance block because it has maximum number of computers.

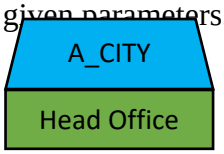
(ii)

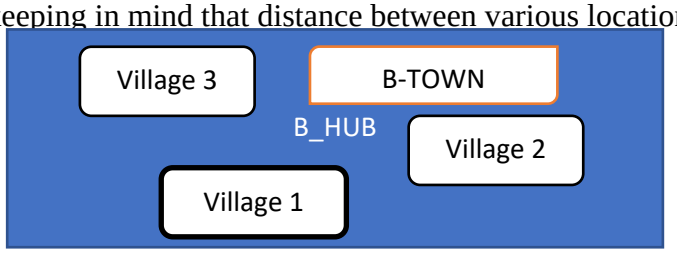


(iii) Satellite Link

(iv) Switch

Q.5 Uplifting skills Hub India is a knowledge and skill community which has an aim to uplift the standard of knowledge and skills in the society. It is planning to setup its training centres in multiple towns and villages in India with its head office in the nearest cities. They have created a model of their network with a city a town and 3 villages as follows. As a network consultant, you have to suggest the best network related solutions for their issues problems raised in (i) to (iv) keeping in mind that distance between various location and given parameters.





Shortest distance between various location :

From	To	Distance
Village1	B-Town	2 km
Village2	B-Town	1.0 km
Village3	B-Town	1.5 km
Village 1	Village 2	3.5 km
Village 1	Village 3	4.5 km
Village 2	Village 3	2.5 km
A_City Head Office	B_Hub	25 km

Number of computers installed at various locations are as follows:

Location	No. of Computers
B_Town	120
Village1	15
Village2	10
Village3	15
A_City Head Office	06

Note:

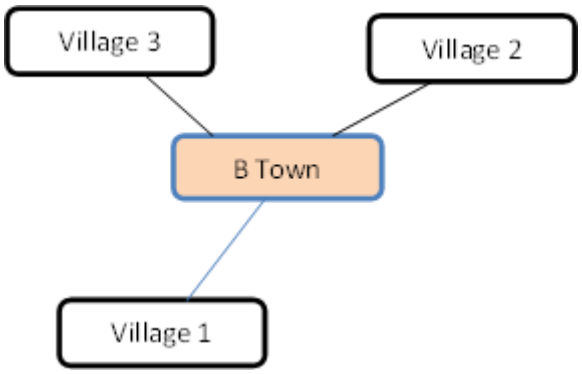
- In Villages, there are community centres, in which one room has been given as training centre to this organization to install computers.

- The organization has get financial support form the government and top IT companies.

(i) Suggest the most appropriate locations of the SEVER in the B_HUB out of 4 locations, to get the best and effective connectivity. Justify your answer.
(ii) Suggest the best wired medium and draw the cable various locations with the B_HUB
(iii) Which hardware device will you suggest to connect all the computers within eact location of B_HUB
(iv) Which service/protocol will be most helpful to conduct live interactions of experts from Head_Office and people at all location of B_HUB?

Ans.

(i) B_TOWN can house the server as it has the maximum no. of computers.
(ii) Optical Fibre cable is the best for the star topology.



(iii) Switch
(iv) VoIP

CHAPTER – INTERNET

Very Short Answer Question (for 1 Mark)

Q.1 _____ is computer network i.e., network of networks.
Ans. Internet

Q.2 _____ is a unique identifier used to locate a resource on the Internet.
Ans. URL

Q.3 World Wide Web was begun in 1989 by _____.
Ans. Tim Beners-Lee

Q.4 _____ field indicates the purpose of e-mail.
Ans. Subject

Q.5 _____symbol separates the user from the domain.
Ans. @

Q.6 _____ is the hub of Internet chatting.
Ans. Chat room

Q.7 VoIP stands for _____
Ans. Voice over Internet Protocol

Q.8 A Website is a collection of _____.
Ans. Web Pages.

Q.9 Write one example of each of URL and IP address.
Ans.
URL : https://www.cbse.nic.in/welcome.html
IP address : 122.176.185.219

Q.10 How is a domain name different from a URL
Ans.
Domain names are used in URLs to identify particular web servers.
For example
In the URL : https://www.cbse.nic.in/welcome.html the domain name is www.cbse.nic.in

SA – Short Answer Question (for 2 Marks)

Q.1 Differentiate between Internet and Intranet.
Ans.

	Internet	Intranet
(i)	It is used to connect different network of computer simultaneously.	It is the type of internet which is used privately.
(ii)	There are multiple users and it provides unlimited number of information to the user.	There are limited number of users and it provide limited number of information to its user.

Q.2 What do you mean by URL?
Ans.

- URL stands for Uniform Resource Locator. It is a unique identifier used to locate a resource on the Internet. It is also referred as a web address.
- URL protocols include HTTP(HyperText Transfer Protocol) and HTTPs (HTTP Secure) for web resources, mail for email addresses, FTP for files on a file Transfer Protocol server and telnet for a session to access remote computers.

Q.3 What is a website?
Ans. Website is a set of related web pages containing content such as text, images, videos, audios etc. A web site is hosted on at least one web server, accessible via a network such as the internet or a private local area network through an Internet address known as a Uniform Resource Locator. All publicly accessible website collectively constitute the world wide web.

Q.4 Distinguish between Web Browser and Web Server.
Ans.

	Web Browser	Web Server
(i)	It requests the server for the web documents and services	Web server accept, approve ad respond to the request made by the web browser for web document or services.
(ii)	The web browser sends an HTTP request and gets an HTTP response.	The web server gets HTTP requests and sent HTTP responses.

Q.5 What is the structure of a URL
Ans. The URL Contains 4 parts as :

- The type of service that the resource is served by HTTP, FTP etc (1)
- The domain name of the site (2)
- The internal port number of the service (3)
- The location of the resource in the directory structure of the server (4)

http://www.cbse.nic.in : 123/index
1 2 3 4

Q.6 What are the difference between a webpage and website?
Ans.

	WebPage	Website
(i)	It is a document on the world wide web that can include text, picture, sound and video	It is a collection of web pages belonging to a particular person or organization.
(ii)	It is a single page	It is composed of a single/multiple pages.

Q.7 What do you mean by cookies?
Ans. Cookies are messages that web server passes to your web browser when you visit internet sites. Your browser stores each message in a small file, called cookie.txt. When you request another page from the server, your browser sends the cookie back to the server. These files typically contain information about your visit to the web page as well as any information you have volunteered. Such as your name and interests.

CHAPTER – SOCIAL IMPACTS

Very Short Answer Question (for 1 Mark)

Q.1 Always check the _____ your post on web.
Ans. content

Q.2 _____ is all about the responsible and safe use of Internet.
Ans. Cyber Safety

Q.3 _____ helps Google ad Sense to server their best.
Ans. Digital footprint

Q.4 _____ is a way to communicate over Internet.
Ans. Netiquette

Q.5 Don't send _____ again and again
Ans. same message

Q.6 Never Post _____ on social media
Ans. abusive content

Q.7 _____can be termed as the security of data or information
Ans. Confidentiality

Q.8 There are _____ type of digital footprint
Ans. two

Q.9 Give an Example of active digital footprint.
Ans. When user makes a comment or post something on social media.

Q.10 Give an example of passive digital footprint.
Ans. When user visit any website then website traces his physical location using user's device IP address.

Q.11 What is a cyber safety ?
Ans. Cyber safety is all about the responsible and safe use of Internet.

Q.12 How can you make your digital foot print positive?
Ans. Always check the content you post on web.

Q.13 _____ are automatically granted to creators and authors.
Ans. Copyrights

Q.14 A patent protects an invention for _____ years, after which it be freely used.
Ans.20

Q. 15 _____ is the most problematic ad common form of plagiarism.
Ans. Cloning

Q.16 CC stands for
Ans. Creative Commons.

Q.17 Write the Full form of the following :
(i) IPR
(ii) FOSS
Ans.

(i) IPR→ Intellectual Property Rights
(ii) FOSS→ Free and Open Source Software.

Q.18 By which intellectual property is protected?
Ans. Intellectual property is protected through copyright patents and trademarks.

Q.19 _____ is actually preparing the owner against any cyber-attack.
Ans. Ethical hacking.

Q.20 _____ attempts through phone calls are also common these day's.
Ans. Phishing

Q.21 _____ blocks the users from accessing, usually by encryption the data.
Ans. Ransomware

Q.22 Do not use _____ for all the websites.
Ans. Same Password

Q.23 Cyber crime touches every action and every reaction in _____
Ans. Cyber space.

Q.24 The very first cyber crime was recorded in the year.
Ans. 1820

Q.25 What is the identity protection?
Ans. Identity protection is a method which provides you protection from identity theft.

Q.26 Rahul has stolen a credit card. He used that credit card to purchase a laptop. What type of offence has he committed?
Ans. He has committed a fraud.

Q.27 Name the primary law in India dealing with cybercrime and electronic commerce.
Ans. The Primary law is Information Technology Act 2000

Q.28 What is a financial Identity theft ?
Ans. When the stolen identity is used for financial gain.

Q.29 Write two important of cyber law.
Ans.
(i) It covers all transactions over the Internet.
(ii) It keeps eyes on all activities over the Internet.

Q. 30 State whether True or False
i. Shareware software allows you to try the software before you buy it.
ii. Copyright is not the right of the creator of creative/artistic work.
Ans.
(i) True
(ii) False

Q.31 The practice of taking confidential information from you through an original looking site and URL is known as _____
Ans. Phishing

Q.32 I am a fraudulent business practice.
I can extract money from an unsuspecting, ignorant person.
Who am I?
Ans. Scam

Q.33 Give a solution to recycle the E-Waste in the country.
Ans. Buy environmentally friendly electronics Donate used electronics to social programs Reuse , refurbish electronics Recycling e-waste

Q.34 Online personal accounts like Paytm account, Phonepe account etc. are examples of:
a. Digital property
b. Digital Wallets
c. Digital Certificates
d. Digital Signature
Ans. b. Digital Wallets.

SA – Short Answer Question (for 2/3 Marks)

Q.1 What do you mean by Phishing? Explain with the help of an example.

OR

List any two health hazards related to excessive use of Technology.
Ans.
Phishing is a type of social engineering attack often used to steal user data, including login credentials and credit card numbers.
Example:
URGENT REQUEST (Email Impersonation) These are targeted and simple forms of phishing emails designed to get victims to purchase gift cards, or to give up personal email

or phone numbers. The "email compromise" gets its name because the attacker mimics the email of a known sender.

OR

The continuous use of devices like smartphones, computer desktop, laptops, head phones etc cause a lot of health hazards if not addressed. These are:

i i. Impact on bones and joints: wrong posture or long hours of sitting in an uncomfortable position can cause muscle or bone injury.

ii ii. Impact on hearing: using headphones or earphones for a prolonged time and on high volume can cause hearing problems and in severe cases hearing impairments.

iii iii. Impact on eyes: This is the most common form of health hazard as prolonged hours of screen time can lead to extreme strain in the eyes.

iv iv. Sleep problem: Bright light from computer devices block a hormone called melatonin which helps us sleep. Thus we can experience sleep disorders leading to short sleep cycles.

Q.2 Jeet has to prepare a project on “Swachh Bharat Abhiyan”. He decides to gather information from the internet. He downloads three Web pages (Webpage1, Webpage2, Webpage3) containing information on Swachh Bharat Mission. Answer the following questions in relation to this.

A. What kind of Cyber Crime can it be considered?

B. Which step should Jeet have avoided doing to avoid committing a Cyber Crime?

.

Ans.

A. Plagiarism

B. Either he should not have copied as it is or he could have given reference of the specific webpages from where he copied.

Q.3 Rakesh went to an ATM Machine to withdraw some cash. He noticed a suspicious person standing right behind him. Answer the following questions in relation to this.

a. What would you suggest Rakesh to do in such a situation?

b. Is the security of the account of Rakesh compromised in this situation?

Ans.

A. Rakesh should ask to person stand away

B. Yes

Q.4 Write the full form of following :

PCB
ICT
EPA
PVC
UNDP
GHE
GFC
CRT
TFT
LED

Ans.

PCB→ Pollution Control Board
ICT→Information and Communication Technology
EPA→Environmental Protection Agency
PVC→Polyvinyl Chloride
UNDP→United Nations Development Program
GHE→ Green House Effect
CFC→Chloro Fluoro Carbon
CRT→ Cathod Ray Tube
TFT→Thin Film Transistor
LED→ Light Emmited Diode

(FAQ-Frequently Asked Questions)

Unit 1: Data Handling using Pandas and Data Visualization

1. In a DataFrame, axis= 0 represents the ..... elements.
Ans. Row

2. In a DataFrame, Axis= 1 represents the_____ elements.
Ans. Column

3. In Pandas the function used to delete a column in a DataFrame is
a. remove b. del c. drop d. cancel
Ans. b**.** del

4. Which method is used to access horizontal subset of a dataframe?
(i) iterrows( ) (ii) sort_values( ) (iii) head( ) (iv) iteritems( )
Ans. (i) iterrows()

5. In Pandas, the function used to fill the missing values in a DataFrame is .....
Ans. fillna()

6. In Pandas the function used to check for null values in a DataFrame is _____
Ans. isnull()

7. Write output of the following code: (1)

```
import pandas as pd
my_series=pd.Series({'Indore':20,'Ujjain':35,'Bhopal':40})
print(my_series[my_series>20])
```

Ans. Ujjain 35
Bhopal 40

8. Given a Pandas series called Sequences, the command which will display the first 4 rows is _____.
a. print(Sequences.head(4))
b. print(Sequences.Head(4))
c. print(Sequences.heads(4)
d. print(Sequences.Heads(4))
Ans. (a) print(Sequences.head(4))

9. ..... refers to tabular data saved as plain text where data values are separated by commas.
Ans. CSV (Comma Separated Values)

10. In Pandas, emp is a Series that stores names of the employees.
emp=pd.Series([“Archana”, “Tiya”, “Manit”, “Sanskaar”]
Which command is used to assign the index as (“Emp1”, “Emp2”, “Emp3”, “Emp4”) explicitly?
(i) emp_index=('Emp1', 'Emp2','Emp3', 'Emp4')
(ii) emp.index =('Emp1', 'Emp2','Emp3', 'Emp4')
(iii) emp.index=['Emp1', 'Emp2','Emp3', 'Emp4']
(iv) emp[index]=('Emp1', 'Emp2','Emp3', 'Emp4')
Ans. (iii) emp.index=['Emp1', 'Emp2','Emp3', 'Emp4']

11. Given a Pandas series called Marks, the command which will display the last 3 rows is .....

(i) print(Marks.tail(3)) (ii) print(Marks.Tail(3))

(iii) print(Marks.tails(3) (iv) print(Marks.Tails(3))

Ans. (i) print(Marks.tail(3))

12. Write the output of the following code:

```
import pandas as pd
Ser1=pd.Series(range(8),index=['A','B','C', 'D', 'E', 'F', 'G', 'H'])
print(Ser1)
```

Ans.

```
A    0
B    1
C    2
D    3
E    4
F    5
G    6
H    7
```

13. Write the output of the following code:

```
import pandas as pd
Marks=pd.Series({'Rahul':80,'Aarush':98,'Shobhit':89, 'Krish':90})
print(Marks[Marks>85])
```

Ans.

```
Aarush     98
Shobhit    89
Krish      90
dtype: int64
```

14. Consider the following DataFrame df and answer any four questions from (i)- (v)

Rollno	name	UT1	UT2	UT3	UT4
1	Prerna Singh	24	24	20	22
2	Manish Arora	18	17	19	22
3	Tanish Goel	20	22	18	24
4	Falguni Jain	22	20	24	20
5	Kanika Bhatnagar	15	20	18	22
6	Ramandeep Kaur	20	15	22	24

(i)Write down the command that will give the following output.

```
rollno          6
name      Tanish Goel
UT1              24
UT2              24
UT3              24
UT4              24
dtype: object
```

a. print(df.max) b. print(df.max())

c. print(df.max(axis=1)) d. print(df.max, axis=1)

Ans. b. print(df.max())

(ii) The teacher needs to know the marks scored by the student with roll number 4. Help her to identify the correct set of statement/s from the given options :

a. df1=df[df['rollno']==4]
   print(df1)
b. b. df1=df[rollno==4]
   print(df1)
c. c. df1=df[df.rollno=4]
   print(df1)
d. d. df1=df[df.rollno==4]
   print(df1)

Ans.

a.- df1=df[df['rollno']==4]
    print(df1)
d.- df1=df[df.rollno==4]
    print(df1)

(iii) Which of the following statement/s will give the exact number of values in each column of the dataframe?

i.print(df.count()) ii. print(df.count(0))
iii. print(df.count) iv. print(df.count(axis='index'))

Choose the correct option:

a. both (i) and (ii) b. only (ii)
c. (i), (ii) and (iii) d. (i), (ii) and (iv)

Ans. a. both (i) and (ii)

(iv) Which of the following command will display the column labels of the DataFrame?

a. print(df.columns()) b. print(df.column())
c. print(df.column) d. print(df.columns)

Ans. d. print(df.columns)

(v) Ms. Sharma, the class teacher wants to add a new column, the scores of Grade with the values, ' A', 'B', 'A', 'A', 'B', 'A' ,to the DataFrame. Help her choose the command to do so:

a. df.column=['A','B','A','A','B','A']
b. df ['Grade']=['A','B','A','A','B','A']
c. df.loc['Grade']= ['A','B','A','A','B','A']
d. Both (b) and (c) are correct

Ans. b. df ['Grade']=['A','B','A','A','B','A']

15. Given the following Series S1 and S2:

S1		S2	
A	10	A	80
B	40	B	20
C	34	C	74
D	60	D	90

Write the command to find the product of series S1 and S2.

Ans. print(s1*s2) OR print(s1.mul(s2))

Write the command to find the sum of series S1 and S2

Ans. print(S1+S2)

16. Consider a given Series , M1:

index

	Marks
Term1	45
Term2	65
Term3	24
Term4	89

Write a program in Python Pandas to create the series.

Ans. import pandas as pd
M1=pd.Series([45,65,24,89],index=['term1','term2','t erm3','term4'])

17. Assume a data frame df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indexes shown below and give the output of any four questions from (i) to (v).

	City	MaxTemp	MinTemp	RainFall
C1	Delhi	40	32	24.1
C2	Bengaluru	31	25	36.2
C3	Chennai	35	27	40.8
C4	Mumbai	29	21	35.2
C5	Kolkata	39	23	41.8

(i) >>>df1.shape (1)

Ans. (5,4)

(ii) >>>df1[1:2] (1)

Ans.

	City	MaxTemp	MinTemp	RainFall
C2	Bengaluru	31	25	36.2

(iii) >>>df1.loc['C1':'C3','City'] (1)

Ans. C1 Delhi
C2 Bengaluru
C3 Chennai

(iv) >>>df1.iloc[2] (1)

Ans. City Chennai
MaxTemp 35
MinTemp 27
RainFall 40.8

(v) >>>df.city (1)

Ans. Delhi
Bengaluru
Chennai
Mumbai
Kolkata

18. Consider a given Series, Subject:

INDEX	MARKS
ENGLISH	75
HINDI	78
MATHS	82
SCIENCE	86

Write a program in Python Pandas to create this series.

Ans. >>>pd.Series([75,78,82,86],index=['ENGLISH','HINDI','MATHS','SCIENCE'])

19. Assume a dataframe df that contains data about IT Quiz Contest with 'SC1','SC2','SC3','SC4','SC5' as indexes shown below.

Give the output of any four questions from (i) to (v).

	School	Total_Students	Winner	Runner-up
SC1	APS	40	32	8
SC2	KPS	30	18	12
SC3	KKPS	20	18	2
SC4	MMPS	18	10	8
SC5	TPS	28	20	8

(i) >>>df.shape (1)

Ans. (5,4)

(ii) >>>df1[2:4] (1)

Ans.

	School	Total_Students	Winner	Runner-up
SC3	KKPS	20	18	2
SC4	MMPS	18	10	8

(iii) >>>df.loc['SC2':'SC4','Winner'] (1)

Ans.
SC2 18
SC3 18
SC4 18
Name: Winner,
dtype= int64

(iv) >>>df.iloc[2:4] (1)

Ans.

	School	Total_Students	Winner	Runner-up
SC3	KKPS	20	18	2
SC4	MMPS	18	10	8

(v) >>>df.Total_Students (1)

Ans.
40
30
20
18
28
Name: Total_Students,
dtype=int64

20. Write Python code to create the following DataFrame df1 using Python Pandas. Use any method of DataFrame creation that you have learned:

Name	Class	Marks
Tanmay	XII	95
Aditi	X	84
Mehak	XI	90
Kriti	XI	75

Give index as "one", "two", "three", "four" respectively.

Ans. import pandas as pd

```
d1= {"Name":['Tanmay', 'Aditi', 'Mehak', 'Kriti'], "Class":[" XII","X","XI","XI"],
        "Marks":[95,84,90,75]}
df1=pd.DataFrame(d1,index=["one", "two", "three", "four"])
print(df1)
```

21. Write the output of the following code:

```
import pandas as pd
a=pd.Series([78,45,89,98])
b=pd.Series([67,87,90])
student={"English":a,"Hindi":b}
df=pd.DataFrame(student)
print(df)
```

Ans.

	English	Hindi
0	78	67.0
1	45	87.0
2	89	90.0
3	98	NaN

22. What will be the output of the following program:

```
import pandas as pd
s = pd.Series([1,2,3,4,5],index=['a','b','c','d','e'])
print(s*3)
print(s>2)
s['e']=6
print(s)
```

Ans.

```
a    3
b    6
c    9
d    12
e    15
dtype: int64
a    False
b    False
c    True
d    True
e    True
dtype: bool
a     1
b    2
c    3
d    4
e    6
dtype: int64
```

23. Consider the following Series object, S_amt

Table	350
Chair	200
Sofa	800
Stool	150

i. Write the command which will display the name of the furniture having rent>250.
ii. Write the command to name the series as Furniture

Ans.

i. print(S_amt[S_amt>250])
ii. ii. S_amt.name= 'Furniture'

24. A dictionary Grade contains the following:

Grade={'Name':['Rashmi','Harsh','Ganesh', 'Priya','Vivek'],
'Grade':['A1','A2','B1','A1','B2']}

Write statements for the following:
(i) Create a Dataframe named "Gr".
(ii) Add a column called 'marks' with following data:
[97,92,95,89,96,82]
(iii) Delete 3rd and 5th rows

Ans. (i) Gr= pd.DataFrame(Grade)
(ii) Gr["Marks"]=[97,92,95,89,96,82]
(iii) Gr.drop([2,4])

25. Write a program to find the Total salary of all employees in the DataFrame employee without using any aggregate function.

Ans.
```
import pandas as pd
d={"Empno":[1,2,3],"Ename":["Ritu","Ankit","Megha"],"Salary":[12000,15000,28000]}
df=pd.DataFrame(d)
print(df)
sum1=0
for i in range(len(df)):
    sum1=sum1+df.loc[i,'Salary']
print(sum1)
```

26. Consider the following Series object, "company" and its profit in Crores

TCS	350
Reliance	200
L&T	800
Wipro	150

i)-Write the command which will display the name of the company having profit>250.
ii)- Write the command to name the series as Profit.

Ans. i. print(company[company>250])
ii. company.name= 'Profit'

27. Write Python code to create the following DataFrame books using Python Pandas. Use any method of DataFrame creation that you have learnt:

BookName	Class	Price
Let us C	BCA	270
Artificial Intelligence	B.Tech	350
Database Management	BCA	450
Computer Architecture	BCA	550

Give index as 'B1','B2','B3','B4'

Ans.
```
import pandas as pd
d1= {"BookName":['Let us C', 'Artificial Intelligence', 'DatabaseManagement',
'Computer Architecture' ],
"Class":[' BCA', 'B.Tech', 'BCA', 'BCA'],
"Price":[270,350,450,550]  }
books=pd.DataFrame(d1,index=['B1','B2','B3', 'B4'])
print(books)
```

28. Consider two objects x and y. x is a list whereas y is a Series. Both have values 10, 20, 30,100. What will be the output of the following two statements considering that the above objects have been created already.

(i) print (x+2) (ii) print(y+2) Justify your answer.

Ans. (i) TypeError: can only concatenate list (not "int") to list

(ii)
```
0    12
1    22
2    32
3    102
dtype: int64
```

In the first case, adding integer value to a list is not permitted. You can add list to another list but not an integer value to a list. This is because list does not allow broadcasting operation, i.e., performing arithmetic operation to each element is not permitted.

But in second case, series can very well implement broadcasting operation. Thus, adding an integer value to pandas series is permitted and is perfectly fine; hence the output is so obtained.

29. Consider the following dataframe df_Student:

AdmNo	Name	Class	Weight	Height
H1001	Tiana	IX B	50	163
H1006	Jiya	IX A	55	167
H1009	Shreyas	IX A	59	164

(i) Write the command to add a new column 'Age' having the following data: Age= (13,15,14)

Ans. df_Student['Age']=[13,15,14]

(ii) Write a command to permanently delete the record of student having AdmNo H1009.

Ans. df_Student.drop('H1009', inplace=True)

(iii) Write a command to display records in ascending order of age.

Ans. print(df_Student.sort_values("Age")).

30. A dictionary 'toys' contains the following:

toys={'Name':['Talking Tom', 'Blocks','Number game', 'ludo'], 'Price':[400,250, 300,150]

Write statements for the following:

(i) Create a Dataframe named "stock"

(ii) Add a column called 'discount' with the following data: [30, 40, 15, 25]

(iii) Delete column discount with all values.

Ans. (i) stock= pd.DataFrame(toys)

(ii) stock["discount"]=[30,40,15,25]

(iii) stock.drop("discount", axis=1)

31. Write a program in Python Pandas to create the following DataFrame TotalMarks from a Dictionary:

Perform the following operations on the DataFrame TotalScore:

RollNo	Name	TERM I	TERM II
1	Anshu	55	76
2	Prachi	82	88
3	Divyansh	95	98
4	Chetan	76	78
5	Sahil	68	65

(a) Add both the Marks of a Student and assign to column "Total".

(b) Display the highest marks in both TERM I and TERM II of the DataFrame.

(c) Display the DataFrame.

Ans. Creating a dataframe:

```
import pandas as pd
data={'RollNo':[1,2,3,4,5],
      'Name':["Anshu","Prachi","Divyansh","Chetan","Sahil"],
      'TERM I':[55,82,95,76,68], 'TERM II' :[76,88,98,78,65] }
df_result=pd.DataFrame( data)
print(df_result)
```

(a) df_result['Total'] = df_result ['TERM I']+ df_result ['TERM II']
print(df_result)

(b) print("Highest Marks are:" , max(df_result ['TERM I']), max(df_result ['TERM II']))

(c) print(df_result)

32. Consider the following DataFrame, classframe

	Rollno	Name	Class	Section	CGPA	Stream
St1	1	Aman	IX	E	8.7	Science
St2	2	Preeti	X	F	8.9	Arts
St3	3	Kartikey	IX	D	9.2	Science
St4	4	Lakshay	X	A	9.4	Commerce

Write commands to :

i. Add a new column 'Activity' to the Dataframe

ii. Add a new row with values (5 , Mridula ,X, F , 9.8, Science)

Ans.

i. classframe['Activity']=['Swimming','Dancing ','Cricket', 'Singing']

ii. classframe.loc['St5']=[1,'Mridula', 'X', 'F', 9.8, 'Science']

33. Consider two objects x and y. x is a list whereas y is a Series.
Both have values 20, 40,90, 110.
What will be the output of the following two statements considering that the above objects have been created already

a. print (x*2)

b. print(y*2) Justify your answer.

Ans.

a. will give the output as:
[20,40,90,110,20,40,90,110]

b. will give the output as

0 40
1 80
2 180
3 220

Justification:

In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times.

The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.

34. Write a program in Python Pandas to create the following DataFrame batsman from a Dictionary:

B_NO	Name	Score1	Score2
1	Sunil Pillai	90	80
2	Gaurav Sharma	65	45
3	Piyush Goel	70	90
4	Kartik Thakur	80	76

Perform the following operations on the DataFrame :
1)Add both the scores of a batsman and assign to column "Total"
2)Display the Lowest score in both Score1 and Score2 of the DataFrame.
3)Display the DataFrame

Ans.

```
import pandas as pd
d1={'B_NO':[1,2,3,4],
    'Name':["Sunil Pillai","Gaurav Sharma","Piyush Goel","Kartik Thakur"],
     'Score1':[90,65,70,80],
      'Score2':[80,45,95,76] }
df=pd.DataFrame(d1)
print(df)
df['Total'] = df['Score1']+ df['Score2']
print("Maximum scores are : " , min(df['Score1']), min(df['Score2']))
```

35. Write a program in Python Pandas to create the following DataFrame toppers from a

Dictionary:

T_NO	Name	PB1	PB2	
1	Pavan	90	80	
2	Sugandha	85	75	
3	Pulkita		70	72
4	Sahil	69	71	

Perform the following operations on the DataFrame :
1)Add both the marks from PB1 and PB2 of a student and assign to column "Final"
2)Display the highest marks in both PB1 and PB2 of the DataFrame.
3)Display the DataFrame

Ans. import pandas as pd

```
d1={ 'T_NO': [1,2,3,4],
     'Name': ["Pavan","Pulkita","Sugandha","Sahil"],
     'PB1':   [90,85, 70,69],
     'PB2':   [80,75,72,71]  }
toppers=pd.DataFrame(d1)
print(toppers)
toppers['Total'] = toppers['PB1']+ toppers ['PB2']
print("Maximum scores are : " , max(toppers['PB1']), max(toppers['PB2']))
```

(FAQ-Frequently Asked Questions)
Data Visualization

1. Fill in the blanks :
The command used to show legends is_____
a. display() b. show() c. legend() d. legends()
Ans. c. legend()

2. Which of the following statements is used to create a histogram of 'step' type with 20 bins? (1)
(i) plt.hist(x, bins=20,histype="barstacked") (ii) plt.hist(x, bins=20)
(iii) plt.hist(x, bins=20, histype="step") (iv) plt.hist(x, bins=20, histype=hist()
Ans. (i) plt.hist(x, bins=20, histype="step")

3. Fill in the blanks :
The command used to give a heading to a graph is _____
a. plt.show() b. plt.plot() c. plt.xlabel() d. plt.title()
Ans. plt.title()

4. A histogram displays numerical data by grouping data into ..... of equal width. (1)
Ans. Bins

5. Using Python Matplotlib _____ can be used to count how many values fall into each interval
a. line plot b. bar graph c. histogram
Ans. histogram

6. Which of the following is not a valid chart type?
a. lineplot b. bargraph c. histogram d. statistical

Ans. d**.** statistical

7. Fill in the blanks:

T20 match analysis in Dubai is to be plotted. The command used to give title to y-axis as 'Total Score' of each team in a graph is ..... .

(i) plt.show() (ii) plt.plot("Total Score")

(iii) plt.ylabel("Total Score") (iv) plt.title("Total Score")

Ans. (iii) plt.ylabel("Total Score")

8. Lekisha wants to plot a bar chart for the students of 6th class of different sections who have opted for the given subjects. Complete the code to perform the following operations: (2)

(i) To plot bar chart using the given data set of subjects and students.

(ii) To provide xticks as subjects.

```
import matplotlib.pyplot as plt
Students=[10,12,15,17,19]
Subject=["French","Sanskrit","ICT", "Music","Art"]
_____ // Statement 1
_____ // Statement 2
plt.show()
```

Ans. (i) plt.bar(Students,Subject) (ii) plt.xticks(Subject)

9. Mr. Hitesh wants to draw a line chart using a list of elements named LIST. Complete the code to perform the following operations:

(i) To plot a line chart using the given LIST,

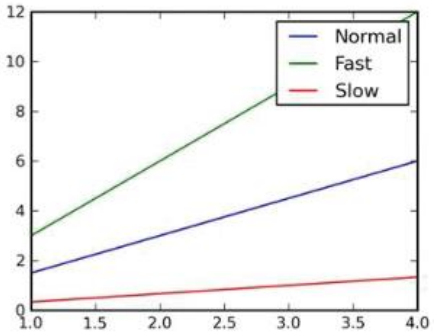
(ii) To give a y-axis label to the line chart named "Sample Numbers".

```
import matplotlib.pyplot as PLINE
LIST=[10,20,30,40,50,60]
_____ Statement 1
_____ Statement 2
PLINE.show()
```

Ans. (i) PLINE.plot(LIST)

(ii) PLINE.ylabel("Sample Numbers")

10. Write a code to plot the speed of a passenger train as shown in the figure given below.



Ans.
```
import matplotlib.pyplot as plt
import numpy as np
```

```
x = np.arange(1, 5)
plt.plot(x, x*1.5, label='Normal')
plt.plot(x, x*3.0, label='Fast')
plt.plot(x, x/3.0, label='Slow')
plt.legend()
plt.show()
```

11. Fill in the blanks:

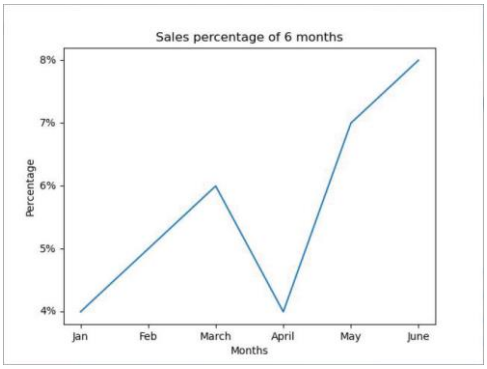
Covid-19 Patient analysis in the Mumbai region is to be plotted. The command used to give title to x-axis as "No. of Patients" in the graph is ..... .

(i) plt.show() (ii) plt.plot("No. of Patients")

(iii) plt.xlabel("No. of Patients") (iv) plt.title("No. of Patients")

Ans. (iii) plt.xlabel("No. of Patients")

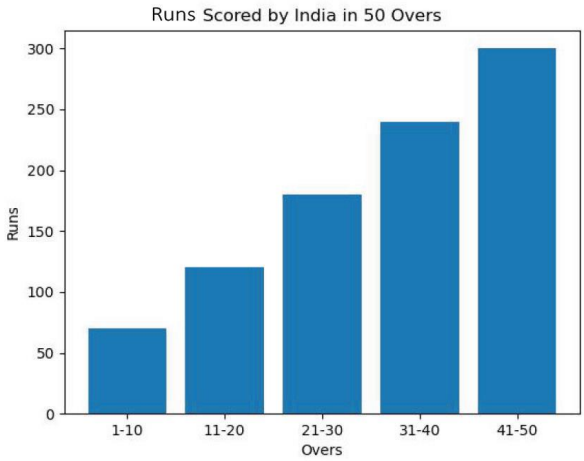
12. Write a code to plot the Sales Percentage of Bags for the last 6 months as shown in the figure given below:



Ans.

```
import matplotlib.pyplot as plt
month=["Jan","Feb","March","April","May","June"]
sales=['4%','5%','6%','4%','7%','8%']
plt.plot(month,sales)
plt.title("Sales percentage of 6 months")
plt.xlabel("Months")
plt.ylabel("Percentage")
plt.show()
```

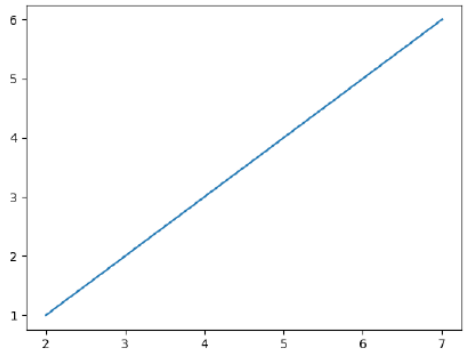
13. Write a code to plot the histogram to display the total runs scored by India in a match as shown in the figure given below:
Runs=[70, 120,180,240, 300]



Ans:

```
import matplotlib.pyplot as plt
overs=['1-10','11-20','21-30','31-40','41-50']
Runs=[70, 120,180,240, 300]
plt.bar(overs,Runs)
plt.title("Scored by India in 50 Overs")
plt.xlabel("Overs")
plt.ylabel("Runs")
plt.show()
```

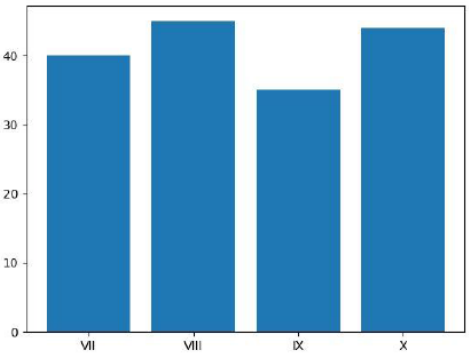
14. Consider the following graph . Write the code to plot it.



Ans.

```
import matplotlib.pyplot as plt
plt.plot([2,7],[1,6])
plt.show()
```

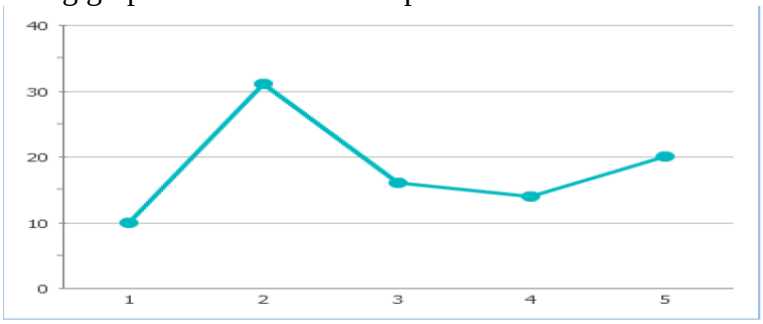
15. Draw the following bar graph representing the number of students in each class.



Ans.

```
import matplotlib.pyplot as plt
Classes = ['VII','VIII','IX','X']
Students = [40,45,35,44]
plt.bar(classes, students)
plt.show()
```

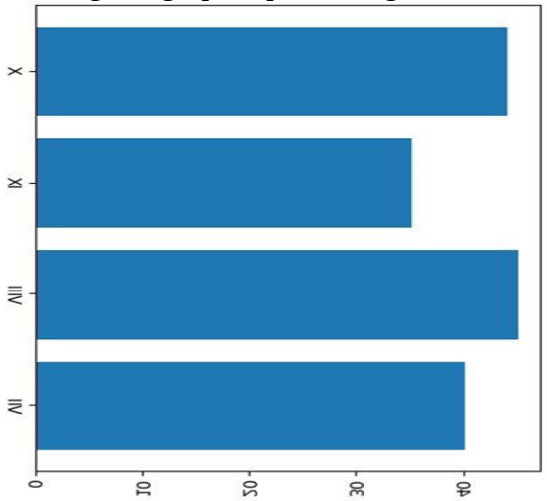
16. Consider the following graph. Write the code to plot it.



Ans.

```
import matplotlib.pyplot as plt
a = [0,1,2,3,4,5]
b = [10,31,26,24,20]
plt.plot(a,b)
plt.show()
```

17. Write code to draw the following bar graph representing the number of students in each class.



Ans.

```
import matplotlib.pyplot as plt
Classes = ['VII','VIII','IX','X']
Students = [40,45,35,44]
plt.barh(classes, students)
plt.show()
```

FAQ-Frequently Asked Questions)
Unit 2: Database Query using SQL

1. Write the output of the following SQL command.
SELECT TRUNCATE(99.78,0);
(i) 99.78 (ii) 99.8
(iii) 99 (iv) 100
Ans. (iii) 99

2. Write the output of the following SQL command.
SELECT ROUND(67834.238,-3);
(i) 68000 (ii) 67000
(iii) 67834.000 (iv) 70000
Ans. (i) 68000

3. A ..... is a set of one or more columns of a table that uniquely identifies a record in a database table but accepts only one null value.
(i) Primary Key (ii) Unique Key
(iii) Foreign key (iv) Candidate key
Ans. (ii) Unique key

4. The MAX() function in MySQL is an example of ..... .
(i) Math Function (ii) Text Function
(iii) Date Function (iv) Aggregate Function
Ans. (iv) Aggregate Function

5. The NOW() function in MySql is an example of
a. Math function b. Text function
c. Date Function d. Aggregate Function
Ans. Date Function

6. The ..... command can be used to modify structure of a table in SQL.
Ans. ALTER TABLE command

7. The ..... command is used to see the structure of the table.
Ans. DESC or DESCRIBE Command

8. The _____command can be used to makes changes in the rows of a table in SQL.
Ans. update

9. The command can be used to delete table with the structure of a table in SQL.
Ans. Drop

10. Write the SQL command that will display the time and date at which the command got executed.

Ans. SELECT SYSDATE();

11. Consider the following table Spice given below:

S.No	Spice_Name	Spice_Price	Spice_Qty	Spice_Manufacturer
SP101	Turmeric	250.00	5	MDH
SP102	Red Chilly	200.00	7	Catch
SP103	Cinnamon Powder	2500.00	2	MDH
SP104	Cumin Powder	240.00	4	TATA
SP105	Black Pepper	550.00	2	Catch

a. To increase the price of 'Turmeric' by Rs 100.

Ans.
```
UPDATE Spice
SET price=price+100
WHERE Spice_Name='Turmeric';
```

b. To display the Spice Name, Spice Price and Spice Manufacturer of all the Spices in descending order of Quantity.

Ans.
```
SELECT Spice_Name,Spice_Price,Spice_Manufacturer FROM Spice
ORDER BY Spice_Price desc;
```

c. Insert a new row with the following values:
SP1006, Cardamom,1450.00, 4, TATA.

Ans. INSERT INTO Spice VALUES('SP1006','Cardamom',1450.00,4,'TATA');

d. Write the output of the following command:
SELECT Spice_Name, Spice_Price from Spice where Spice_Name LIKE '%Powder';

(i)
Spice_Name	Spice_Price
Cinnamon Powder	2500.00

(ii)
Spice_Name	Spice_Price
Cinnamon Powder	2500.00
Cumin Powder	240.00

(iii)
Spice_Name	Spice_Price
Cumin Powder	240.00

(iv)
Spice_Name	Spice_Price
Cumin Powder	240.00
Black Pepper	550.00

Choose the correct option:
(a) Only (i) (b) Both (ii) and (iv)
(c) Both (i) and (iii) (d) Only (ii)

Ans. (d) Only (ii)

e. Help Aarti to display Spice Name in capital letters along with Spice price rounded off to nearest integer.

(a) select upper(Spice_Name),round(Spice_Price,0)from Spice;
(b) select toupper(Spice_Name),round(Spice_Price,0)from Spice;
(c) select upper(Spice_Name),truncate(Spice_Price,0)from Spice;
(d) select Spice_Name,round(Spice_Price,1)from Spice;
Ans. (a) select upper(Spice_Name),round(Spice_Price,0)from Spice;

12. Consider the following table given below:

Table: PharmaDB					
RxID	***DrugID***	***DrugName***	***Price***	***Pharmacy Name***	***PharmacyLocation***
R1000	5476	Amlodipine	100.00	RxPharmacy	Pitampura,Delhi
R1001	2345	Paracetamol	15.00	RajMedicos	Bahadurgarh,Haryana
R1002	1236	Nebistar	60.00	MyChemist	Rajouri Garden,Delhi
R1003	6512	VitaPlus	150.00	MyChemist	Gurgaon,Haryana
R1004	5631	Levocitrezine	110.00	RxPharmacy	SouthExtension,Delhi

(i) To increase the price of "Amlodipine" by 50.

Ans.
```
UPDATE PharmaDB
SET price= price+50
WHERE DrugName="Amlodipine";
```

(ii) To display the Drug ID, DrugName and Pharmacy Name of all the records in descending order of their price.

Ans.
```
SELECT DrugID, DrugName, PharmacyName FROM PharmaDB
ORDER BY Price DESC;
```

(iii) Delete the field name PharmacyLocation.

Ans. ALTER TABLE PharmaDB DROP PharmacyLocation;

(iv) State the command to display all the details of the drugs where the name starts with 'M' and has 'Ch' somewhere in the name.

(a) Select * from PharmaDB where DrugName LIKE "M%ch%;
(b) Select * from PharmaDB where DrugName LIKE "m_ch%";
(c) Select * from PharmaDB where DrugName LIKE "m__ch%";
(d) Select * from PharmaDB where DrugName LIKE "%ch%m";

Choose the correct option:

(a) Only (i) (b) Both (ii) and (iv)
(c) Both (i) and (iii) (d) Only (iii)

Ans. (a) Only (i)

(v) Help Sachin to display drugname in capital letters along with price rounded off to nearest integer.

(a) select upper(DrugName),round(Price,0)from PharmaDB;
(b) select toupper(DrugName),round(Price,0)from PharmaDB;
(c) select upper(DrugName),truncate(Price,0)from PharmaDB;
(d) select DrugName,round(Price,1)from PharmaDB;

Ans. (a) select upper(DrugName),round(Price,0)from PharmaDB;

13. Consider the SchoolBus table given below:

Rtno	Area_covered	Capacity	Noofstudents	Distance	Transporter	Charges
1	Vasantkunj	100	120	10	Shivamtravels	100000
2	HauzKhas	80	80	10	Anand travels	85000
3	Pitampura	60	55	30	Anand travels	60000
4	Rohini	100	90	35	Anand travels	100000
5	Yamuna Vihar	50	60	20	Bhalla Co.	58000
6	Krishna Nagar	70	80	30	Yadav Co.	80000
7	Vasundhara	100	110	20	Yadav Co.	100000
8	PaschimVihar	40	40	20	Speed travels	55000

(1) State the command that will give the output as :

Area_covered
Yamuna Vihar
Krishna Nagar
Vasundhara

i. select area_covered from schoolbus
where transporter='Yadav Co.'and transporter='Bhalla Co.';

ii. select area_covered from schoolbus
where not transporter='Yadav Co.'and transporter='Bhalla Co.';

iii. select area_covered from schoolbus
where transporter ='Yadav Co.' OR transporter='Bhalla Co.';

iv. select area_covered from schoolbus
where transporter IN("Yadav co.", "Bhalla co.");

Choose the correct option:

a. Both (i) and (ii). b. Both (iii) and (iv).
c. Any of the options (i), (ii) and(iv) d. Only(iii)

Ans. b. Both (iii) and (iv)

(2) What will be the output of the following command?

SELECT * FROM schoolbus WHERE distance=20 ORDER BY charges;

a)

Rtno	Area_covered	Capacity	Noofstudents	Distance	Transporter	Charges
5	Yamuna Vihar	50	60	20	Bhalla Co.	58000
7	Vasundhara	100	110	20	Yadav Co.	100000
8	PaschimVihar	40	40	20	Speed travels	55000

b)

Rtno	Area_covered	Capacity	Noofstudents	Distance	Transporter	Charges
8	PaschimVihar	40	40	20	Speed travels	55000
5	Yamuna Vihar	50	60	20	Bhalla Co.	58000
7	Vasundhara	100	110	20	Yadav Co.	100000

C)

Distance	Charges
20	58000
120	100000
20	55000

d)

Distance	Charges
20	55000
20	58000
20	100000

Ans. b

(3) Ravi has given the following command to obtain the Longest distance

Select max(distance) from schoolbus where group by transporter;

But he is not getting the desired result. Help him by writing the correct command.

a. select max(distance) from schoolbus where group by transporter;
b. select transporter, max(distance) from schoolbus group by distance;
c. select transporter, max(distance) group by transporter from schoolbus;
d. select transporter, max(distance) from schoolbus group by transporter;

Ans. d. Select transportar, max(distance) from schoolbus group by transportar;

(4) State the command to display the average of charges as per distance covered?

Ans. Select distance, average(charges) from schoolbus group by distance;

(5) Help Saumya to write the command to display the name of the transporter who is having lowest capacity in his schoolbus?

a. select transporter,min(capacity) from schoolbus;
b. select transporter,max(capacity) from schoolbus;
c. select transporter,min(capacity) from schoolbus group by transporter;
d. select transporter,maximum(capacity) fromschoolbus;

Ans. a. select transportal,min(capacity) from schoolbus ;

14. Differentiate between aggregate functions and single row functions. (2)

Ans. Aggregate functions take values of multiple rows and return a single value calculated after a certain condition. Aggregate functions are also called group functions or multiple row functions. Examples of aggregate functions are: MAX(), MIN(), SUM(), AVG(), COUNT().

Single row functions take single value to return a single value. They accept one or more arguments but return only single value. Examples of single row functions are: Mod(), Length(), Power(), etc.

15. What is a Primary Key? List the criteria for selecting a Primary key for a table.

Ans. A primary key is a set of one or more columns which uniquely identifies a row in a table.

(i) It must uniquely identify the row.
(ii) It cannot have NULL values.

16. State any two differences between instr() and substr() functions in SQL.

Ans. (i) INSTR function searches string for sub-string and returns an integer indicating the position of the character in string that is the first character of this occurrence whereas SUBSTR function returns a portion of string, beginning at character position, substring_length characters long.

(ii) For example,

```
select instr("India is my country",'my');
```

Output->10

```
Select substr("We are indians",4,3);
```

Output -> are

17. What is the difference between where and having clause when used along with the select statement. Explain with an example.

(i) WHERE is used to filter records before any groupings take place whereas HAVING is used to filter values after they have been groups.

For example,

```
select * from student where marks>85;
```

For example,

```
select stream, avg(marks) from student group by stream having stream IN
("Commerce","Humanities");
```

18. State any two differences between single row functions and multiple row functions.

OR

Ans. Differences between single row functions and multiple row functions.

(i) Single row functions work on one row only whereas multiple row functions group rows

(ii) Single row functions return one output per row whereas multiple row functions return only one output for a specified group of rows.

19. What is the difference between the order by and group by clause when used alongwith the select statement. Explain with an example.

Ans. The order by clause is used to show the contents of a table/relation in a sorted manner with respect to the column mentioned after the order by clause. The contents of the column can be arranged in ascending or descending order.

The group by clause is used to group rows in a given column and then apply an aggregate function eg max(), min() etc on the entire group.

20. State any two differences between CHAR and VARCHAR.

Ans. Differences between CHAR and VARCHAR.

(i) CHAR assign fixed memory to the variable

(ii) (ii) VARCHAR assign variable memory as per the value of the variable.

21. Consider the decimal number x with value 9945.8853. Write commands in SQL to: (2)

(i) round it off up to 2 decimal places.

(ii) round it to 2 places before the decimal.

Ans. (i) select round(9945.8853,2);

(ii)select round(9945.8853,-2);

22. Consider the decimal number x with value 3875.4897. Write commands in SQL to:
i. Round it off 3 places after the decimal
ii. Round it to 3 places before the decimal.

Ans. i. SELECT round(3875.4897,3);
ii. SELECT round(3875.4897,-3);

23. Write the output of the following SQL commands:
(i) Select Mod(13,3);
(ii) Select Power(5,3);
(iii) Select Length("Data Science");
(iv) Select Month('2020-03-12');

Ans. (i) 1 (ii) 125
(iii) 12 (iv) 3

24. Consider the decimal number x with value 8459.2654. Write commands in SQL to:
i. round it off to a whole number
ii. round it to 2 places before the decimal.

Ans. i. SELECT round(8459.2654);
ii. SELECT round(8459.2654,-2);

25. Rinku writes the following commands with respect to table sales having fields, itemno, iname, sales_made, commission.
Command1 : **Select sum(sales_made) from sales;**
Gives Output as: 1200

Command2: **Select avg(sales_made) from sales;**
Gives Output as: 300

What will be the cardinality of the table if there is no NULL value for sales_made? Also give the command to find out the no. of rows in this table.

Ans. The cardinality of the table sales is: 4 since 1200/300 =4
Select count(*) from sales;

26. Gunjan has entered the following SQL command on Table 'Result' that has TotalMarks as one of the columns:
SELECT count(TotalMarks) from RESULT;
The output displayed is 43.
Then, Gunjan enters the following command:
SELECT count(*) from RESULT;
Now the output displayed is 50.
What could be the possible reason for different outputs? How many total records are there in the table Result?

Ans. count(TotalMarks) counts all the rows present in a column excluding Null values. The output is 43 as Null values are not counted, so there are 7 rows that have NULL values (50-7=43).
Whereas count(*) counts the total number of rows in a column including Null values; that is why the output returns 50. So there are total 50 records in the table Result.

27. Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission.
Command1 : Select count(*) from employee;
Command2: Select count(commission) from employee;
She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.

Ans. This is because the column commission contains a NULL value and the aggregate functions do not take into account NULL values. Thus Command1 returns the total number of records in the table whereas Command2 returns the total number of non NULL values in the column commission.

28. Consider the following SQL string: "Preoccupied"
Write commands to display:
a. "occupied"
b. "cup"

Ans.

a. select substr("Preoccupied", 4); or select substring("Preoccupied", 4);
or select mid("Preoccupied",4); or select right(("Preoccupied"", 8);

b. select substr("Preoccupied" ,6,3); or select substring("Preoccupied", 6,3);
or select mid(("Preoccupied" ,6,3);

29. Considering the same string "Preoccupied"
Write SQL commands to display:
a. the position of the substring 'cup' in the string "Preoccupied"
b. the first 4 letters of the string

Ans. a. select instr 'Preoccupied' , ' 'cup'));
b. select left 'Preoccupied',4);

30. Consider the following SQL string: "Corporate world"
Write commands to display:
(i) "rate" (ii) "world"

Ans. (i) Select substr("Corporate world",6,4); (ii) Select right("Corporate world",5);

31. Considering the same string "Corporate world" Write SQL commands to display:
(i) the position of the substring 'or' in the string "Corporate world"
(ii) the last 4 letters of the string

Ans.

(i) Select instr("Corporate world","or");
(ii) Select right("Corporate world",4);

32. Consider the following SQL string: "Operating System" (2)
Write the use of SUBSTR command to display:
(i) "Opera" (ii) "stem"

Ans. (i) Select SUBSTR("Operating System",1,5);
(ii) Select SUBSTR("Operating System",13);
Another way:
Select SUBSTR("Operating System",13,16);
Select Mid("Operating System",13,16);

33. Considering the same string “Operating System”, write SQL commands to display:
(i) the position of the substring ‘era’ in the string “Operating System”
(ii) Replace the word Operating with “Computational”

Ans. (i) Select INSTR(“ Operating System ”,“era”);
(ii) Select REPLACE(“Operating System”,“Operating”,“Computational”);

34. Consider the following SQL string: “Informatics Practices”
Write commands to display:
a. “Practices”
b. “matics”

Ans.
a. select substr("Informatics-Practices", 13); **or**
select substring("Informatics-Practices",13); **or**
select mid("Informatics-Practices",13); **or**
select right("Informatics-Practices", 9);
b. select substr("Informatics-Practices" ,6,6); **or**
select substring("Informatics-Practices", 6,6);**or**
select mid(("Informatics-Practices" ,6,6);

35. Considering the same string “Computer” . Write SQL commands to display:
a. the position of the substring ‘ter’ in the string“Computer”
b. the first 4 letters of the string

Ans.
a. select instr('Computer' ,'ter);
b. select left('Computer',4);

36. A relation Vehicles is given below:

V_no	Type	Company	Price	Qty
TT25	Wagon	Maruti	200000	20
J0043	Jeep	Mahindra	3500000	19
SV98	SUV	Mitsubishi	5000000	20
MV76	Mini van	Datsun	7800000	25
SV599	SUV	Maruti	8000000	26
MV880	Mini van	Mahindra	5600000	19

Write SQLcommands to:
(i) Display the average price of each type of vehicle having quantity more than 20.
Ans. select avg(price) from vehicles group by type having qty>20;
(ii) Count the type of vehicles manufactured by each company.
Ans. select count(type) from vehicles group by company;
(iii) Display the total price of all types of vehicles.
Ans. select sum(price) from vehicles group by type;

37. A relation Product is given below:

P_No	Ptype	P_Manufacturer	Price	Qty
P1001	Pencil	Natraj	15	20
P1002	Ball Pen	Reynolds	10	50
P1003	Gel Pen	Flair	20	100
P1004	Sketch Pen	Doms	50	35
P1005	Paint Brush	Doms	30	15
P1006	Pencil	Natraj	15	30
P1007	Ball Pen	Reynolds	10	10
P1004	Sketch Pen	Doms	50	60
P1005	Paint Brush	Doms	30	85
P1006	Pencil	Natraj	15	45

Write SQL commands to:

(i) Display the Average price of each type of Product having quantity more than 30.

Ans. Select avg(price) from Product group by Ptype having qty>30;

(ii) Increase the price of the products manufactured by Doms by 2%.

Ans.
```
Update Product
set price=Price+(Price*2/100)
where P_Manufacturer='Doms';
```

(iii) Display the Maximum and Minimum price of all types of Products.

Ans. Select Max(Price), Min(Price) from Product group by Ptype;

38. A relation **Toys** is given below :

T_no	Name	Company	Price	Qty
T001	Doll	Barbie	1200	10
T002	Car	Seedo_wheels	550	12
T003	Mini House	Barbie	1800	15
T004	tiles	Seedo_wheels 450	20	
T005	Ludo	Seedo_wheels 200	24	

Write SQL commands to:

a. Display the average price of each type of company having quantity more than 15.

b. Count the type of toys manufactured by each company.

c. Display the total price of all toys.

Ans.

a. select company, avg(Price) from toys group by company having Qty>15;

b. select Company, count(distinct name) from toys group by Company;

c. Select name, sum(Price* Qty) from toys;

39. Write the SQL statements to perform the following operations: (5)

(a) To display the name of the month of “2020-10-31”.

(b) To remove spaces from the right side of the string, “Pandas ”.

(c) To display the name of the day, such as Friday or Sunday, from the current date.

(d) To display the last name from “Arjun Awasthi”.

(e) To calculate number 7 raised to the power of 3.

Ans.
```
(a) select monthname(“2020-10-31”);
(b) select trim(“Pandas ”);
(c) select dayname(curdate());
(d) select right(“Arjun Awasthi”,7);
(e) select pow(7,3);
```

40. Consider the LOANS table given below and give the SQL commands to perform the following:

Table: LOANS

AccNo	Cust_Name	Loan_Amount	Instalments	Int_Rate	Start_Date	Interest
1	R.K. Gupta	300000	36	12.00	19-07-2009	1200
2	S.P. Sharma	500000	48	10.00	22-03-2008	1800
3	K.P. Jain	300000	36	NULL	08-03-2007	1600
4	M.P. Yadav	800000	60	10.00	06-12-2008	2250
5	S.P. Sinha	200000	36	12.50	03-01-2010	4500
6	P. Sharma	700000	60	12.50	05-06-2008	3500
7	K.S. Dhall	500000	48	NULL	05-03-2008	3800

(a) Display the sum of all Loan Amount whose interest rate is greater than 10.
(b) Display the Maximum Interest from LOANS table.
(c) Display the count of all Loan Account Holders whose name ends with 'Sharma'.
(d) Display interest-wise details of Loan Account Holders with at least 10 instalments remaining.
(e) Display interest-wise count of all Loan AccountHolders whose due Instalments are more than 5 in each group.

Ans. (a) MySQL> Select sum(Loan_Amount) from LOANS Where Int_Rate>10;
(b) MySQL> Select Max(Interest) from LOANS;
(c) MySQL> Select Count(*) from LOANS Where Cust_Name Like '%Sharma';
(d) MySQL> Select * from LOANS Group By Interest Having Instalments>=10;
(e) MySQL> Select Count (*) from LOANS Group By Interest Having instalments>5;

41 Write the SQL functions which will perform the following operations:
(a) To display the string ("information technology") in Uppercase.
(b) To remove spaces from the beginning and end of a string, " Informatics ".
(c) To display the name of the day, e.g., Friday or Sunday from your date of birth, dob.
(d) To display the starting position of your first name(fname) from your whole name(name).
(e) To compute the remainder of division between two numbers, n1 and n2.

Ans. (a) Select UPPER("information technology") ;

OR

Select Ucase("information technology");

(b) Select trim(" Informatics ");
(c) Select dayname(date(dob));
(d) Select instr(name, fname);
(e) Select mod(n1,n2);

42. Write the SQL functions which will perform the following operations:
i) To display the name of the month of the current date .
ii) To remove spaces from the beginning and end of a string, " Panorama ".
iii) To display the name of the day eg, Friday or Sunday from your date of birth, dob.
iv) To display the starting position of your first name(fname) from your whole name (name).
v) To compute the remainder of division between two numbers, n1 and n2

Ans. i) monthname(date(now()))
ii) trim(" Panaroma ")
iii) dayname(date(dob))
iv)instr(name, fname)
v) mod(n1,n2) 1 mark for each correct answer

43. Consider a table SALESMAN with the following data:

SNO	SNAME	SALARY	BONUS	DATEOFJOIN
A01	Beena Mehta	30000	45.23	29-10-2019
A02	K. L. Sahay	50000	25.34	13-03-2018
B03	Nisha Thakkar	30000	35.00	18-03-2017
B04	Leela Yadav	80000	NULL	31-12-2018
C05	Gautam Gola	20000	NULL	23-01-1989
C06	Trapti Garg	70000	12.37	15-06-1987
D07	Neena Sharma	50000	27.89	18-03-1999

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

a) Display salesman name and bonus after rounding off to zero decimal places.
b) Display the position of occurrence of the string "ta" in salesman names.
c) Display the four characters from salesman name starting from second character.
d) Display the month name for the date of join of salesman
e) Display the name of the weekday for the date of join of salesman

Ans.
a) Select sname, round(bonus,0) from Salesman;
b) Select instr(Sname, "ta") from Salesman;
b) Select mid(Sname,2,4) from Salesman; alternative answer
c) Select Substring(Sname,2,4) from Salesman;
d) Select monthname(DateofJoin) from Salesman;
e) Select dayname(DateofJoin) from Salesman;

44. Write the SQL functions which will perform the following operations:

i) To display the name of the day of the current date.
ii) To remove spaces from the beginning of a string, " Python".
iii) To display the name of the month eg, January or February from your date of birth.
iv) To display the starting position of word "Information" from "Information Technology"
v) To compute the power of two numbers a and b

Ans.
i) dayname(date(curdate()))
ii) ltrim(" Python")
iii) monthname(date(dob))
iv) instr("Information Technology","information")
v) pow(a,b)

45. Consider a table Employee with the following data:

ENO	**ENAME**	**SALARY**	**BONUS**	**DATEOFJOINING**
E01	RamMehta	35000	NULL	02-11-2020
E02	ShyamSahay	55000	32.34	16-03-2008
E03	AlishaThakkar	32000	NULL	18-09-2020
E04	Neena Gupta	85000	28.54 3	1-11-1993
E05	GautamSingh	24000	NULL	30-09-2020
E06	Tez Singh	75000	22.47	25-07-1985
E07	ReemaSaxena	55000	NULL	30-10-2020

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

a) Display employee name and bonus after rounding off to zero decimal places.
b) Display the position of occurrence of the string "ee" in employee names.

c) Display the four characters from employee name starting from second character.
d) Display the day name for the date of joining of employee
e) Display the name of the month from the date of joining of employee

Ans. a) Select ename, round(bonus,0) from employee;
b) Select instr(ename, "ee") from employee;
c) Select mid(ename,2,4) from employee;

OR

c) Select Substring(ename,2,4) from employee;
d) Select dayname(DateofJoin) from employee;
e) Select monthname(DateofJoin) from employee;

(FAQ-Frequently Asked Questions)
Unit 3: Introduction to Computer Networks

1. To prevent unauthorized access to and / or from the network, a system known as _____ , can be implemented by hardware and / or software.
Ans. Firewall

2. The address of location of the document on the World Wide Web is called its _____.
Ans. URL

3. Internet is an example of which topology: Star, Mesh , Tree, Bus
Ans. Mesh

4. A digital document hosted on a website is _____
Ans. web page

5. The practice of taking confidential information from you through an original looking site and URL is known as _____
Ans. Phishing scam

6. Which amongst the following is the first page we normally view on a Website?
a. Home Page b. Master Page c. First Page d. Banner Page
Ans. a. Home Page

7. I can allow you to make audio calls.
I can allow you to make video calls.
I should be connected to internet-enabled device equipped with microphone and speakers.
Who am I?

Ans. VoIP (Voice Over Internet Protocol)

8. The main function of ..... is to divide the message or data into packets of a definite size on the source computer.

Ans. TCP (Transmission Control Protocol)

9. Software application that reside on a computer and is used to locate and display pages and information provided by web servers is defined as a ..... .
Ans. Web Browser

10. Expand the following:
(i) VOIP (ii) SMTP
Ans. (i) VOIP- Voice Over Internet Protocol
(ii) SMTP- Simple Mail Transfer Protocol

11. This protocol is used to send email messages over the internet.
Ans. SMTP—Simple Mail Transfer Protocol

12. When you visit a website, a small text file called ..... is stored on your computer that keeps track of your visits and activities on a specific website.
Ans. Cookie

13. Which of the following is not a web browser?
Microsoft Edge, Windows, Internet Explorer, Google Chrome
Ans. Windows

14. Which of the following is not a network topology : Star, Mesh , Tree, Bug , Bus
Ans. Bug

15. For web pages where the information is changed frequently, for example, stock prices, weather information which out of the following options would you advise ?
a) Static web page b) Dynamic web page
Justify your answer.
Ans. Dynamic web page. Since the data or information in the web site is to be regularly updated so Dynamic web page will fulfil the purpose.

16. While sending the email to a number of users, we wish that a particular recipient should be able to see only senders' email id, but not other recipients. Where should we write the email of all recipients, whether in CC or BCC? (1)
Ans. BCC (Blind Carbon Copy)

16. A website store the browsing activity through _____
Ans. cookies

17. _____ network device is known as an intelligent hub .
Ans. Switch

18. Expand the following terms related to Computer Networks:
(i) IMAP (ii) POP
(iii) TCP/IP (iv) HTTPs
Ans. (i) Internet Message Access Protocol
(ii) Post Office Protocol
(iii) Transmission Control Protocol/Internet Protocol
(iv) Hypertext Transfer Protocol Secure

19. Expand the following terms related to Computer Networks:
(i) MAC (ii) TCP/IP
(iii) VoIP (iv) WAN

Ans. (i) Media Access Control (ii) Transmission Control Protocol/Internet Protocol
(iii) Voice over Internet Protocol (iv) Wide Area Network

20. Expand the following:
(i) PPP (ii) FTP
Ans. (i) PPP — Point to Point Protocol (ii) FTP — File Transfer Protocol

21. I can connect multiple computers and devices. (1)
I can filter and forward data packets only to the intended computers.
I am also called an intelligent hub.
Who am I?
Ans. Switch

22. _____Network device is a broadcast device.
Ans. Hub

23. What is unauthorized access? How confidentiality of data can be maintained?

Ans. Some data and information stored on computer disks is personal and needs to be kept confidential, such as pay, bank details, and medical records. If someone who is not entitled to see these details can obtain access without permission, it is unauthorized access.

PRACTICES TO ENSURE CONFIDENTIALITY OF INFORMATION

- Use Firewall wherever possible.
- Control browser settings to block tracking.
- Browse privately wherever possible.
- Be careful while posting on the internet.
- Ensure safe sites while entering crucial information.
- Ensure that the address contains prefix as HTTPs and a padlock sign.
- Do not give sensitive information on wireless networks.
- Never save passwords while working on public computer.

24. Explain the difference between a web browser and web server with suitable examples?
Ans.

Web Browser: A web browser is a software application for accessing information on the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.

Web Server: A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP).

Popular web browsers: Google Chrome, Mozilla Firefox, Internet Explorer, etc.

25. Explain the difference between a web hosting and web server with suitable examples.

Ans. Web hosting: Web hosting service is provided by companies to host web server applications through which websites are accessible to the internet users via world wide web. These companies are known as web hosts. The host may provide a control panel for managing web server to add new information to the website. Examples of web hosting companies are:

webhostingsitesindia.co.in, godaddy.com

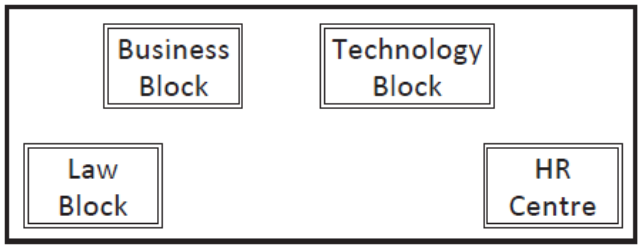
Web server: A web server is a computer that runs websites. The basic objective of the web server is to store, process and deliver web pages to the users. This intercommunication is done using Hypertext Transfer Protocol (HTTP).

26. Differentiate between Star topology and Bus topology.

Ans.

Star topology	Bus topology
A central hub is required to connect all computers with each other.	A long cable known as backbone is used to connect all computers with each other.
The data is transmitted from the sender to the receiver by passing through a hub.	The data is transmitted through a long cable from the sender to the receiver.
No collision takes place through transmission of data.	Collision can take place as the data can be transmitted from both ends at the same time.
If the central hub fails, the entire network shuts down.	If there is a fault in a cable or terminator, no transmission takes place.

27. Chanakya University is setting up its academic blocks at Dehradun and is planning to set up a network. The University has 3 academic blocks and one Human Resource Centre as shown in the diagram below: (5)



Centre-to-Centre distances between various blocks/centre is as follows:

Law Block to business Block	40m
Law Block to Technology Block	80m
Law Block to HR Centre	105m
Business Block to technology Block	30m
Business Block to HR Centre	35m
Technology block to HR Centre	15m

Number of computers in each of the blocks/centres is as follows:

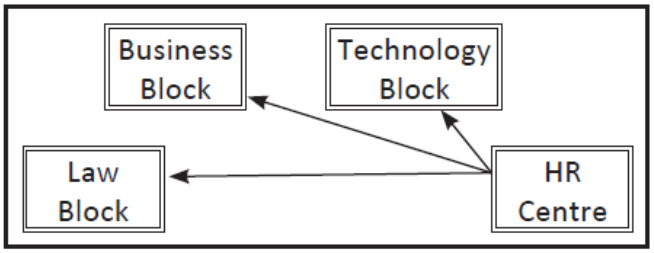
Law Block	15
Technology Block	40
HR Centre	115
Business Block	25

(a) Suggest the most suitable place (*i.e.*, block/centre) to install the server of this University with a suitable reason.

Ans. Most suitable place to install the server is HR centre as this centre has maximum number of computers.

(b) Suggest an ideal layout for connecting these blocks/centres for a wired connectivity.

Ans.



(c) Which device will you suggest to be placed/installed in each of these blocks/centres to efficiently connect all the computers within these blocks/centres?

Ans. Switch

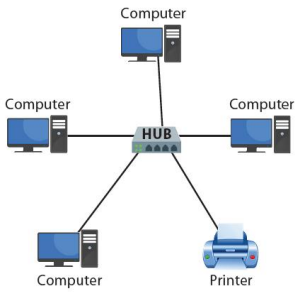
(d) Suggest the placement of a Repeater in the network with justification.

Ans. Law block to Technology block
Law block to HR Centre
Repeater may be placed when the distance between 2 buildings is more than 70 metres.

(e) The university is planning to connect its admission office in Delhi which is more than 1,250 km from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

Ans. WAN, as the given distance is more than the range of LAN and MAN.

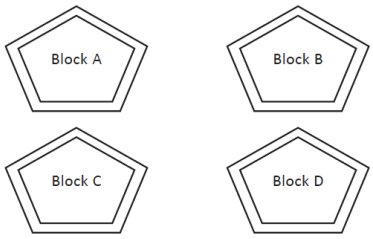
28. Which of the following network topology is shown in the figure:



(i)Bus (ii) Star (iii) Tree (iv) Ring

Ans. (i) Star

29. The Virtual Connects organization has set up its new centre at Noida for its office and web-based activities. It has 4 blocks of buildings as shown in the diagram below:



Distance between the various blocks is as follows:

A to B	40 m
B to C	120 m
C to D	60 m
A to D	170 m
B to D	150 m
A to C	70 m

Number of computers:

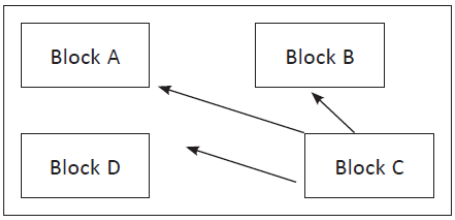
Block A	25
Block B	50
Block C	125
Block D	10

(i) Suggest the most suitable place (the Block) to install the server of this organization with a suitable reason.

Ans. The most suitable place to install the server is Block C as this place has maximum number of computers.

(ii) Suggest an ideal layout for connecting these blocks/centres for a wired connectivity.

Ans.



(iii) Which device will you suggest to be placed/installed in each of these blocks to efficiently connect all the computers within these blocks?

Ans. Switch

(iv) Suggest the placement of a Repeater in the network with justification.

Ans. Repeater may be placed when the distance between 2 buildings is more than 70 metres, *i.e.*,

Block B to Block C

Block A to Block D

Block B to Block D

(v) The organization is planning to link its office to an office in the hilly areas. Suggest a way to connect it economically. Justify your answer.

Ans. Radio waves, because these waves are easy to generate, can travel long distances and can penetrate mountains easily.

29. A company in Mega Enterprises has 4 wings of buildings as shown in the diagram :

Center to center distances between various Buildings:

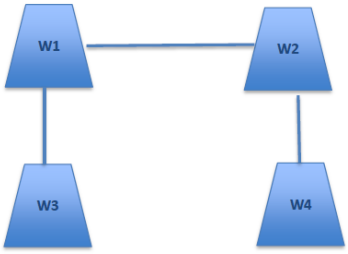
W3 to W1 - 50m
W1 to W2 - 60m
W2 to W4 - 25m
W4 to W3 - 170m
W3 to W2 - 125m
W1 to w4 - 90m

Number of computers in each of the wing:

W1 - 150
W2 - 15
W3 - 15
W4 - 25

Computers in each wing are networked but wings are not networked
The company has now decided to connect the wings also.

i. Suggest a most suitable cable layout for the above connections.
Ans. Most suitable layout according to distance is



ii. Suggest the most appropriate topology of the connection between the wings.
Ans. Star Topology

iii. The company wants internet accessibility in all the wings. Suggest a suitable technology .
Ans. Broadband

iv. Suggest the placement of the following devices with justification if the company wants minimized network traffic a)Repeater b)Hub / switch
Ans. a. Not required.
Repeaters may be skipped as per above layout (because distance is less than 100 m)
b. In every wing (switch)

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

Ans. Radio Waves

(FAQ-Frequently Asked Questions)
Unit 4: Societal Impacts

1. ..... is a document that provides legally binding guidelines for the use and distribution of software.

Ans. Software licensing

2. As soon as a ..... enters your system, it immediately starts replicating itself with the sole goal of infecting as many networked systems and inadequately-protected computers as possible.

Ans. Worm or Virus

3. ..... is a type of program that either pretends to have, or is described as having, a set of useful or desirable features but actually contains malicious code.

Ans. Trojan Horse

4. Name the primary law in India dealing with cybercrime and electronic commerce.

Ans. Information Technology (IT) Act 2000.

5. The practice of taking someone else's work or ideas and passing them off as one's own is known as _____

Ans. Plagiarism

6. State whether True or False: (1)

(i) Copying someone else's work or programs and claiming them as your own is an act of plagiarism.

(ii) Cyber bullying is an attempt to acquire sensitive information such as usernames, passwords and credit card details by sending emails or instant messaging.

Ans. (i) True (ii) False

7. State whether True or False :

i. Shareware software allows you to try the software before you buy it.

ii. Copyright is not the right of the creator of creative/artistic work.

Ans. (i) True (ii) False

8. A mail or message sent to a large number of people indiscriminately without their consent is called_____

Ans. spam

9. State whether True or False :

i. A copyright is automatically granted to authors or creators of content. _____

ii. In FOSS source code is usually hidden from the users. _____

Ans. (i) True (ii) False

10. Name the term used to describe traces of online activities that an individual performs on social media, online shopping, etc.

Ans. Digital Footprints

11. I can keep you signed in.
I can remember your site preferences.
I can give you locally relevant content.
Who am I ?

Ans. Cookies

12. I am a fraudulent business practice.
I can extract money from an unsuspecting, ignorant person.
Who am I?

Ans. Scam

13. According to a survey, one of the major asian country generates approximately about 2 million tonnes of electronic waste per year. Only 1.5 % of the total e-waste gets recycled. Suggest a method to manage e-waste .

Ans. Buy environmentally friendly electronics
Donate used electronics to social programs Reuse ,
refurbish electronics
Recycling e-waste

14. Give a solution to recycle the E-Waste in the country

Ans. Buy environmentally friendly electronics
Donate used electronics to social programs Reuse ,
refurbish electronics
Recycling e-waste

15. Gaining unauthorized access to a network or computer with malicious intensions is an example of _____

Ans. Hacking

17. List some Network security components.

Ans. (i) Antivirus and anti-spyware.
(ii) Firewall to block unauthorized access to your network.

18. List any two health hazards related to excessive use of Technology.

Ans.

The continuous use of devices like smartphones, computer desktop, laptops, head phones etc cause a lot of health hazards if not addressed. These are: (any two)

i. Impact on bones and joints: wrong posture or long hours of sitting in an uncomfortable position can cause muscle or bone injury.

ii. Impact on hearing: using headphones or earphones for a prolonged time and on high volume can cause hearing problems and in severe cases hearing impairments.

iii. Impact on eyes: This is the most common form of health hazard as prolonged hours of screen time can lead to extreme strain in the eyes.

iv. Sleep problem: Bright light from computer devices block a hormone called melatonin which helps us sleep. Thus we can experience sleep disorders leading to short sleep cycles.

19. Ms Sheena has many electronic gadgets which are not usable due to outdated hardware and software. Help her to find any three best ways to dispose the used electronic gadgets. (2)

Ans. (i) Give Your Electronic Waste to a Certified E-Waste Recycler.
(ii) Donate Your Outdated Technology.
(iii) Give Back to the Electronic Companies and leave at Drop-off Points.

20. Sujata received an email from her bank stating that there is a problem with her account. The email provides instructions and a link, by clicking on which she can log on to her account and fix the problem. Help Sujata by telling her the precautions she should take when she receives these types of emails.

Ans. She should check whether it is a valid bank site or not by checking in the URL https. It is always better to type the URL and then login to the site. She should not click on the link provided in the email.

21. Deepanjali received an SMS from her bank querying a recent transaction that she made online and asking for the pin number. Answer the following questions as to what she should do on receiving this SMS.
(i) Should she SMS her pin number to the given contact number?
(ii) Should she call the bank helpline number to recheck the validity of the SMS received?

Ans. (i) No, she should not respond to the message. If she responds by sending her pin number, then there is an absolute chance of her bank account being hacked, which can result in a huge financial loss to her.
(ii) Yes, she should call the bank helpline number to check the validity of the SMS received as this is an act of cybercrime.

22. Priyanka is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?

Ans.

We call this type of activity as Digital Footprints

Risk involved :

It includes websites we visit emails we send, and any information we submit online, etc., along with the computer's IP address, location, and other device specific details. Such data could be used for targeted advertisement or could also be misused or exploited.

23. What do you mean by Identity theft? Explain with the help of an example.

Ans.

Identity theft is the crime of obtaining the personal or financial information of another person for the sole purpose of assuming that person's name or identity to make transactions or use it to post inappropriate remarks , comments etc.

Example: Alex likes to do his homework late at night. He uses the Internet a lot and also sends useful data through email to many of his friends. One Day he forgot to sign out from his email account. In the morning, his twin brother, Flex started using the computer. He used Flex's email account to send inappropriate messages to his contacts

24. What do you mean by Phishing? Explain with the help of an example.

Ans. Phishing is a type of social engineering attack often used to steal user data, including login credentials and credit card numbers.

Example: URGENT REQUEST (Email Impersonation)
These are targeted and simple forms of phishing emails designed to get victims to purchase gift cards, or to give up personal email or phone numbers. The "email compromise" gets its name because the attacker mimics the email of a known sender

25. What do you understand by Net Etiquettes? Explain any two such etiquettes.

Ans.

Net Etiquettes refers to the proper manners and behavior we need to exhibit while being online. These include:

1-**No copyright violation**:

We should not use copyrighted materials without the permission of the creator or owner.

We should give proper credit to owners/creators of open source content when using them.

2- **Avoid cyber bullying:**

Avoid any insulting, degrading or intimidating online behavior
like repeated posting of rumours,
giving threats online,
posting the victim's personal information,
or comments aimed to publicly ridicule a victim.

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05 SAMPLE PAPER AND THEIR MARKING SCHEMEN

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-1 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A	
	Section-I **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	The device that can operate in place of hub is a:	1
2	What is used to represent missing data in pandas object?	1
3	Which one is not DDL command? a.alter b.delete c.drop d.create	1
4	Which type of transmission media is the least expensive to manufacture? a.Coaxial b.Twisted pair c.CAT6 d.fibre optics	1
5	Which function is used to draw horizontal bar chart?	1
6	Using someone else's twitter handle to post something, will be termed as: a.fraud b.identity theft c.online stealing d.violation	1
7	Mr.Aakash is setting LAN connection in his office but in long distance he is getting weak and corrupted signal, he wants to regenerates and amplifies the signal. Help him by suggesting suitable network device.	1
8	Can you use = comparison operator to compare Null values in a select query?	1
9	State whether true or false: i.Series can store elements of different data types. ii.The keys of a dictionary must be of immutable types.	1
10	An attribute in a relation is a foreign key if it is the _____key in any other relation.	1

<table>
<tr><td>11</td><td>Abbreviate: i)VoIP ii)HTTP</td><td>1</td></tr>
<tr><td>12</td><td>The information/art/work that exits in digital form is called_____</td><td>1</td></tr>
<tr><td>13</td><td>To get top 5 rows of dataframe, you may use _____function.
a.head b.head(5) c.top() d.top(5)</td><td>1</td></tr>
<tr><td>14</td><td>In SQL, which keyword is used to select only one copy of each set of duplicable rows?</td><td>1</td></tr>
<tr><td>15</td><td>Write name of an open source DBMS.</td><td>1</td></tr>
<tr><td>16</td><td>Which library need to import to use arange() method in your program?</td><td>1</td></tr>
<tr><td>17</td><td>Mr.Naveen is using query “Select * from manager;” but he is getting error, no database is selected, Help him to select database “emp” from already existing databases.</td><td>1</td></tr>
<tr><td>18</td><td>Discarded electrical or electronic devices are known as_____</td><td>1</td></tr>
<tr><td>19</td><td>Seema thinks firewall is used to protect from fire, but Sudhir told her firewall is used to secure a private network from a public network. Whether Sudhir is giving correct definition of firewall or not?</td><td>1</td></tr>
<tr><td>20</td><td>Which function brings you vertical subsets from a dataframe in the form of column index and a series object containing values for all rows in that column.</td><td>1</td></tr>
<tr><td>21</td><td>I can keep you signed in.
I can remember your site preferences.
I can give you locally relevant content. Who am I?</td><td>1</td></tr>
<tr><td></td><td colspan="2">Section-II
Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</td></tr>
<tr><td>22</td><td>Consider the following tables ACTIVITY and COACH. Write SQL commands for the following statements:
Table:ACTIVITY
<table>
<tr><th>Acode</th><th>ActivityName</th><th>Stadium</th><th>ParticipantsNum</th><th>PrizeMoney</th><th>ScheduleDate</th></tr>
<tr><td>1001</td><td>Relay 100 x 4</td><td>Star Annex</td><td>16</td><td>10000</td><td>23-Jan-04</td></tr>
<tr><td>1002</td><td>High jump</td><td>Star Annex</td><td>10</td><td>12000</td><td>12-Dec-03</td></tr>
<tr><td>1003</td><td>Shot put</td><td>Super power</td><td>12</td><td>8000</td><td>14-Feb-04</td></tr>
<tr><td>1005</td><td>Long jump</td><td>Star Annex</td><td>12</td><td>9000</td><td>01-Jan-04</td></tr>
<tr><td>1008</td><td>Discuss throw</td><td>Super power</td><td>10</td><td>15000</td><td>19-Mar-04</td></tr>
</table>
Table:COACH
<table>
<tr><th>Pcode</th><th>Name</th><th>Acode</th></tr>
<tr><td>1</td><td>Ahmed Hussain</td><td>1001</td></tr>
<tr><td>2</td><td>Ravinder</td><td>1008</td></tr>
<tr><td>3</td><td>Janila</td><td>1001</td></tr>
<tr><td>4</td><td>Naaz</td><td>1003</td></tr>
</table></td><td></td></tr>
<tr><td>(i)</td><td>To display the names of all activities with their Acodes in descending order.</td><td>1</td></tr>
<tr><td>(ii)</td><td>To display sum of PrizeMoney for the Activities played in each of the Stadium separately.</td><td>1</td></tr>
<tr><td>(iii)</td><td>To display the coach’s names and Acodes in ascending order of Acode from the table COACH.</td><td>1</td></tr>
</table>

(iv) To display the content of all activities for which ScheduleDate is earlier than 01-01-2004 in ascending order of ParticipantsNum. 1

(v) Which column in Table:COACH is treated as Foreign key. 1

23 Consider the following DataFrame **df** and answer any four questions from (i)- (v)

rollno	name	UT1	UT2	UT3	UT4
1	Prerna Singh	24	24	20	22
2	Manish Arora	18	17	19	22
3	Tanish Goel	20	22	18	24
4	Falguni Jain	22	20	24	20
5	Kanika Bhatnagar	15	20	18	22
6	Ramandeep Kaur	20	15	22	24

(i) Write down the command that will give output: 1

rollno	6
name	Tanish Goel
UT1	24
UT2	24
UT3	24
UT4	

a. print(df.max)
b. print(df.max())

c. print(df.max(axis=1))

d. print(df.max, axis=1)

(ii) The teacher needs to know the marks scored by the student with roll number 1

4. Help her to identify the correct set of statement/s from the given options :

a. df1=df[df['rollno']==4]
print(df1)

b. df1=df[rollno==4]
print(df1)

c. df1=df[df.rollno=4]
print(df1)

d. df1=df[df.rollno==4]

print(df1)

(iii)	Which of the following statement/s will give the exact number of values in each column of the dataframe? i. print(df.count()) ii. print(df.count(0)) iii. print(df.count) iv. print(df.count(axis='index')) Choose the correct option: a. both (i) and (ii) b. only (ii) c. (i), (ii) and (iii) d. (i), (ii) and (iv)	1
(iv)	Which of the following command will display the column labels of the DataFrame? a. print(df.columns()) b. print(df.column()) c. print(df.column) d. print(df.columns)	1
(v)	Ms. Sharma, the class teacher wants to add a new column, the scores of Grade with the values, ' A', 'B', 'A', 'A', 'B', 'A' choose the command to do so: a. df.column=['A','B','A','A','B','A'] b. df ['Grade']=['A','B','A','A','B','A'] c. df.loc['Grade']= ['A','B','A','A','B','A'] d. Both (b) and (c) are correct	1
	Part-B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal options.**	
24	Given are two objects, a list object namely lst1 and a series object namely ser1, both are having similar values i.e., 2,4,6,8. Find out the output produced by following statements:	2

<table>
<tr><td></td><td>i)print(lst1*2) ii)print(ser1*2)
OR
Consider the below given two code fragments. Will they produce the same output? Why/why not?
i)fst=[9,10,11] ii)fst=pd.Series(data=[9,10,11])
ob1=pd.Series(data=fst*2) ob2=pd.Series(data=fst*2)
print(ob1) print(ob2)</td><td></td></tr>
<tr><td>25</td><td>Give difference between char and varchar.
OR
Sivani is working in MySQL.Differentiate her between the Where and having clause</td><td>2</td></tr>
<tr><td>26</td><td>As a citizen of india, what advise you should give to others for e-waste disposal?</td><td>2</td></tr>
<tr><td>27</td><td>Write command to create given table.
<table>
<tr><td>Columne</td><td>Type</td><td>SIZE</td><td>Constraint</td><td>Description</td></tr>
<tr><td>Empid</td><td>INTEGER</td><td>6</td><td>PRIMARY KEY</td><td>employee NUMBER</td></tr>
<tr><td>dno</td><td>int</td><td>3</td><td></td><td>Department no</td></tr>
<tr><td>name</td><td>VARCHAR</td><td>20</td><td></td><td>NAME OF DEPARTMENT</td></tr>
<tr><td>salary</td><td>float</td><td>(8,2)</td><td></td><td>LOCATION OF DEPARTMENT</td></tr>
<tr><td>gender</td><td>char</td><td>1</td><td></td><td>Gender ‘m’ for male ‘f’ for female</td></tr>
<tr><td>job</td><td>char</td><td>30</td><td></td><td>Type of job</td></tr>
</table></td><td>2</td></tr>
<tr><td>28</td><td>In binary addition, if a column in a data frame contains a NaN and the corresponding column in other DataFrame is a numeric value, then what would be returned as a result? Why?</td><td>2</td></tr>
<tr><td>29</td><td>Rina is using a table emp. She wants to display highest sal obtained in each job. She wrote the following query
select job , max(sal) from emp;
but she did not get the desired result. Rewrite the above query with necessary changes to get desired output.</td><td>2</td></tr>
<tr><td>30</td><td>Write the expanded name of the following:
a.HTTP b.OSS c.URL d.FLOSS</td><td>2</td></tr>
<tr><td>31</td><td>What is the purpose of using router?</td><td>2</td></tr>
<tr><td>32</td><td>Why is following code not producing any result? Why is it giving errors?
a=range(10,50,12)
b=range(90,200,20)
matplotlib.pyplot.plot(a,b)</td><td>2</td></tr>
<tr><td>33</td><td>Consider the decimal number x with value 8459.2654. Write commands in SQL to:
i. round it off to a whole number
ii. round it to 2 places before the decimal.</td><td>2</td></tr>
</table>

Section-II

This contain long answer questions of 3 marks each in which two questions have internal options.

34 Describe measures to recycle your e-waste safely. 3

OR

What is privacy laws? Explain IT ACT 2000 for privacy.

35 Given a DataFrame mdf as shown below: 3

	A	B	C
0	1	2	3
1	4	5	6

Find out the errors in following statements:

i)mdf.drop(["total","order"],axis=1)

ii)mdf.drop(['A','D'])

iii)mdf.drop(['A','D'],axis=1)

OR

Consider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40,90, 110.

What will be the output of the following two statements considering that above objects have been created already

a. print (x*2) b. print(y*2)

Justify your answer.

36 Define: a. Primary key b.Candidate key c.Foreign key 3

37 Create an array A, in the range 1 to 20 with values 1.25 apart. Another array B, contains the log values of the elements in the array A. 3

Write a program to create a scatter plot of first vs second array with red circle markers, specify the x-axis title as 'Random values' and y-axis title as 'logarithm values'.

Section-III

This contain very long answer questions of 5 marks each in which one question have internal option.

38 Consider the following table named "SOFTDRINK" .Write commands of SQL for (i) to (v). 5

drinkcode	dname	price	calories
101	lime and lemon	20.00	120
102	apple drink	18.00	120
103	nature nectar	15.00	115
104	green mango	15.00	140
105	aam panna	20.00	135
106	mango juice	12.00	150

i)To display names and drink codes of those drinks that have more than 120 calories.

ii)To display drink codes, name and calories of all drinks in descending order of calories.

iii)To display names and price of drinks that have price in the range 12 to 18.

iv)Increase the price of all drinks in the given table by 10%.

v)To add column quantity data type int size 3.

OR

i)Write query to concat drinkcode and dname as drinkcodename having price of Rs.20 of above table.
ii)Display drink name of above table in capital letters.
iii)Write query to remove leading spaces of string ‘ kendriya’.
iv)Display the position of occurance of string ‘OL’ in string “rollnoinschool”.
v)Display institute code “uss” from string “uss/23/67/09”.

39 Consider the following DataFrame df. 5

	Fruits	Pulses	Rice	Wheat
Andhra p.	7830	931.0	7452.4	NaN
Gujarat	11950	818.0	1930.0	2737.0
Kerala	113.1	1.7	2604.8	NaN
Punjab	7152	33.	11586.2	16440.5
Tripura	44.1	23.2	814.6	0.5
Uttar p.	140169.2	2184.4	13754.0	30056.0

Write a script that does the following:
a.Lists the presence of missing data in whole dataframe.
b.Fills the missing values with 999.
c.Print the dataframe after filling missing value.

40 Software development company has set up its new center at Raipur for its office and web based activities. It has 4 blocks of buildings named block A, block B, block C and block D. 5

Number of Computes

Block A	25
Block B	50
Block C	125
Block D	10

Shortest distances between various blocks in meters:

Block A to Block B	60m
Block B to Block C	40m
Block C to Block A	30m
Block D to Block C	50m

(i)Draw layout for given setup.
(ii)Suggest the most suitable place to house the server with suitable reason.
(iii)The company is planning to link all the blocks through a secure and high speed wired medium. Suggest a way to connect all the blocks.
(iv)Suggest the type of network to connect all the blocks with suitable reason.
(v)Company wants to protect their connection from outside network suggest hardware/software for given purpose.

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-1 MARKING SCHEME 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 TIME:03:00 Hrs

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A	
	Section-I **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	switch	1
2	NaN	1
3	b.delete	1
4	twisted pair	1
5	barh()	1
6	identity theft	1
7	Repeater	1
8	No	1
9	i.false ii.true ½ marks for each correct answer	1
10	primary key	1
11	i)Voice over Internet Protocol ii)Hyper Text Transfer Protocol	1
12	digital property	1
13	head(5)	1
14	distinct	1
15	MySQL,SQLite,MongoDB or any other open source DBMS	1
16	numpy	1
17	use emp;	1
18	e-waste	1
19	yes, Sudhir is giving correct definition of firewall	1

<table>
<tr><td>20</td><td>Iteritems() function</td><td>1</td></tr>
<tr><td>21</td><td>Cookies</td><td>1</td></tr>
<tr><td></td><td>Section-II
Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</td><td></td></tr>
<tr><td>22</td><td></td><td></td></tr>
<tr><td>(i)</td><td>select Acode, ActivityName from ACTIVITY order by Acode desc;</td><td>1</td></tr>
<tr><td>(ii)</td><td>select Stadium, sum(PrizeMoney) from ACTIVITY group by stadium;</td><td>1</td></tr>
<tr><td>(iii)</td><td>select name, acode from coach order by acode;</td><td>1</td></tr>
<tr><td>(iv)</td><td>select * from activity where scheduledate < ’01-Jan-2004’ order by participantsnum;</td><td>1</td></tr>
<tr><td>(v)</td><td>Acode is foreign key in table coach.</td><td>1</td></tr>
<tr><td>23</td><td></td><td></td></tr>
<tr><td>(i)</td><td>b. print(df.max())</td><td>1</td></tr>
<tr><td>(ii)</td><td>a. df1=df[df[‘rollno’]==4]
print(df1)

d. df1=df[df.rollno==4]
print(df1)

½ mark for mentioning option(a)

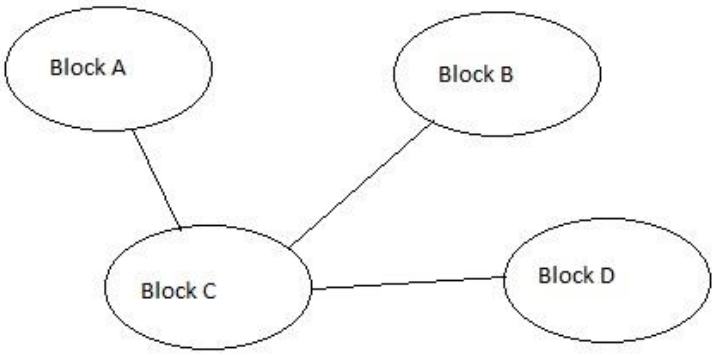
½ mark for mentioning option(d)</td><td>1</td></tr>
<tr><td>(iii)</td><td>a. both (i) and (ii)</td><td>1</td></tr>
<tr><td>(iv)</td><td>d. print(df.columns)</td><td>1</td></tr>
<tr><td>(v)</td><td>b. df [‘Grade’]=[’A’,’B’,’A’,’A’,’B’,’A’]</td><td>1</td></tr>
<tr><td></td><td>Part-B</td><td></td></tr>
<tr><td></td><td>Section-I
This contain short answer questions of 2 marks each in which two questions have internal options.</td><td></td></tr>
<tr><td>24</td><td>i)[2,4,6,8,2,4,6,8]
ii)
<table><tr><td>0</td><td>4</td></tr><tr><td>1</td><td>8</td></tr><tr><td>2</td><td>12</td></tr><tr><td>3</td><td>16</td></tr></table>OR
No,both codes will produce different results.
This is because, in the part (i) Series object ob1’s data contains a Python list (fst)* 2 which will repeat the values of the list two times and the data will contain: 9,10,11,9,10,11.
In part (ii), Series object ob2’s data contains a Series object (fst)*2, which will perform the vectorized operation on the values of fst and then make it as data of ob2, i.e., 18,20,22.</td><td>2</td></tr>
<tr><td>25</td><td><table><tr><td>CHAR</td><td>VARCHAR</td></tr><tr><td>1.It is of fixed length</td><td>1.It is of variable length.</td></tr></table></td><td>2</td></tr>
</table>

	2.When a column is defined as CHAR(n) then all values stored in that column have that length. | 2.When a column is defined as VARCHAR(n), then maximum size a value in this column can have is that length. OR Where clause is used to show data set for a table based on a condition and having clause is used to put condition on the result set that comes after using Groupby clause.	
26	E-wastes should not be given to unauthorized vendors/buyers. The respective pollution control boards in different states, authorize agencies to collect e-waste from generators. The dealers should have valid consent and authorization. This authorization is given based on the competency of the recycler, infrastructure and other factors as decided by the regulatory authorities.	2
27	create table emp(empid int(6) primary key,dno int(3),name varchar(20),sal float(8,2),gender char(1),job char(30));	2
28	The result of addition of a NaN value and a number is a NaN always. This is because, NaN means not a number and there is functionally defined only for adding two numbers and not with a NaN.	2
29	select job,max(sal) from emp group by job;	2
30	a.Hyper Text Transfer Protocol b.Open Source Software c.Uniform Resource Locator d.Free Libre/Livre and Open Source Software.	2
31	A router can work like a bridge and can also handle different protocols. A router can locate the destination required by sending the traffic to another router, if the destination is unknown itself.	2
32	The above code is producing error because the two sequence being plotted i.e., a and b do not match in shape. While sequence 'a' contains 4 elements, sequence 'b' contains 6 elements. For plotting, it is necessary that the two sequences being plotted must match in their shape.	2
33	i. select round(8459.2654); ii. select round(8459.2654,-2);	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	1.Use a certified e-waste recycler-Find an e-waste recycler certified by the Basel Action Network. 2.Visit Civic Institutions-Check with local government, schools and universities for additonal responsible recycling options. Encourage your neighbors to join you and spread the word about educated e-waste disposal. 3.Explore retail options-Best buy or other stores with an effective recycling program can be approached. 4.Donate your electronics-Reuse is always better than recycling. Share your technology with people who wouldn't otherwise have access to it. OR Privacy laws refer to laws that deal with regulating, storing and using personally identifiable information of individuals, which can be collected by governments, public or other individuals. IT ACT 2000 two sections for privacy, 1. Section 43A which deals with implementation of reasonable security practices for sensitive personal data	3

<table>
<tr><td></td><td>and provide compensation. 2. Section 72A punishment for disclosing personal information about another person.</td><td></td></tr>
<tr><td>35</td><td>i)Axis 1 means columns. There are no columns by the name “Total” and “order” in dataframe mdf. Hence the error.
ii)No axis given, which means the default axis 0 , which is row. There are no rows in DataFrame mdf with labels as “A” and “D”. Hence the error.
iii)Axis 1 means column. There are no columns by the name “D” in DataFrame mdf. Hence the error.
OR
a. will give the output as:
[20,40,90,110,20,40,90,110]
b.will give the output as:
<table><tr><td>0</td><td>40</td></tr><tr><td>1</td><td>80</td></tr><tr><td>2</td><td>180</td></tr><tr><td>3</td><td>220</td></tr></table>Justification: In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times. The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.</td><td>3</td></tr>
<tr><td>36</td><td>a) Primary key refers to a set of one or more attributes that can uniquely identify tuples within the relation.
b)All attribute combinations inside a relation that can serve as primary key are candidate keys.
c)A non-key attribute, whose values are derived from the primary key of some other table is known as foreign key in its current table.</td><td>3</td></tr>
<tr><td>37</td><td>import matplotlib.pyplot as plt
import numpy as np
A=np.arange(1,20,1.25)
B=np.log(A)
plt.plot(A,B,’ro’)
plt.xlabel(‘Random values’)
plt.ylabel(‘Logarithm values’)
plt.show()</td><td>3</td></tr>
<tr><td></td><td>Section-III
This contain very long answer questions of 5 marks each in which one question have internal option.</td><td></td></tr>
<tr><td>38</td><td>i)select dname, drinkcode from softdrink where calories > 120;
ii)select drinkcode,dname,calories from softdrink order by calories desc;
iii)select dname,price from softdrink where price between 12 and 18;
iv)update softdrink set price=price + 0.01 * price;
v)alter table softdrink add (quantity int(3));
OR
i)select concat(drinkcode,dname) as “drinkcodename” from softdrink where price=20;
ii)select upper(dname) from softdrink;
iii)select rtrim(‘ kendriya’);
iv)select instr(‘rollnoinschool’,’ol’);</td><td>5</td></tr>
</table>

	v)select left(“uss/23/67/09”,3);	

39	import pandas as pd
	import numpy as np
	: # creation or loading of dataframe df
	print(“missing data elementwise”)
	print((df.isnull())
	df=df.fillna(999)
	print(“after filling missing values with 999, the dataframe is like:”)
	print(df)
	1 mark each of import statement
	1 mark of isnull()
	1 mark for fillna()
	1 mark for print statement
		5

40	(i)  or any other suitable connection diagram. (ii)Block C because it contains maximum number of computers. (iii)Through fiber optics. (iv)LAN because all block is under distance of 1km. (v)Firewall.	5

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-2 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A	
	Section-I **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	All aggregate functions except_____ignore null values in their input collection. a.count(sal) b.count(*) c.avg() d.sum()	1
2	Which function is used to create a line chart?	1
3	Which operator is used to compare Null values in a select query?	1
4	By default order by clause lists the result in _____order.	1
5	An_____address is a numerical identification and logical address that is assigned to devices connected in a computer network.	1
6	In Ms. Kiran office, A computer facilitates the sharing of data, software, and hardware resources on a network, Name the given computer.	1
7	The keyword used with group by for giving condition is?	1
8	Which argument must be set with plotting functions for legend() to display the legends?	1
9	A website stores the browsing activity through_____	1
10	To get bottom 3 rows of a dataframe you may use _____function. a.bottom(3) b.back(3) c.tail() d.tail(3)	1
11	Write query to display sum, average, highest and lowest salary of employee table.	1
12	To iterate over horizontal subsets of dataframe, _____function may be used.	1
13	The original code written by programmers for a software is known as_____	1
14	Write full form of SMTP.	1
15	Which library you need to import for using PyPlot.	1

16	practice of taking confidential information from you through an original looking site and URL is known as_____	1
17	The qualifier distinct must be used in an SQL statement when we want to eliminate duplicate rows. State true or false.	1
18	Nikhil and Shyam has connected their device withing the range of 10 meters using Bluetooth. Which type of network they formed?	1
19	Which clause is used with "aggregate functions"? a.group by b.select c.where d.both a and c	1
20	Raman is getting various email from unidentified source without his consent, which type of mail it is called as?	1
21	The first page that you normally view at a web site is its: a.Home page b.First page c.Start page d.Master page	1
	Section-II **Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.**	
22	Consider the DataFrame dfmks having some missing values(shown as NaN) as shown below:	

	A	B	C	D
acct	99	94.0	92	97.0
eco	90	94.0	92	97.0
eng	95	89.0	91	89.0
ip	94	NaN	99	95.0
math	97	100.0	99	NaN

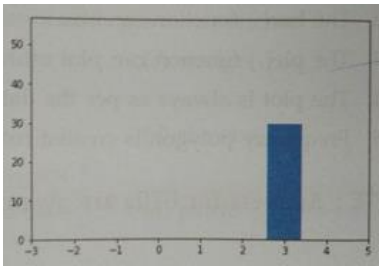
(i)	Which function will fill 0 in place of NaN. a.dfmks.fillna b.dfmks.fillNaN(0) c.dfmks.fillna(0) d.dfmks.fillNaN	1
(ii)	Which function will not select all the rows that have NaN values. a.dfmks.drop(3,4) b.dfmks.dropna() c.dfmks.dropna(4,5) d.dfmks.dropNaN()	1
(iii)		1

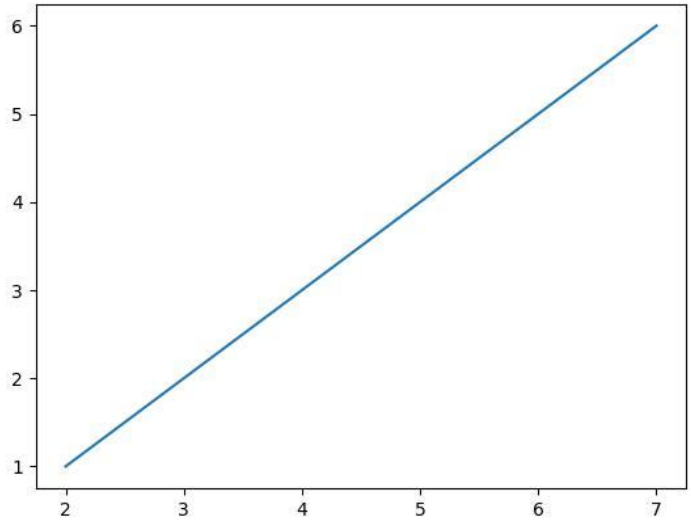
	A	B	C	D
acct	FALSE	FALSE	FALSE	FALSE
eco	FALSE	FALSE	FALSE	FALSE
eng	FALSE	FALSE	FALSE	FALSE
ip	FALSE	TRUE	FALSE	FALSE
math	FALSE	FALSE	FALSE	TRUE

The above output will be produced by using:
a.dfmks.isnull()
b.dfmks.show(True,False)
c.dfmks.isnull(True,False)
d.dfmks.show(Boolean)

(iv)	Select code to arrange data in ascending order of section A. a.dfmks.sortvalue(by=['A']) b.dfmks.sort_value(by=['A']) c.dfmks.sortvalues(by=['A'])	1

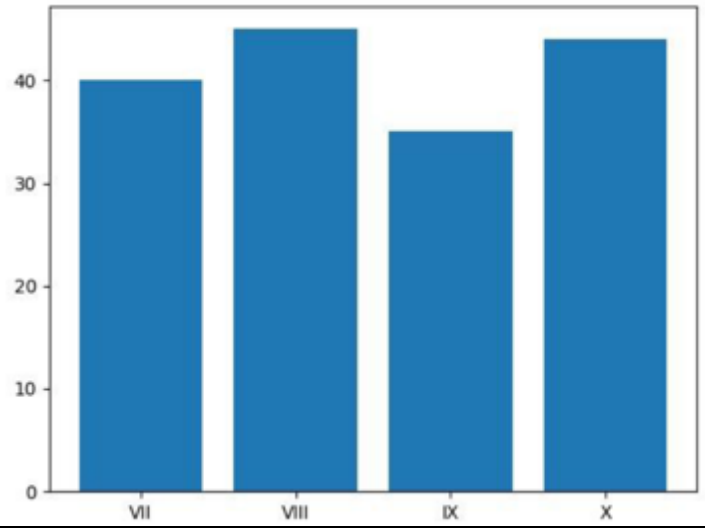
	d.dfmks.sort_values(by=['A'])	
(v)	Which library is necessary to import for above DataFrame. a. Import matplotlib b. Import pandas c. Import csv d. Import dataframe	1
23	Consider the following table GAMES. Write SQL commands for the following statements. Table:GAMES GCode | GameName | Type | Number | PrizeMoney | Schedule 101 | Carom Board | Indoor | 2 | 5000 | 23-Ja 102 | Badminton | Outdoor | 2 | 12000 | 12-D 103 | Table Tennis | Indoor | 4 | 8000 | 14-Fe 105 | Chess | Indoor | 2 | 9000 | 01-Ja 108 | Lawn Tennis | Outdoor | 4 | 25000 | 19-M	
(i)	To display the name of all games with their gcodes.	1
(ii)	To display details of those games which are having prizemoney more than 7000.	1
(iii)	To display the content of the games table in ascending order of scheduledate.	1
(iv)	To display sum of prizemoney for each type of games.	1
(v)	What will be cardinality and degree of given table.	1
	Part-B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal noptions.**	
24	What is difference between DDL and DML command?	2
25	Consider a given Series , M1: index | Marks Term1 | 45 Term2 | 65 Term3 | 24 Term4 | 89 Write a program in Python Pandas to create the series.	2
26	Nitesh forgot to enter dob field in table emp help him to add dob filed. What is default format of date?	2
27	Janish Khanna used a pen drive to copy files from his friend's laptop to his office computer. Soon his office computer started abnormal functioning. Sometimes it would restart by itself and sometimes it would stop different applications running	2

	on it. Which of the following options out of (i) to (iv), would have caused the malfunctioning of the computer? Justify the reason for your chosen option: (i) Computer Virus (ii) Spam Mail (iii) Computer Bacteria (iv) Trojan Horse	
28	Trying to extract the first five rows of DataFrame x, Nia has given code as: x.loc[0:5] but it is returning 6 rows. Why? Suggest the solution. **OR** What is following code doing? df.drop(df.column[0],axis=1)	2
29	By mistake Nitesh inserted "NULL" in field job in place of NULL. What is difference between these two?	2
30	Differentiate between bus topology and star topology of network. OR Arun opened his e-mail and found that his inbox was full of hundreds of unwanted mails. It took him around two hours to delete these unwanted mails and find the relevant ones in his inbox. What may be the cause of his receiving so many unsolicited mails? What can Arun do to prevent this happening in future?	2
31	Define digital footprint.	2
32	Given the code below(all required libraries are imported) and the output produced by it. Why is the chart showing one bar only while we are plotting four values on the chart?  a=[3,6,9,12] b=[30,48,54,48] plt.xlim(-3,5) plt.bar(a,b) plt.show()	2
33	State any two differences between single row functions and multiple row functions.	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	Consider the following graph . Write the code to plot it.	3



OR

Draw the following bar graph representing the number of students in each class.



35 A relation Vehicles is given below : 3

V_no	**Type**	**Company**	**Price**	**Qty**
AW125	Wagon	Maruti	250000	25
J0083	Jeep	Mahindra	4000000	15
S9090	SUV	Mitsubishi	2500000	18
M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

Write SQLcommands to:

a. Display the average price of each type of vehicle having quantity more than 2(

b. Count the type of vehicles manufactured by each company.

c. Display the total price of all the types of vehicles.

36 Describe the term free software and open source software. Write examples of one proprietary and one OSS software. 3

OR

Mr. Jayanto is confused between shareware and open source software. Mention at least two points of differences to help him understand the same.

37 Given a data frame namely data as shown below: 3

	Color	Count	Price
Apple	Red	3	120
Apple	green	9	110
Pear	red	25	125
Pear	green	26	150
Lime	green	99	70

i)Find all rows with the label "Apple". Extract all columns.

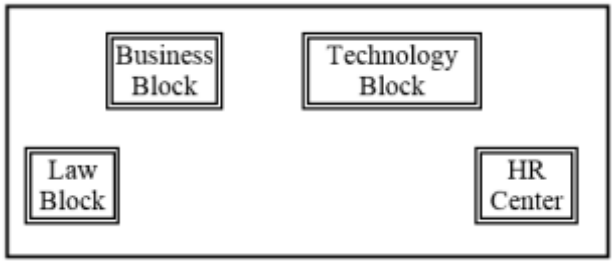
ii)List fruits with count more than 25.

iii)List 2nd , 3rd and 4th rows.

Section-III

This contain very long answer questions of 5 marks each in which one question have internal option.

38 Pace University is setting up its academic blocks at Naya Raipur and is planning to set up a network. The university has 3 academic blocks and one human resource center as shown in the diagram below: 5



Center to Center distance between various blocks/center is as follows:

Law block to Business block	40m
Law block to Technology block	80m
Law block to HR center	105m
Business block to technology block	30m
Business block to HR center	35m
Technology to HR center	15m

Number of computers in each of the blocks/center is as follows:

Law block	15
Technology block	40
HR center	115
Business block	25

a)Suggest the most suitable place to install the server with suitable reason.
b)Suggest an ideal layout for connecting these blocks for a wired connectivity.
c)Which device will you suggest to be placed in each of these blocks to efficiently connect all the computers within these blocks.
d)Suggest the placement of repeater in the network with justification.
e)The university is planning to connect its admission office in Delhi, which is more than 1250km from university. Which type of network out of LAN, MAN and WAN will be formed ? Justify your answer.

39 Consider the table WORKER. Write SQL commands for the following statements. 5

Table:WORKER

ecode	name	desig	plevel	doj	dob
11	radhe shyam	supervisor	p001	13-Sep-2004	23-Aug-1981
12	chander nath	operator	p003	22-Feb-2010	12-Jul-1987
13	fizza	operator	p003	15-Jun-2009	14-Oct-1983
15	ameen ahmed	mechanic	p002	21-Aug-2006	13-Mar-1984
18	sanya	clerk	p002	19-Dec-2005	09-Jun-1983

i)To display the details of all worker in descending order of DOB.
ii)To display name and desig of those worker whose plevel is either p001 or p002.
iii)To display the content of all worker table, whose dob is in between '19-Jan-1984' and '18-Jan-1987'.
iv)To add a new row with following details:
19,'kishor','operator','p003','19-Jun-2008','11-Jul-1984';
v)To add a new column salary data type float(8,2).

OR

Predict output of first two query
i)select 9 mod 2;
ii)select round(29.21),round(32.76);
iii)Write function that return the time at which the function executes.
iv)Write query with function to calculate square root of number 28.
v)Write query to truncate value 15.79 to 1 decimal place.

40 Write a program in python pandas to create the following DataFrame batsman from a dictionary. 5

bno	name	score1	score2
1	sunil pillai	90	80
2	Gaurav sharma	65	45
3	Piyush goel	70	90
4	kartik thakur	80	76

perform the following operations on the DataFrame:
i)Add both the scores of a batsman and assign to column "total".
ii)Display the highest score in both score1 and score2 of the DataFrame.
iii)Display the DataFrame.

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-2 MARKING SCHEME 2020-2021

CLASS:XII SUB: INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

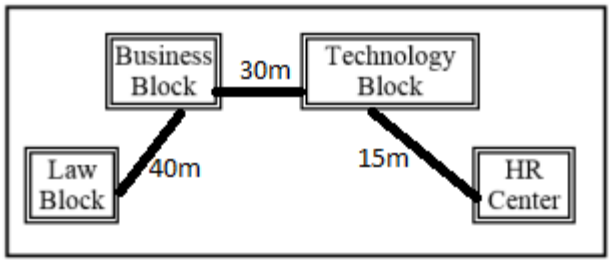
b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	b.count(*)	1
2	plot()	1
3	‘is’ operator	1
4	ascending	1
5	IP address	1
6	server	1
7	Having	1
8	label	1
9	Cookies	1
10	d.tail(3)	1
11	select sum(sal),avg(sal),max(sal),min(sal) from employee;	1
12	iterrows()	1
13	Source code	1
14	Simple Mail Transfer Protocol	1
15	matplotlib	1
16	Phishing	1
17	True	1
18	PAN	1
19	a.group by	1

20	spamming.	1
21	Home page	1
	Section-II **Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.**	
22		
(i)	c.dfmks.fillna(0)	1
(ii)	b.dfmks.dropna()	1
(iii)	a.dfmks.isnull()	1
(iv)	d.dfmks.sort_values(by=[‘A’])	1
(v)	b.import pandas	1
23		
(i)	select gamename,gcode from games;	1
(ii)	select * from games where prizemoney>7000;	1
(iii)	select * from games order by scheduledate;	1
(iv)	select sum(prizemoney) , type from games group by type;	1
(v)	cardinality=5, degree=6	1
	Part-B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal options.**	
24	The Data Definition Language commands as the name suggests, allow you to perform tasks related to data definition. That is, through these commands, you can perform tasks like, create, alter and drop schema objects, grant and revoke privileges etc. The Data Manipulation Language commands, as the name suggests, are used to manipulate data. That is, DML commands query and manipulate data in existing schema objects.	2
25	import pandas as pd m1=pd.Series([45,65,24,89],index=['term1','term2','term3','term4'])	2
26	alter table emp add (dob date); . Default format of date data type is “YYYY-MM-DD”.	2
27	Computer Virus or Trojan Horse Justification: ● Pen drive containing Computer Virus / Trojan Horse was used before the abnormal functioning started, which might have corrupted the system files. ● Computer Virus/ Trojan Horse affects the system files and start abnormal functioning in the computer.	2
28	It is returning 6 rows because loc does not produce output like slices. It includes both starting and end point. To correct the above problem, Nia needs to change the code to: x.loc[0:4] OR Axis 1 means columns. Given statement will remove the first column because of df.columns[0].	2
29	“NULL” is a value type char of size 4 bytes. But NULL is none value i.e a legal empty value.	2
30	Bus | Star	2

	In bus topology all the stations are connected through a single cable known as bus(cable).	In star topology all the stations are connected through a centralized device called switch.
	Each node is connected to the backbone cable by drop cable.	Each node is connected by individual cable with switch.
	Network fail only is bus(cable) fails.	Network fail if switch does not work.
	OR	
	Arun's email has been attacked with spam. These may be promotional mails from different advertisement groups. Arun must have checked some promotional offers while surfing the Internet. He should create filters in his email to stop receiving these unwanted mails.	
31	A digital footprint is a trail of data you create while using the internet. It includes the websites you visit, emails you send, and information you submit to online services.	2
32	The given chart is showing a single bar as the limits of x-axis have been set as -3 to 5. On this range only one value from the data range being plotted falls. i.e., only a[0] and b[0] fall on this range. Thus only a single value b[0] i.e., 30 is plotted against a[0] i.e., 3.	2
33	Differences between single row functions and multiple row functions. (i) Single row functions work on one row only whereas multiple row functions group rows (ii) Single row functions return one output per row whereas multiple row functions return only one output for a specified group of rows.	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	import matplotlib.pyplot as plt plt.plot([2,7],[1,6]) plt.show() **alternative answer** import matplotlib.pyplot as plt a = [1,2,3,4,5,6] b = [2,3,4,5,6,7] plt.plot (a,b) **1 mark for the import statement** **1 mark for appropriate usage of plot()** **1 mark for show()** **OR** import matplotlib.pyplot as plt Classes = ['VII','VIII','IX','X'] Students = [40,45,35,44] plt.bar(classes, students) plt.show() **1 mark for the import statement** **1 mark for appropriate usage of plot()** **1 mark for show()**	3

35	a. select Type, avg(Price) from Vehicle group by 3 Type having Qty>20; b.select Company, count(distinct Type) from Vehicle group by Company; c.Select Type, sum(Price* Qty) from Vehicle group by Type;	3
36	Free software is the software free of cost, which can be copied, modified and redistributed as well but whose source code is not available. Open source software on the otherhand is the software, whose source code is available and which can be copied, modified and redistributed as well. There may or may not be charges payable for open source software. Open source software:Linux proprietary software:Microsoft windows 8 **OR** Shareware is software, which is made available with the right to redistribute copies, but it is available for limited time, often after a certain period of time, then a license of fee should be paid. Share ware is not the same thing as free and open source software for two main reasons:i) The source code is not available. Ii)Modifications to the software are not allowed. OSS refers to open source software, which refers to software whose source code is available to customers and it can be modified and redistributed without any limitation. An OSS may come free of cost or with a payment of nominal charges that its developers may charge in the name of development, support of software.	3
37	i)data.loc[‘Apple’,:] ii)data[data[‘Count’]>25] iii)data.iloc[0:3,:]	3
	Section-III **This contain very long answer questions of 5 marks each in which one question have internal option.**	
38	a)Server will be placed at HR Center, because this center has maximum number of computers. b)  c)Switch d)Repeater will be placed if we connect law block to HR block, because its distance is more than 100m.Repeater will be used to regenerate the signal. e)This will form WAN. Wide Area Network connect system which is very far from each other.	5
39	i)select * from worker order by dob desc; ii)select name,desig from worker where plevel in(‘p001’,’p002’); iii)select * from worker where dob between ‘19-Jan-1984’ and ‘18-Jan-1987’. iv)insert into worker values(19,’kishor’,’operator’,’p003’,’19-Jun-2008’,’11-Jul-1984’;	5

	v)alter table worker add (salary float(8,2));
	OR
	i)1
	ii)29 33
	iii)sysdate()
	iv)select sqrt(28);
	v)select truncate(15.79,1);	

40	import pandas as pd d1={'B_NO':[1,2,3,4], 'Name':["Sunil Pillai","Gaurav Sharma","Piyush Goel","Kartik Thakur"],'Score1':[90,65,70,80], 'Score2':[80,45,95,76] } df=pd.DataFrame(d1) print(df) df['Total'] = df['Score1']+ df['Score2']	5

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-3 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A	
	Section-I **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	To display third element of a series object S, you will write_____	1
2	What is the full form of SQL?	1
3	A computer _____is a malicious code which self-replicates by copying itself to other program. a.program b.virus c.application d.worm	1
4	The axis 1 identifies a dataframe's_____.	1
5	_____is an attempt where a hacker tires to divert network traffic to a bogus site. a.phishing scams b.spoofing c.eavesdropping d.pharming attack	1
6	Functions MID() and SUBSTR() do the same thing. State true or false.	1
7	A _____is a small piece of data sent from a website and stored in a used's web browser while a user is browsing a website.	1
8	To display the 3rd , 4th and 5th columns from the 6th to 9th rows of a dataframe DF, you can write. a.DF.loc[6:9,3:5] b. DF.loc[6:10,3:6] c. DF.iloc[6:10,3:6] d. DF.iloc[6:9,3:5]	1
9	Which sublanguage of SQL is used to query information from the database and to insert tuples into, delete tuples from and modify tuples in the database?	1

10	Central computer which is powerful that other computers in the network is called as_____ a.client b.server c.hub d.switch	1
11	The digital trail which gets created as a person's internet usage using computers, smartphones, gaming consoles etc. is called_____	1
12	To delete a row from a DataFrame, you may use_____statment. a.remove b.del c.drop d.cancel	1
13	Internet is and example of _____topology. a.star b.bus c.mesh d.ring	1
14	In scatter(), which argument is used to specify the size of datapoints?	1
15	The_____clause of SELECT query allows us to select only those rows in the result that satisfy a specified condition.	1
16	Which topology contains a backbone cable running through the whole length of the network.	1
17	To iterate over vertical subsets of a dataframe,_____function may be used. a.iterate() b.iterrows() c.itercols() d.iteritems()	1
18	Which network devise is used to connect different protocols or dissimilar networks?	1
19	What will be returned by the given query? select round(153.669,2);	1
20	The plot which tells the trend between two graphed variables is the _____graph/chart. a.line b.scatter c.bar d.pie	1
21	What will bee returned by the given query? select month('2020-05-11');	1

Section-II

Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.

22 Consider the following tables ACTIVITY and COACH. Write output for the following Commands:

Table:ACTIVITY

Acode	ActivityName	Stadium	ParticipantsNum	PrizeMoney	Sche
1001	Relay 100 x 4	Star Annex	16	10000	23-Ja
1002	High jump	Star Annex	10	12000	12-D
1003	Shot put	Super power	12	8000	14-F
1005	Long jump	Star Annex	12	9000	01-Ja
1008	Discuss throw	Super power	10	15000	19-M

Table:COACH

Pcode	Name	Acode
1	Ahmed Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

(i)	select count(distinct participantsnum) from activity;	1
(ii)	select max(scheduledate), min(scheduledate) from activity;	1
(iii)	select name, activityname from activity A, coach C where A.acode=C.acode and A.participantsnum=10;	1
(iv)	select distinct participantsnum from activity;	1

(v) select count(*) from coach; 1

23 Consider the following DataFrame df and answer any four questions from (i) to (v):

	Fruits	Pulses	Rice	Wheat
Andhra p.	7830	931.0	7452.4	NaN
Gujarat	11950	818.0	1930.0	2737.0
Kerala	113.1	1.7	2604.8	NaN
Punjab	7152	33.	11586.2	16440.
Tripura	44.1	23.2	814.6	0.5
Uttar p.	140169.2	2184.4	13754.0	30056.(

(i) Write down the command to find minimum value along the columns for each row. 1
a.df.min()
b.df.min(axis=1)
c.df.min(axis=0)
d.df.min(column)

(ii) Which argument is used with max() function for only numeric values are used for calculation. 1
a.NaN=True
b.numerionly=True
c.skipna=True,numeric_value=True
d.skipNaN=True,number_value=True

(iii) Select command to delete column wheat. 1
a.del df[‘wheat’]
b.del ‘wheat’
c.del df.wheat
d.del df[4]

(iv) Which function is used to change the name of index. 1
a.df.change(index={“Andhra p.”:”A”,”Gujrat”:”B”, ”Kerala”:”C”, ”Punjab”:”D”})
b.df.reindex(index={“Andhra p.”:”A”,”Gujrat”:”B”, ”Kerala”:”C”, ”Punjab”:”D”})
c.df.named(index={“Andhra p.”:”A”,”Gujrat”:”B”, ”Kerala”:”C”, ”Punjab”:”D”})
d.df.rename(index={“Andhra p.”:”A”,”Gujrat”:”B”, ”Kerala”:”C”, ”Punjab”:”D”})

(v) Select code which will change value of ‘7152’ Fruits column of row Punjab into 9658. 1
a.df.Fruits(7152)=9658
b.df.punjab[7152]=9658
c.df.Fruits[‘punjab’]=9658
d.df.punjab[‘Fruits’](7152)=9658

Part-B

Section-I

This contain short answer questions of 2 marks each in which two questions have internal options.

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

25 Consider the following Series object, S_amt 2

Table	350
Chair	200
Sofa	800
Stool	150

	i. Write the command which will display the name of the furniture having rent>250. ii. Write the command to name the series as Furniture.	
26	Write a query to display name, job, salary and hiredate of employees who are hired between may 20, 1990 and December 31,1991. Order the query in ascending order of hiredate. (table emp)	2
27	What do you mean by spam mails? How can you protect your mailbox from spams?	2
28	Name the functions you will use to create a line chart, bar chart.	2
29	Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission. Command1 : Select count(*) from employee; Command2: Select count(commission) from employee; She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.	2
30	Priyanka is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?	2
31	Consider the following cod: section=[‘a’,’b’,’c’] classes=[6,4,3] dc={‘section’:section,’no of class’:classes} calsdf=pd.DataFrame(dc,index=[‘True’,’False’,’True’]) print(clasdf.loc[True]) Why is it giving KeyError if you run the given code? **OR** Write code to change the indexes of the given series object in any random order. s1.pd.Series(data=[100,200,300,400],index=[‘I’,’J’,’K’,’L’])	2
32	Differentiate free and open source software. **OR** How can we prevent identity thefts and data protection?	2
33	Considering the same string “Preoccupied” Write SQL commands to display: a. the position of the substring ‘cup’ in the string “Preoccupied” b. the first 4 letters of the string	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	Consider the following dataframe and answer the questions given below: import pandas as pd df=pd.DataFrame({	3

“qtr1”:[2000,4000,5000,4400],
”qtr2”:[5800,2500,5400,3000],
”qtr3”:[2000,1600,7000,3600],
“qtr4”:[1400,3700,1700,2000]})

i)Write the code to find mean value from above dataframe df over the index and column axis.

ii)Use sum() function to find sum of all the values over the index axis.

iii)Find the median of the dataframe df.

OR

Given a data frame df1 as shown below:

city	maxtemp	mintemp	rainfall
delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
kolkata	39	23	41.8

i)Write command to compute sum of every column of the data frame.

ii)Write command to compute mean of column rainfall.

iii)Write command to compute median of the maxtemp column.

35 i)Write two examples of DBMS software. 3

ii)What is meant by NULL value in MySQL?

iii)Table club has 4 rows and 3 columns. Table member has 2 rows and 5 columns. What will be the cardinality of the cartesian product of them?

36 Consider the table given below. Write a program to plot a bar chart from the medals won by Australia. In the same chart plot medals won by India too. 3

country	gold	silver	bronze	total
Australia	80	59	59	198
india	26	20	20	66

37 N/A Black 3

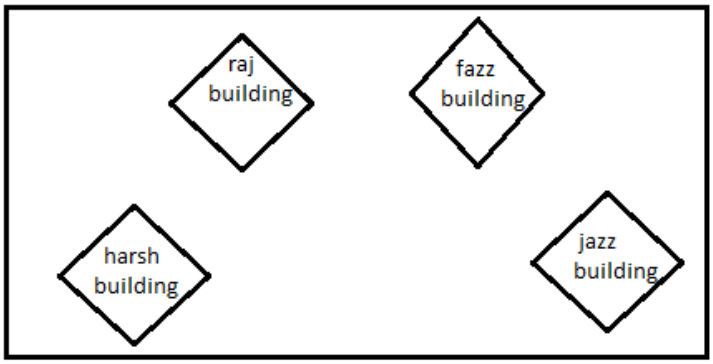
Section-III

This contain very long answer questions of 5 marks each in which one question have internal option.

38 Create a DataFrame Qtrsales as given in table where each row contains the item category, item_name, and expenditure. Locate the 3 largest values of expenditure in this DataFrame. 5

	category	item_name	expenditure
0	A	ipad	288000
1	B	Lcd	356000
2	A	iphone	497000
3	A	iwatch	315000
4	B	projector	413000
5	C	harddisk	45000
6	B	pen drive	21000

39 Ravya industries has set up its new center at kaka nagar for its office and web based activities. The company compound has 4 buildings as shown in the diagram below:



Center to center distances between various building is as follows:

harsh building to raj building	50m
raj building to fazz building	60m
fazz building to jazz building	25m
jazz building to harsh building	170m
harsh building to fazz building	125m
raj building to jazz building	90m

Number of computers in each of the buildings is as follows:

harsh building	15
raj building	150
fazz building	15
jazz building	25

a)Suggest the most suitable place to house the server of this organization with a suitable reason. 1

b)Suggest the placement of the following devices with justification.

i)Internet connecting device ii)switch 1

c)The organization is planning to link its sale counter situated in various parts of the same city, which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

d)If there will be connection between all building using mesh topology, suggest where need to place repeater.

12

40 Write the SQL functions which will perform the following operations: 5

i) To display the name of the month of the current date.

ii) To remove spaces from the beginning and end of a string, " Panorama ".

iii) To display the name of the day eg, Friday or Sunday from your date of birth, dob.

iv) To display the starting position of your first name(fname) from your whole name

Consider a table SALESMAN with the following data:

OR

SNO	NAME	SALARY	BONUS	DATE OF JOIN
A01	Beena Mehta	30000	45.23	29-10-2019
A02	K. L. Sahay	50000	25.34	13-03-2018
B03	Nisha Thakkar	30000	35.00	18-03-2017
B04	Leela Yadav	80000	NULL	31-12-2018

C05	Gautam Gola	20000	NULL	23-01-1989	
C06	Trapti Garg	70000	12.37	15-06-1987	
D07	Neena Sharma	50000	27.89	18-03-1999	

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

a) Display salesman name and bonus after rounding off to zero decimal places.

b) Display the position of occurrence of the string “ta” in salesman names.

c) Display the four characters from salesman name starting from second character.

d) Display the month name for the date of join of salesman

e) Display the name of the weekday for the date of join of salesman

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-3 MARKING SCHEME 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	S[2]	1
2	Structured Query Language	1
3	d.worm	1
4	columns	1
5	pharming attack	1
6	true	1
7	cookie	1
8	c. DF.iloc[6:10,3:6]	1
9	DML(Data Manipulation Language)	1
10	server	1
11	digital footprint	1
12	c.drop	1
13	mesh	1
14	s	1
15	where	1
16	bus	1
17	d.iteritems()	1
18	gateway	1
19	153.67	1
20	a.line	1

21	5	1
	Section-II **Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.**	
22		
(i)	3	1
(ii)	max(scheduledate) min(scheduledate) 19-Mar-04 12-Dec-03	1
(iii)	name activityname Ravinder Discuss Throw	1
(iv)	16 10 12	1
(v)	4	1
23		
(i)	b.df.min(axis=1)	1
(ii)	c.skipna=True,numeric_value=True	1
(iii)	a.del df[‘wheat’]	1
(iv)	d.df.rename(index={“Andhra p.”:”A”,”Gujrat”:”B”, ”Kerala”:”C”, ”Punjab”:”D”})	1
(v)	c. df.Fruits[‘punjab’]=9658	1
	Part-B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal options.**	
24	The order by clause is used to show the contents of a table/relation in a sorted manner with respect to the column mentioned after the order by clause. The contents of the column can be arranged in ascending or descending order. The group by clause is used to group rows in a given column and then apply an aggregate function eg max(), min() etc on the entire group.	2
25	i. print(S_amt[S_amt>250]) ii. S_amt.name= 'Furniture'	2
26	select ename,job,sal, hiredate from emp where hiredate between ‘1990-05-20’ and -1991-12-31’ order by hiredate;	2
27	Spam mails, also known as junk e-mail, is a subset of spam that involves nearly identical messages sent to numerous recipients by e-mail. We can protect our mailbox from spams by creating appropriate filters.	2
28	matplotlib.pyplot.plot() matplotlib.pyplot.bar()	2
29	This is because the column commission contains a NULL value and the aggregate functions do not take into account NULL values. Thus Command1 returns the total number of records in the table whereas Command2 returns the total number of NULL values in the column commission	2
30	We call this type of activity as Digital Footprints. Risk involved : It includes websites we visit emails we send, and any information we submit online, etc., along with the computer’s IP address, location, and other device specific details. Such data could be used for targeted advertisement or could also be misused or exploited	2

<table>
<tr><td>31</td><td>The above code is giving KeyError because it has created the dataframe with string indexes and it is trying to access rows considering the indexes as Boolean.
OR
s1=s1.reindex(index=[‘k’,’J’,’L’,’I’])</td><td>2</td></tr>
<tr><td>32</td><td><table><tr><td>Free software</td><td>Open source software</td></tr><tr><td>1.Free software need no payment it is free of charge.</td><td>1.Open source does not have to be free of charge.</td></tr><tr><td>2.Its source code is not necessarily available.</td><td>2.Its source code is available.</td></tr></table>OR
Identity theft refers to the acquisition of personal data of the victim and using it for illegal purposes. we prevent by
1.Ensure a strong and unique password 2.Avoid posting confidential information online or social media.
3.Shop from known and trusted websites only 4.Install advanced antivirus and spywares.</td><td>2</td></tr>
<tr><td>33</td><td>a. select instr 'Preoccupied' , ‘ 'cup'));
b. select left 'Preoccupied',4);</td><td>2</td></tr>
<tr><td></td><td>Section-II
This contain long answer questions of 3 marks each in which two questions have internal options.</td><td></td></tr>
<tr><td>34</td><td>i)print(df.mean(axis=1))
print(df.mean(axis=0))
ii)print(df.sum(axis=1))
iii)print(df.median())
OR
i)df.sum()
ii)df1[‘rainfall’].mean()
iii)df1.loc[:,’maxtemp’].median()</td><td>3</td></tr>
<tr><td>35</td><td>i)Oracle, SQL Server, MySQL
ii)Null value signifies a legal empty value.
iii)8</td><td>3</td></tr>
<tr><td>36</td><td>import matplotlib.pyplot as plt
info=[‘gold’,’silver’,’bronze’,’total’]
Australia=[80,59,59,198]
India=[26,20,20,66]
plt.bar(info,Australia)
plt.bar(info,India)
plt.xlabel(“medal type”)
plt.ylabel(“Australia, India medal count”)
plt.show()</td><td>3</td></tr>
<tr><td>37</td><td>NA Blank</td><td>3</td></tr>
<tr><td></td><td>Section-III
This contain very long answer questions of 5 marks each in which one question have internal option.</td><td></td></tr>
<tr><td>38</td><td>import pandas as pd
Qtrsales=pd.DataFrame(</td><td>5</td></tr>
</table>

	{‘category’:[‘A’,’B’,’A’,’A’,’B’,’C’,’B’], ’item_name’:[‘ipad’,’Lcd’,’iphone’,’iwatch’,’projector’,’harddisk’,’pendrive’], ’expenditure’:[288000,356000,497000,315000,413000,45000,21000]}) print(“dataframe qtrsales is:”) print(qtrsales) print(“3 largest expenditure values in given dataframe are:”) print(qtrsales.sort_values(“expenditure”,ascending=False).head(3))	
39	a)The most suitable place to house the server of this organization would be raj building as this block contains the maximum number of computers. b)i)Raj building since it contains largest number of computers. ii)In the suggested layout, a switch each would be needed in all the buildings, to interconnect the group of cables from different computers in each block. c)MAN shall be formed, MAN are the networks that link computer facilities within a city. d)In between jazz building to harsh building and harsh building to fazz building.	5

40	i) monthname(date(now()))
	ii) trim(“ Panaroma “)
	iii) dayname(date(dob))
	iv)instr(name, fname)
	v) mod(n1,n2)
	1 mark for each correct answer
	OR
	i) Select sname, round(bonus,0) from Salesman;
	ii) Select instr(Sname, “ta”) from Salesman;
	iii)Select mid(Sname,2,4) from Salesman;
	alternative answer
	iii) Select Substring(Sname,2,4) from Salesman;
	iv) Select monthname(DateofJoin) from Salesman;
	v) Select dayname(DateofJoin) from Salesman;
		5

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-4 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 TIME:03 Hrs

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 21 each question carries one mark.**	
1	Give a solution to recycle e-waste in the country.	1
2	Which portion of the URL below records the directory or folder of the desired resource? http://www.somestore.com/firstfloor/shoes.htm	1
3	The now() function in MySQL is an example of_____ a.math function b.text function c.date function d.aggregate function	1
4	Series objects are value_____but size_____ objects.	1
5	Gaining unauthorized access to a network or computer with malicious intensions is an example of_____	1
6	Pandas data structure storing the two-dimensional labelled array is known as_____	1
7	A_____is a program that lets you visit different sites on the Net and display their offerings on your own computer.	1
8	To create line chart which function is used? a.line() b.plot() c.show() d.drawline()	1
9	The _____command is used to make changes in the structure of table.	1
10	In order to use pyplot on your computers for data visualization, you need to first import_____	1

<table>
<tr><td>11</td><td>Stealing someone else’s intellectual work and representing it as own, is called_____</td><td>1</td></tr>
<tr><td>12</td><td>Combination of text,graphic images, audion and video tracks, and hyperlinks is called as_____</td><td>1</td></tr>
<tr><td>13</td><td>In pandas which function is used to delete a column in a DataFrame?
a.remove b.del c.drop d.cancel</td><td>1</td></tr>
<tr><td>14</td><td>Write SQL command to display time and date when command get executed.</td><td>1</td></tr>
<tr><td>15</td><td>A software that can be freely accessed and modified is called_____</td><td>1</td></tr>
<tr><td>16</td><td>SQL applies conditions on the groups through_____clause after groups have been formed.</td><td>1</td></tr>
<tr><td>17</td><td>I am group of related web pages hosted on a web server, guess my name?</td><td>1</td></tr>
<tr><td>18</td><td>0 is equal to NULL in SQL, State true or false.</td><td>1</td></tr>
<tr><td>19</td><td>A digital document hosted on a website is _____</td><td>1</td></tr>
<tr><td>20</td><td>Give output of given code:
pay=np.array([100,200,300,np.NaN])
sr=pd.Series(data=pay*2)
print(sr)</td><td>1</td></tr>
<tr><td>21</td><td>URL stands for____</td><td>1</td></tr>
<tr><td></td><td>Section-II
Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</td><td></td></tr>
<tr><td>22</td><td>Consider the following DataFrame df and answer any four questions from (i) to (v):
<table>
<tr><td></td><td>Fruits</td><td>Pulses</td><td>Rice</td><td>Whea</td></tr>
<tr><td>Andhra p.</td><td>7830</td><td>931.0</td><td>7452.4</td><td>NaN</td></tr>
<tr><td>Gujarat</td><td>11950</td><td>818.0</td><td>1930.0</td><td>2737.</td></tr>
<tr><td>Kerala</td><td>113.1</td><td>1.7</td><td>2604.8</td><td>NaN</td></tr>
<tr><td>Punjab</td><td>7152</td><td>33.</td><td>11586.2</td><td>1644(</td></tr>
<tr><td>Tripura</td><td>44.1</td><td>23.2</td><td>814.6</td><td>0.5</td></tr>
<tr><td>Uttar p.</td><td>140169.2</td><td>2184.4</td><td>13754.0</td><td>30056</td></tr>
</table></td><td></td></tr>
<tr><td>(i)</td><td>Add new row banglore with all columns value 1200
a.df.[‘banglore’,:]=1200
b.df.at[‘banglore’]=1200
c.df.at[‘banglore’,:]=1200
d.df.at.banglore=1200</td><td>1</td></tr>
<tr><td>(ii)</td><td>The output:
<table>
<tr><td>11950</td><td>818.0</td></tr>
<tr><td>113.1</td><td>1.7</td></tr>
</table>
will be produced by.
a.df.show[1:3,0:2]
b.df.at[1:3,0:2]
c.df.loc[1:3,0:2]
d.df.iloc[1:3,0:2]</td><td>1</td></tr>
<tr><td>(iii)</td><td>Which line is used to find transpose of given DataFrame?
a.df.transpose
b.df.T
c.df.tans
d.df.transpose(df)</td><td>1</td></tr>
<tr><td>(iv)</td><td>Write function that returns middle value from a set of values.</td><td>1</td></tr>
</table>

a.mode()
b.mean()
c.median()
d.var()

(v) Which among given option produce output — 1

Andhra p	3
gujarata	4
kerala	3
Punjab	4
Tripura	4
uttar p	4

a.df.count(axis=1)
b.df.count(axis=0)
c.df.count(rows)
d.df.count(columns)

23 Consider the following table GAMES and PLAYER. Write output of given SQL commands.

Table:GAMES

GCode	GameName	Type	Number	PrizeMoney	Sc e
101	Carom Board	Indoor	2	5000	23
102	Badminton	Outdoor	2	12000	12
103	Table Tennis	Indoor	4	8000	14
105	Chess	Indoor	2	9000	01
108	Lawn Tennis	Outdoor	4	25000	19

Table:PLAYER

pcode	name	gcode
1	nabi ahmad	101
2	ravi sahai	108
3	jatin	101
4	nazneen	103

(i) select count(distinct number) from games; — 1

(ii) select max(scheduledate), min(scheduledate) from games; — 1

(iii) select name, gamename from games G, player P where G.gcode=P.gcode and G.prizemoney > 10000; — 1

(iv) select distinct gcode from player; — 1

(v) select number from games where gamename like “c%”; — 1

Part-B

Section-I

This contain short answer questions of 2 marks each in which two questions have internal options.

24 Consider the following SQL string: “Preoccupied” — 2

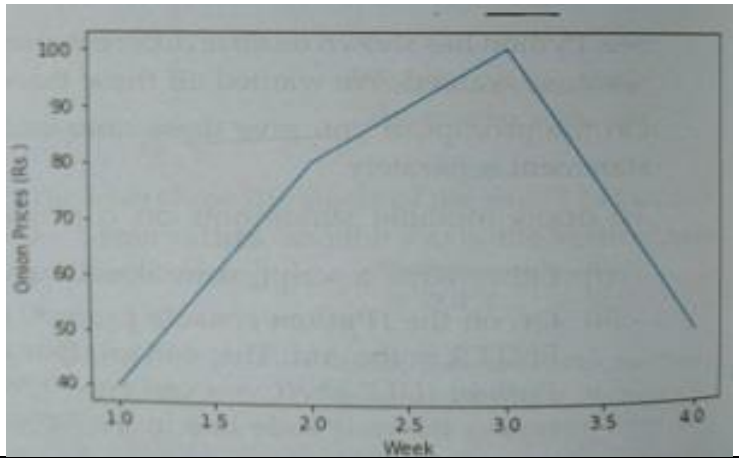
Write commands to display:

a. “occupied”
b. b. “cup”

25	Write code to create a Series object using the python sequence (11,21,31,41). Assume that pandas is imported as alias name pd.	2
26	Consider the decimal number x with value 8459.2654. Write commands in SQL to: i. round it off to a whole number ii. round it to 2 places **before** the decimal.	2
27	List any two health hazards related to excessive use of Technology. **OR** Describe why authentication is important for file protection.	2
28	Consider the following DataFrame, classframe **Rollno Name Class Section CGPA Stream** St1 1 Aman IX E 8.7 Science St2 2 Preeti X F 8.9 Arts St3 3 Kartikey IX D 9.2 Science St4 4 Lakshay X A 9.4 Commerce Write commands to : i. Add a new column 'Activity' to the Dataframe ii. Add a new row with values (5 , Mridula ,X,F, 9.8, Science)	2
29	Predict the output of following queries a) select trim(trailing '.' from ' To be continued…'); b) select trim(' To be continued…');	2
30	Robin wanted to gift his friend a football or a wrist watch. So he searched for many sports items and wrist watch online. But after that everytime he goes online, his web browser shows him advertisements about sports items and wrist watches. a)Why is this happening? b)How can Robin get rid of this now?	2
31	Explain Phishing and how to prevent it?	2
32	Following code is plotting the desired graph but legends are not showing despite giving the legend() of pyplot. What could be the reason? Suggest a solution for the problem. plt.plot(x,y) plt.plot(x,z) plt.legend(loc="upper left") **OR** Given a dataframe df as shown below: import pandas as pd x={'speed':[10,15,20,18,19],'meter':[122,150,190,230,300]}	2

<table>
<tr><td></td><td>df=pd.DataFrame(x)
Write code to create scatter graphs from speed and meters columns of df.</td><td></td></tr>
<tr><td>33</td><td>Write a query which displays the employee name with all other letters in lower case and length of there name string from emp table.</td><td>2</td></tr>
<tr><td></td><td>Section-II
This contain long answer questions of 3 marks each in which two questions have internal options.</td><td></td></tr>
<tr><td>34</td><td>Given tow dataframe df3 and df4 as shown below:
df3
<table>
<tr><td></td><td>A</td><td>B</td><td>C</td></tr>
<tr><td>0</td><td>100</td><td>200</td><td>300</td></tr>
<tr><td>1</td><td>400</td><td>500</td><td>600</td></tr>
</table>
df4
<table>
<tr><td></td><td>A</td><td>B</td></tr>
<tr><td>0</td><td>1000</td><td>2000</td></tr>
<tr><td>1</td><td>4000</td><td>5000</td></tr>
<tr><td>2</td><td>7000</td><td>8000</td></tr>
</table>
df3 + df4
<table>
<tr><td></td><td>A</td><td>B</td><td>C</td></tr>
<tr><td>0</td><td>1100.0</td><td>2200.0</td><td>NaN</td></tr>
<tr><td>1</td><td>4400.0</td><td>5500.0</td><td>NaN</td></tr>
<tr><td>2</td><td>NaN</td><td>NaN</td><td>NaN</td></tr>
</table>
Both these dataframes store integer values but when they are added as df3+df4, the values in the resultant object automatically change to floating point(as shown in table) contrary to the fact the two integers when added will result into integer only. Can you specify the reason?</td><td>3</td></tr>
<tr><td>35</td><td>Shanya Khanna is using a table employee. It has the following columns.
admno, name, agg, stream
she wants to display highest agg obtained in each stream.
she wrote the following statement.
select stream, man(agg) from employee;
but she did not get the desired result. Rewrite the above query with necessary changes to help her get the desired output.</td><td>3</td></tr>
<tr><td>36</td><td>Tanushree is doing some research. She has a stored line of pascal’s triangle numbers as ar2 as shown below:
ar2=[1,7,21,35,35,21,7,1]
She wants to plot the sine(numpy.sin()), cosine(numpy.cos()) and tangent values(numpy.tan()) for the same ar2.
She wants cyan color for sine plot line, red color for cosine plot line and black color for tangent plot line.
Also the tangent line should be dashed.
Write a program to accomplish all this.
OR</td><td>3</td></tr>
</table>

Write a program to get given output:



37 Nivedita has recently shifted to new city and new school. She does not know many people in her new city and school. Bull all of sudden, someone is posting negative, demeaning comments on her social networking profile school site's forum etc. She is also getting repeated mails from unknown people. Everytime she goes online, she finds someone chasing her online. 3

a)What is this happening to Nivedita?

b)What action should she taken to stop them?

OR

Describe following cybercrims:

a)Cyber bulling b)Cyber stalking

Section-III

This contain very long answer questions of 5 marks each in which one question have internal option.

38 Write SQL function which will perform following operation. 5

i)Display the result of 4^2.

ii)Truncate value 15.79 to ten's place.

iii)Round off value 15.193 to nearest ten's.

iv)Write function to extract a sub string from string "Quadratically" which should 6 characters long and start from 5^{th} character of the given string.

v)Write function to count how many characters are there in string "CANDIDE".

OR

Consider the table :GARMENT. Write command of SQL for(i) to (v).

gcode	gname	size	colour	price
111	tshirt	XL	red	1400.00
112	jeans	L	blue	1600.00
113	skirt	M	black	1100.00
114	ladies jacket	XL	blue	4000.00
115	trousers	L	brown	1500.00
116	ladies top	L	pink	1200.00

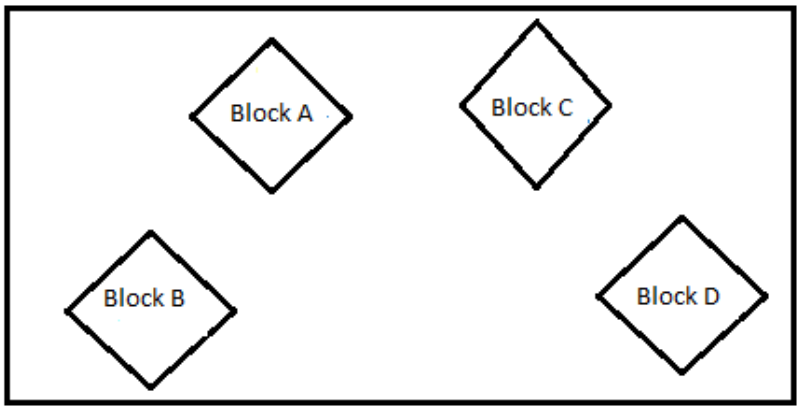
i)Show names of those garments that are available in XL size.

ii)Show codes and names of those garments that have their names starting with 'ladies'.

iii)Show garment names, codes and price of those garment that have price in the range 1000.00 to 1500.00.

iv)To change the colour of garment with code as 116 to orange.

v)To define gcode as primary key.

<table>
<tr><td>39</td><td>Write a program to print the DataFrame df, one column at a time. Also display highest marks obtained.
<table>
<tr><td></td><td>marks</td><td>name</td></tr>
<tr><td>roll 1</td><td>70</td><td>ram</td></tr>
<tr><td>roll 2</td><td>95</td><td>pam</td></tr>
<tr><td>roll 3</td><td>80</td><td>sam</td></tr>
</table></td><td>5</td></tr>
<tr><td>40</td><td>Knowledge supplement organization has set up its new center at Mangolore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below:
 

Center to Center distances between various blocks:
<table>
<tr><td>Block A to Block B</td><td>50m</td></tr>
<tr><td>Block B to Block C</td><td>150m</td></tr>
<tr><td>Block C to Block D</td><td>25m</td></tr>
<tr><td>Block A to Block D</td><td>170m</td></tr>
<tr><td>Block B to Block D</td><td>125m</td></tr>
<tr><td>Block A to Block C</td><td>90m</td></tr>
</table>
Numbers of computes in each block:
<table>
<tr><td>Block A</td><td>25</td></tr>
<tr><td>Block B</td><td>50</td></tr>
<tr><td>Block C</td><td>125</td></tr>
<tr><td>Block D</td><td>10</td></tr>
</table>
a)What type of network will be formed if all blocks are connected.
b)Suggest the most suitable place to house the server with justification.
c)Suggest the placement of the following devices with justification.
i)Repeater ii)Switch
d)The organization is planning to link its front office situated in the city in a hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed.</td><td>1
1

2

1</td></tr>
</table>

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-4 MARKING SCHEME 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	By donating used electronics, refurbish electronics, recycle e-waste. Any other correct answer.	1
2	firstfloor	1
3	date function	1
4	mutable,immutable ½ marks for each correct answer	1
5	Hacking	1
6	DataFrame	1
7	web browser	1
8	plot()	1
9	alter	1
10	matplotlib.pyplot library	1
11	plagiarism	1
12	Hypertext	1
13	del	1
14	select sysdate();	1
15	open source software	1
16	having	1
17	website	1

18	false	1
19	webpage	1
20	0 200 1 400 2 600 3 NaN	1
21	Uniform Resource Locator	1
	Section-II **Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.**	
22		
(i)	c.df.at[‘banglore’,:]=1200	1
(ii)	d.df.iloc[1:3,0:2]	1
(iii)	b.df.T	1
(iv)	c.median()	1
(v)	a.df.count(axis=1)	1
23		
(i)	2	1
(ii)	max(scheduledate) min(scheduledate) 19-Mar-2004 12-Dec-2003	1
(iii)	ravi sahai lawn tennis	1
(iv)	101 108 103	1
(v)	carom board chess	1
	Part-B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal options.**	

24	a. select substr("Preoccupied", 4);
	OR
	select substring("Preoccupied", 4);
	OR
	select mid("Preoccupied",4);
	OR
	select right(("Preoccupied"”, 8);
	b. select substr("Preoccupied" ,6,3);
	OR
	select substring("Preoccupied", 6,3);
	OR
	select mid(("Preoccupied" ,6,3);
		2

25	import pandas as pd s1=pd.Series((11,21,31,41)) print(s1)	2
26	i. select round(8459.2654);	2

	ii.select round(8459.2654,-2);	
27	The continuous use of devices like smartphones, computer desktop, laptops, head phones etc cause a lot of health hazards if not addressed. These are: i. Impact on bones and joints: wrong posture or long hours of sitting in an uncomfortable position can cause muscle or bone injury. ii. Impact on hearing: using headphones or earphones for a prolonged time and on high volume can cause hearing problems and in severe cases hearing iii. Impact on eyes: This is the most common form of health hazard as prolonged hours of screen time can lead to extreme strain in the eyes. iv. Sleep problem: Bright light from computer devices block a hormone called melatonin which helps us sleep. Thus we can experience sleep disorders leading to short sleep cycles . OR Authentication is the process of determining whether someone is a legal user. It is the process of identifying an individual, usually based on a username and password. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual. It is used a primary step for file protection from unauthorized users.	2
28	i. classframe[‘Activity’]=[‘Swimming’,’Dancing ’,’Cricket’, ‘Singing’] ii. classframe.loc[‘St5’]=[1,’Mridula’, ‘X’, ‘F’, 9.8, ‘Science’]	2
29	a) To be continued b) To be continued…	2
30	a)This is happening because third party cookies saved his search preference and now websites are posting advertisements based on his preferences. b)Now Robin can delete all the previous history and cookies stored on his computer. This would stop websites posting advertisements.	2
31	Phishing is the practice of attempting to acquire sensitive information from individuals over the internet, by means of deception. Information typically targeted by phishing schemes includes passwords, user-names, bank account information, and social security numbers. One can prevent the phishing attacks by using the following practices: a.Don’t enter sensitive information in the webpages that you don’t trust. b.Verify the site’s security. c.Use firewalls. d.Use Antivirus software that has internet security. e.Use Antiphishing toolbar.	2
32	The above code won’t print the legends because with the plot(), the labels are missing. The legend() will work only when we specify label for data series being plotted in the plot(). plt.plot(x,y,label=”y data”) plt.plot(x,z,label=j”z data”) plt.legend(loc=”upper left”) OR	2

	import matplotlib.pyplot as plt import pandas as pd x={'speed':[10,15,20,18,19],'meter':[122,150,190,230,300]} df=pd.DataFrame(x) plt.scatter(df['speed'],df['meters']	
33	select lower(name), length(ename) from emp;	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	The reason behind the conversion to floating point type is that the two dataframes have different indexes and columns. For the non-matching row indexes and columns, python will add NaN values to corresponding value from another dataframe. Python stores NaN values in a non-integer suitable data type. Thus, the moment NaN is added or present in any column, the datatype of the entire column is changed. Thus, all the values are represented as floating point value because of presence of NaN values in their column.	3
35	select stream, man(agg) from employee group by stream;	3
36	import matplotlib.pyplot as plt import numpy as np ar2=[1,7,21,35,35,21,7,1] s2=np.sin(ar2) c2=np.cos(ar2) t2=np.tan(ar2) plt.plot(ar2,s2,'c') plt.plot(ar2,cs,'r') plt.plot(ar2,t2,'k',linestyle='dashed') plt.xlabel("arrayvalues") plt.ylabel("sine, cosine and tangent values") plt.show() OR import matplotlib.pyplot as plt week=[1,2,3,4] prices=[40,80,100,50] plt.plot(week,prices) plt.xlabel('week') plt.ylabel('onion prices(Rs.)') plt.show()	3
37	a)Nivedita has become a victim of cyber bullying and cyber stalking. b)She must immediately bring it into the notice of her parents and school authorities. And she must report this cyber crime to local police with the help of her parents. **OR** Cyber bulling refers to act of online harassment of someone by using online tools such as Internet, mails, instant messages, chat rooms etc. Cyber Stalking refers to online stalking where someone uses internet, chat rooms, social networking sites etc to stalk his/her victim. Cyber stalker follows the victim online everywhere and keeps posting/sending something which are unsolicited.	3
	Section-III	

	This contain very long answer questions of 5 marks each in which one question have internal option.	

38	i)select pow(4,2);
	ii)select truncate(15.79,-1);
	iii)select round(15.193,-1);
	iv)select substring("Quadratically",5,6);
	v)select length("CANDIDE");
	OR
	i)select gname from garment where size='XL';
	ii)select gcode,gname from garment where gname like 'ladies%';
	iii)select gname,gcode,price from garment where price between 1000.00 and 1500.00;
	iv)update garment set colour="orange" where gcode=116;
	v)alter table garment add primary(gcode);
		5

39	import pandas as pd dict={marks':[70,95,80],'name':["ram","pam","sam"]} df=pd.DataFrame(dict,index=['roll 1','roll 2','roll 3']) for i , j in df.iteritems(): print(j) df.sort_values(by=['marks']).head(1)	5
40	a)LAN b)Block C. As this block contains the maximum number of computers. c)i)Repeater will be placed between Block B to Block C, Block A to Block D and Block B to Block D. Since distance between these two block is more than 100meters. d)The most economic way to connect it with a reasonable high speed would be to use radiowave transmission, as they are easy to install, can travel long distances and penetrate buildings easily.	1 1 1 1 1

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-4 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

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a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 2 1 each question carry one mark.**	
1	The number of data points that fall within a specified range of values in histograms is known as_____	1
2	SQL is programming language. State true or false.	1
3	To display fifth element of a Series object S, you will write_____	1
4	Which of the following keywords will you use in the following query to display all the values of the column dept_name? select _____dept_name from company; a.all b.from c.distinct d.name	1
5	Topology that needs central device switch is called as _____	1
6	To extract row/column from a dataframe,_____function may be used. a.row() b.column() c.loc() d.extract()	1
7	It is self replicating program that eats up all the memory/space. a.virus b.worms c.trojan horse d.phishing	1
8	The SQL keyword_____is used in SQL expressions to select based on patterns.	1
9	Which argument is used to consider only non-NaN values for calculation purpose? a.np.NaN b.skipna=True c.NaN=True d.skipNaN=True	1
10	Unauthorised monitoring of other people's communications is called_____	1
11	select mod(11,4) "modulus";	1
12	Python integer types can store NaN values. State True or False.	1
13	The pattern of interconnection of nodes in a network is known as_____	1
14	The _____operator is used for making range checks in queries.	1

<table>
<tr><td>15</td><td>PyPlot is collection of methods within_____library.</td><td>1</td></tr>
<tr><td>16</td><td>Which one is not unguided media?
a.infrared waves b.laser c.fibre optics d.satellites</td><td>1</td></tr>
<tr><td>17</td><td>Write code to change 5th column's value at 3rd row as 35 in DataFrame DF.</td><td>1</td></tr>
<tr><td>18</td><td>Which argument do you specify with read_csv() to specify a separator character?
a.character b.char c.separator d.sep</td><td>1</td></tr>
<tr><td>19</td><td>Software whose source code is available and which can be modified, copied and redistributed.</td><td>1</td></tr>
<tr><td>20</td><td>list object lst having values [2,4,6,8]. Find out the output of
print(lst*2)</td><td>1</td></tr>
<tr><td>21</td><td>select round(15.193,-1) “round”;</td><td>1</td></tr>
<tr><td></td><td>Section-II
Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</td><td></td></tr>
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<tr><td></td><td>Fruits</td><td>Pulses</td><td>Rice</td><td>Wheat</td></tr>
<tr><td>Andhra p.</td><td>7830</td><td>931.0</td><td>7452.4</td><td>NaN</td></tr>
<tr><td>Gujarat</td><td>11950</td><td>818.0</td><td>1930.0</td><td>2737.0</td></tr>
<tr><td>Kerala</td><td>113.1</td><td>1.7</td><td>2604.8</td><td>NaN</td></tr>
<tr><td>Punjab</td><td>7152</td><td>33.</td><td>11586.2</td><td>16440.5</td></tr>
<tr><td>Tripura</td><td>44.1</td><td>23.2</td><td>814.6</td><td>0.5</td></tr>
<tr><td>Uttar p.</td><td>140169.2</td><td>2184.4</td><td>13754.0</td><td>30056.0</td></tr>
</table></td><td></td></tr>
<tr><td>(i)</td><td>Single function used to calculate count, mean, std, min, max etc.
a.var()
b.quartile()
c.describe()
d.detail()</td><td>1</td></tr>
<tr><td>(ii)</td><td>Which function is used to get last 3 row of given table?
a.head(3)
b.tail()
c.last(3)
d.tail(3)</td><td>1</td></tr>
<tr><td>(iii)</td><td>In given table change the column name pulses to barley.
a.df.change(columns={‘Pulses’:’barley’})
b. df.rename(columns={‘Pulses’:’barley’})
c. df.index(columns={‘Pulses’:’barley’})
d. df.reindex(columns={‘Pulses’:’barley’})</td><td>1</td></tr>
<tr><td>(iv)</td><td>Write command to compute mean of column wheat.
a.df=mean(‘wheat’)
b.df.mean(‘wheat’)
c.df.wheat(mean)
d.df[‘wheat’].mean()</td><td>1</td></tr>
<tr><td>(v)</td><td>Write command to compute average rice wheat production for tripura and uttar pradesh.
a.df.loc[4: ,’tripura’:’uttar p’].mean()
b.df.loc[4:].mean(’tripura’:’uttar p’)
c. df.loc[4:].average(’tripura’:’uttar p’)
d. df.loc[4: ,’tripura’:’uttar p’].average()</td><td>1</td></tr>
<tr><td>23</td><td>Consider the table STUDENT given below:
<table>
<tr><td>rollno</td><td>name</td><td>class</td><td>dob</td><td>gender</td><td>city</td><td>mark</td></tr>
</table></td><td></td></tr>
</table>

	1	anand	xi	6/6/97	m	agra	430		
	2	Chetan	xii	7/5/94	m	Mumbai	460		
	3	geet	xi	6/5/97	f	agra	470		
	4	preeti	xii	8/8/95	f	Mumbai	492		
	5	saniyal	xii	8/10/95	m	delhi	360		
	6	maakhiy	xi	12/12/94	f	dubai	256		
	7	neha	x	8/12/95	f	Moscow	324		
	8	nishant	x	12/6/95	m	moscow	429		

(i) State the command that will give the output as :

name
anand
Chetan
geet
preeti

i. select name from student where class='XI' and class='XII';

ii. select name from student where not class='XI' and class='XII';

iii. select name from student where city="Agra" OR city="Mumbai";

iv. select name from student where city IN("Agra", "Mumbai");

Choose the correct option:

a. Both (i) and (ii).

b. Both (iii) and (iv).

c. Any of the options (i), (ii) and (iv)

d. Only (iii) 1

(ii) What will be the output of the following command?

Select * from student where gender ="F" order by marks; 1

(iii) Prachi has given the following command to obtain the highest marks Select max(marks) from student where group by class;

but she is not getting the desired result. Help her by writing the correct command.

a. Select max(marks) from student where group by class;

b. Select class, max(marks) from student group by marks;

c. Select class, max(marks) group by class from student;

d. Select class, max(marks) from student group by class; 1

(iv) State the command to display the average marks scored by students of each gender who are in class XI?

i. Select gender, avg(marks) from student where class= "XI"

group by gender; 1

	ii Select gender, avg(marks) from student group by gender where class=”XI”; iii. Select gender, avg(marks) group by gender from student having class=”XI”; iv. Select gender, avg(marks) from student group by gender having class = “XI”; Choose the correct option: a. Both (ii) and (iii) b. Both (ii) and (iv) c. Both (i) and (iii) d. Only (iii)	
(v)	Help Ritesh to write the command to display the name of the youngest student? a. select name,min(DOB) from student ; b. select name,max(DOB) from student ; c. select name,min(DOB) from student group by name ; d. select name,maximum(DOB) from student;	1
	Part B	
	Section-I **This contain short answer questions of 2 marks each in which two questions have internal options.**	
24	Write code to create a Series object using the python sequence [4,6,8,10]. Assume that pandas is imported as alias name pd. **OR** Write code to display number of rows and number of columns in DataFrame df.	2
25	Display name of employee who has job as “salesman”,”accountant”,”manager”,”clerk” in emp table.	2
26	What is digital propery? What are the threats to digital property?	2
27	Tina wants to change the size of LOC field of table emp to 20. Write code for her.	2
28	Given an ndarray p as ([1,2,3,4]). Write code to plot a bar chart having bars for p and p**2 (with red color).	2
29	Kishan wanted to gift his friend a football or a wrist watch. So he searched for many sports items and wrist watch online. But after that everytime he goes online, his web browser shows him advertisements about sports items and wrist watches. a)Why is this happening?	2

<table>
<tr><td></td><td>b)How could have Kishan avoided them?</td><td></td></tr>
<tr><td>30</td><td>Nitesh forgot to enter dob field in above table help him to add dob filed. What is default format of date?</td><td>2</td></tr>
<tr><td>31</td><td>What is the basic difference between iterrows() and iteritems()?
OR
What fucntions does pandas provide to handle missing data? Write atleast two functions.</td><td>2</td></tr>
<tr><td>32</td><td>What is network? Mention two advantages of networking.</td><td>2</td></tr>
<tr><td>33</td><td>Write command to create given table.
<table>
<tr><td>Column Name</td><td>Type</td><td>SIZE</td><td>Constraint</td><td>Description</td></tr>
<tr><td>Empid</td><td>INTEGER</td><td>6</td><td>PRIMARY KEY</td><td>employee NUMBER</td></tr>
<tr><td>dno</td><td>int</td><td>3</td><td></td><td>Department no</td></tr>
<tr><td>name</td><td>VARCHAR</td><td>20</td><td></td><td>NAME OF DEPARTMENT</td></tr>
<tr><td>salary</td><td>float</td><td>(8,2)</td><td></td><td>LOCATION OF DEPARTMENT</td></tr>
<tr><td>gender</td><td>char</td><td>1</td><td></td><td>Gender ‘m’ for male ‘f’ for female</td></tr>
<tr><td></td><td>char</td><td>30</td><td></td><td>Type of job</td></tr>
</table></td><td>2</td></tr>
<tr><td></td><td>Section-II
This contain long answer questions of 3 marks each in which two questions have internal options</td><td></td></tr>
<tr><td>34</td><td>What do you mean by Identity theft? Explain with the help of an example.
OR
What do you understand by Net Ettiquetes? Explain any two such ettiquetes.</td><td>3</td></tr>
<tr><td>35</td><td>Given two arrays namely arr1 and arr2 each having 5 values. Create a scatter chart so that each data points gets a different color, different size. Keep the marker style as square.
OR
Generally ten different prices of a stock are stored. However for ABC Co. only 5 prices are available for a day:[74.25,76.06,69.5,72.55,81.5]
Write a program to create a bar chart with the given prices:
the graph should be plotted between the limits -2 to 10 on x-axis.
there should be tick for every plotted point.</td><td>3</td></tr>
<tr><td>36</td><td>A relation Vehicles is given below :
<table>
<tr><td>V_no</td><td>Type</td><td>Company</td><td>Price</td><td>Qty</td></tr>
<tr><td>AW125</td><td>Wagon</td><td>Maruti</td><td>250000</td><td>25</td></tr>
<tr><td>J0083</td><td>Jeep</td><td>Mahindra</td><td>4000000</td><td>15</td></tr>
<tr><td>S9090</td><td>SUV</td><td>Mitsubishi</td><td>2500000</td><td>18</td></tr>
</table></td><td>3</td></tr>
</table>

M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

Write SQLcommands to:

a. Display the average price of each type of vehicle having quantity more than 20.

b. Count the type of vehicles manufactured by each company.

c. Display the total price of all the types of vehicles.

37 What is missing data? Why is it considered a problem? 3

Section-III

This contain very long answer questions of 5 marks each in which one question have internal option.

38 Consider the following tables CABHUB and CUSTOMER. Write SQL commands for the following statements. 5

Table:CABHUB

VCODE	VEHICLE NAME	MAKE	COLOR	CAPACITY	CHAF
100	innova	Toyota	white	7	15
102	sx4	Suzuki	blue	4	14
104	c class	Mercedes	red	4	35
105	a-star	Suzuki	white	3	14
108	indigo	tata	silver	3	12

Table:CUSTOMER

CCODE	CNAME	VCODE
1	Hemant	101
2	raj lal	108
3	feroza shah	105
4	ketan dhal	104

i)To display the names of all the white coloured vehicles.

ii)To display name of vehicle, make and capacity of vehicles in ascending order of their seating capacity.

iii)To display the highest charges at which a vehicle can be hired from CABHUB.

iv)To display the customer name and the corresponding name of the vehicle hired by them.

v)To increase charges by 15%.

OR

i)Write query to concatenate vehiclename and make of table cabhub.

ii)Display 4 characters extracted from 3rd left character onwards from string 'ABCDEFGH'.

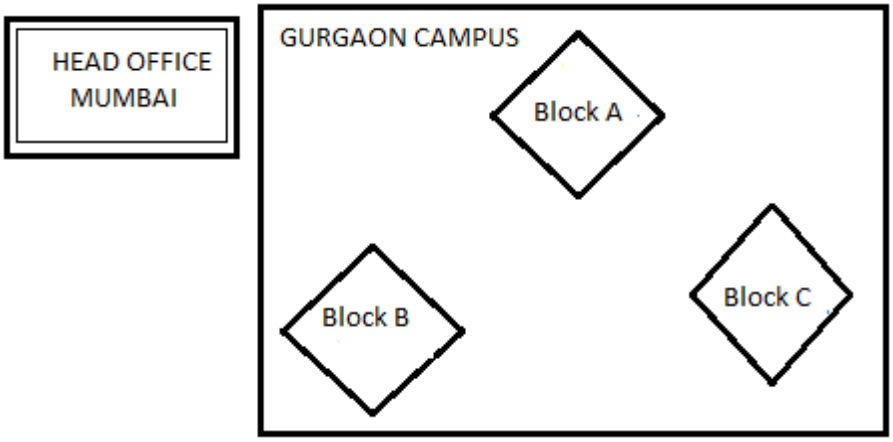
iii)Convert and display string "large" into capital letters.

iv)Write a query to remove leading x characters from string 'xxxxBAR ONExxxxx'.

v)Display the position of string 'ed' in field make of table cabhub.

39 Given a data frame df1 as shown below: 5

	city	maxtemp	mintemp	rainfall		
	delhi	40	32	24.1		
	Bengaluru	31	25	36.2		
	Chennai	35	27	40.8		
	Mumbai	29	21	35.2		
	kolkata	39	23	41.8		
	i)Write program to compute sum of every column of the data frame, to compute mean of column rainfall, to compute median of the maxtemp column.					
40	Workalot consultants are setting up a secured network for their office campus at Gurgaon. They are planning to have connectivity between 3 blocks and the head office at Mumbai. Answer the questions (a) to (d) after going through the block positions in the campus and other details, which are given below:					



Distances between various buildings:

Block A to Block C	110m
Block A to Block B	45m
Block B to Block C	65m
Gurgaon Campus to Head office	1760 Km

Number of computers:

Block A	32
Block B	150
Block C	45
Head office	10

a)Suggest the most suitable place to house the server with justification. 1

b)Suggest a connection medium to connect Gurgaon campus with head office. 1

c)Suggest the placement of the following devices with justification: 2

i)Switch ii)Repeater 1

d)The organization is planning to provide a high speed link with its head office situated in Mumbai using a wired connection. Which of the following cables will be most suitable for this job?

i)Optical Fibre ii)Co-axial Cable iii)Ethernet Cable

KENDRIYA VIDYALAYA SANGATHAN, RAIPUR REGION

MODEL PAPER-5 MARKING SCHEME 2020-2021

CLASS:XII SUB:INFORMATICS PRACTICES (065)

Max Marks: 70 **TIME:03:00 Hrs**

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2.Both part A and part B have choices.

3.Part-A has 2 sections:

a.Section-I is short answer questions, to be answered in one word or one line.

b.Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.

4.Part-B is descriptive paper.

5.Part-B has three sections:

a.Section-I is short answer questions of 2 marks each in which two questions have internal options.

b.Section-II is long answer questions of 3 marks each in which two questions have internal options.

c. Section-III is very long answer questions of 5 marks each in which one question have internal options.

	Part-A **Section-I** **Attempt any 15 questions from questions 1 to 21 each question carry one mark.**	
1	bins	1
2	false	1
3	S[4]	1
4	all	1
5	star	1
6	c.loc()	1
7	worms	1
8	like	1
9	b.skipna=True	1
10	eavesdropping	1
11	3	1
12	False	1
13	Topology	1
14	between	1
15	matplotlib	1
16	fibre optics	1
17	DF.iat[3,5]=35	1
18	sep	1
19	open source software	1

<table>
<tr><td>20</td><td>[2,4,6,8,2,4,6,8]</td><td>1</td></tr>
<tr><td>21</td><td>20</td><td>1</td></tr>
<tr><td></td><td>Section-II
Both the case study based questions(22 & 23) are compulsory. Attempt any four sub parts from each question. Each sub question carries 1 mark.</td><td></td></tr>
<tr><td>22</td><td></td><td></td></tr>
<tr><td>(i)</td><td>c.describe()</td><td>1</td></tr>
<tr><td>(ii)</td><td>d.tail(3)</td><td>1</td></tr>
<tr><td>(iii)</td><td>b. df.rename(columns={‘Pulses’:’barley’})</td><td>1</td></tr>
<tr><td>(iv)</td><td>d.df[‘wheat’].mean()</td><td>1</td></tr>
<tr><td>(v)</td><td>a.df.loc[4: ,’tripura’:’uttar p’].mean()</td><td>1</td></tr>
<tr><td>23</td><td></td><td></td></tr>
<tr><td>(i)</td><td>b. Both (iii) and (iv)</td><td>1</td></tr>
<tr><td>(ii)</td><td>
<table>
<tr><td>rollno</td><td>name</td><td>class</td><td>dob</td><td>gender</td><td>city</td><td>marks</td></tr>
<tr><td>6</td><td>maakhiy</td><td>xi</td><td>12/12/94</td><td>f</td><td>dubai</td><td>256</td></tr>
<tr><td>7</td><td>neha</td><td>x</td><td>8/12/95</td><td>f</td><td>Moscow</td><td>324</td></tr>
<tr><td>3</td><td>geet</td><td>xi</td><td>6/5/97</td><td>f</td><td>agra</td><td>470</td></tr>
<tr><td>4</td><td>preeti</td><td>xii</td><td>8/8/95</td><td>f</td><td>mumbai</td><td>492</td></tr>
</table>
</td><td>1</td></tr>
<tr><td>(iii)</td><td>d. Select class, max(marks) from student group
by class;</td><td>1</td></tr>
<tr><td>(iv)</td><td>b. Both (ii) and (iv)</td><td>1</td></tr>
<tr><td>(v)</td><td>b. select name,max(DOB) from student ;</td><td>1</td></tr>
<tr><td></td><td>Part-B</td><td></td></tr>
<tr><td></td><td>Section-I
This contain short answer questions of 2 marks each in which two questions have internal
options.</td><td></td></tr>
<tr><td>24</td><td>import pandas as pd
s1=pd.Series([4,6,8,10])
print(s1)
OR
df.shape[0] for number of rows
df.shape[1] for number of columns</td><td>2</td></tr>
<tr><td>25</td><td>select * from emp where job IN (“salesman”,”accountant”,”manager”,”clerk”);</td><td>2</td></tr>
<tr><td>26</td><td>Digital property refers to any information about you or created by you that exist in digital form, either online or on an electronic storage device.
Examples of digital property include: any online personal accounts and personal websites and blogs, domain names registered in your name, intellectual properties etc.
Common threats to digital properties are:
1.Digital software penetration tools such as cracks and keygens, tools created by hackers.
2.Stealing and plagiarizing codes of your digital properties.</td><td>2</td></tr>
<tr><td>27</td><td>alter table emp modify (loc varchar(20));</td><td>2</td></tr>
<tr><td>28</td><td>import matplotlib.pyplot as plt
p=([1,2,3,4])
plt.bar(p,p**2,color=’r’,width=0.3)</td><td>2</td></tr>
</table>

29	a)This is happening because third party cookies saved his search preference and now websites are posting advertisements based on his preferences. b)Kishan could have avoided this by privately browsing i.e., opening the web browser in incognito mode before searching for such things.	2
30	alter table emp add (dob date); . Default format of date data type is "YYYY-MM-DD".	2
31	df.iterrows() iterates over vertical subsets in the form of (col-index, Series) pairs, df.iteritems() iterates over horizontal subsets in the form of (row-index, Series) pairs. **OR** isnull() , dropna() and fillna() are common fucntions to handle missing data.	2
32	A network is an interconnected collection of autonomous computers that can share and exchange information. Major reasons that emphasize on the need of networks are: 1.Resource Sharing:- Through a network, data, software and hardware resources can be shared irrespective of the physical location of the resources and the user. 2.Reliability:-A file can have its copies on two or more computers of the network, so if one of them is unavailable, the other copies could be used. That makes a network more reliable. 3.Reduced costs:- Since resources can be shared, it greatly reduces the costs. 4.Fast communication:-With networks, it is possible to exchange information at very fast speed.	2
33	create table emp(empid int(6) primary key,dno int(3),name varchar(20),sal float(8,2),gender char(1),job char(30));	2
	Section-II **This contain long answer questions of 3 marks each in which two questions have internal options.**	
34	Identity theft is the crime of obtaining the personal or financial information of another person for the sole purpose of assuming that person's name or identity to make transactions or use it to inappropriate remarks , comments e.t.c post Example: Alex likes to do his homework late at night. He uses the Internet a lot and also sends useful data through email to many of his friends. One Day he forgot to sign out from his email account. In the morning, his twin brother, Flex started using the computer. He used Flex's email account to send inappropriate messages to his contacts or any other relevant example (1 ½ mark for explaining Identity theft) (1 ½ nark for suitable example) **OR** Net Ettiquets refers to the proper manners and behaviour we need to exhibit while being online These include : 1. No copyright violation: we should not use copyrighted materials without the permission of the creator or owner. We should give proper credit to owners/creators of open source content when using them. 2. Avoid cyber bullying: Avoid any insulting, degrading	3

	or intimidating online behaviour like repeated posting of rumours, giving threats online, posting the victim's personal information, **OR** comments aimed to publicly ridicule a victim. **OR** any other relevant answer. 1 marks for deifition of Net Ettiquettes 1 mark eachfor the example with explanation.	
35	import matplotlib.pyplot as pl arr1=[-1,-.5,0,.5,1] arr2=[0.4,0.7,1,1.5,2.6] colors=['r','b','k','g','m'] sizes=[50,120,220,150,80] pl.scatter(arr1,arr2,c=colors,s=sizes,marker='s') **OR** import matplotlib.pyplot as plt pr=[74.25,76.06,69.5,72.55,81.5] plt.bar(range(len(pr)),pr,width=0.4,color='m') plt.xlim(-2,10) plt.title("prices of abc co.") plt.xticks(range(-2,10)) plt.ylabel("prices") plt.show()	3
36	A. select Type, avg(Price) from Vehicle group by 3 Type having Qty>20; B.select Company, count(distinct Type) from vehicle group by Company; C.Select Type, sum(Price* Qty) from Vehicle group by Type;	3
37	Missing data means when no information is provided for one or more items or for a whole unit. Missing data can also refer to as NaN(Not Available) values in pandas. Pandas puts NaN in place of missing data in dataframes. Missing data is very big problem in real life scenario. This is because, the presence of NaN hampers calculations because NaN cannot be used in calculations and in fact, it makes the whole calculation result as NaN.	3
	Section-III **This contain very long answer questions of 5 marks each in which one question have internal option.**	

38	i)select vehiclename from cabhub where colour="white";
	ii)select vehiclename,make,capacity from cabhub order by capacity;
	iii)select max(charges) from cabhub;
	iv)select cname,vehiclename from cabhub,customer where customer.vcode = cabhub.vcode;
	v)update cabhub set charges=charges+0.15*charges;
	OR
		5

	i)select concat(vehiclename,make);
	ii)select substr("ABCDEFGH",3,4);
	iii)select upper("large"); or select ucase('large');
	iv)select trim(leading 'x' from 'xxxxBAR ONExxxxx';
	v)select make,instr(make,'ed') from cabhub;	

39	import pandas as pd df1=pd.DataFrame({'city':['delhi','bengaluru','chennai','mumbai','kolkata'], 'maxtemp':[40,31,35,29,39], 'mintemp':[32,25,27,21,23], 'rainfall':[24.1,36.2,40.8,35.2,41.8]}) print(df1.sum()) print(df1['rainfall'].mean()) print(df1.loc[:,'maxtemp'].median())	5
40	a)In Block B as it houses maximum number of computer. b)Any unguided medium e.g., Satellite. c)i)Switches are needed in every block as they help share bandwidth in every building. ii)Repeaters may be skipped as per above layout, however if block A and block B are directly connected, we place a repeater there as the distance between these two block is more that 100m. d)Optical fibre	1 1 1 1 1

तत् त्वं पूषन् अपावृणु

केन्द्रीय विद्यालय संगठन

केंद्रीय विद्यालय संगठन रायपुर संभाग

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