



KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

WORKSHEETS CLASS: XII

SUBJECT: INFORMATICS PRACTICES (065)

SESSION: 2023-24



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INDEX

UNIT NO.	UNIT NAME	PAGE NO.	
		FROM	TO
1.	Data Handling using Pandas and Data Visualization	6	92
2.	Database Query using SQL	93	129
3.	Introduction to Computer Network	130	136
4.	Societal Impacts	137	143

THEORY MARKS DISTRIBUTION

Unit	Unit Name	Marks (Theory)
I	Data Handling using Pandas and Data Visualization	25
II	Database Query using SQL	25
III	Introduction to Computer Networks	10
IV	Societal Impacts	10
	Total	70

PRACTICAL MARKS DISTRIBUTION

Unit	Unit Name	Marks (PRACTICAL)
1	Python Program Using Pandas and Matplotlib	8
2	SQL Queries	7
3	Practical File (Min. 15 Programs Based on Pandas, 4 Based on Matplotlib and 15 SQL Queries must be included)	5
4	Project Work	5
5	Viva Voce	5
	Total	30

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP** NAME OF CHAPTER: Series

TOPIC: Series (Create Series, Access element, Filter value)

WORKSHEET NO. 1

QN.	Questions	M
1	Write a program to create a series to print scalar value "5" four times.	2
2	Write a program to create a series object F1 using a dictionary that stores the number of furniture in each lab of your school. Note: Assume four furniture names are Table, Sofa, Chair and stool having 40, 2, 45, 26 items respectively and pandas library has been imported as pd.	2
3	What will be the output of the following code: import pandas as pd L= [9,10,12] S=pd.Series(L) Dbl=pd.Series(data = S*2) print("New Series: ") print(Dbl)	1
4	Write a program to create a series object using a dictionary that stores the number of students in each house of CLASS 12D of your school. Note: Assume four house names are Beas, Chenab, Ravi and Satluj having 18, 2, 20, 18 students respectively and pandas library has been imported as pd.	2
5	What will be the output of the following code: >>>import pandas as pd >>>A=pd.Series(data=[35,45,55,40]) >>>print(A==data) What will be the output: a. True b. False c. [35,45,55,40] d. Error	1
6	Find the output of following program. import numpy as np d=np.array([10,20,30,40,50,60,70]) print(d [-4:])	1
7	What will be the output of the following code: >>>import pandas as pd >>>A=pd.Series(data=[35,45,55,40]) >>>print (A[A>45])	1
8	Write the output of the given command: import pandas as pd s=pd.Series([1,2,3,4,5,6],index=['A','B','C','D','E','F']) print(s[s%2==0])	1
9	What will be the output of the following code: >>>import pandas as pd >>>A=pd.Series(data=[35,45,55,40]) >>>print ([A>45])	1
10	What will be the output of the following code: >>>import pandas as pd >>>A=pd.Series(data=[35,45,55,40]) >>>A[2:5]=25 >>>print (A)	1
11	Write a program to create a series object comp using a list that stores the number of quantity of computer item in lab of your school. Note: Assume four computer item names as index are KB, Mouse, computer and printer having values are 30, 25, 20, 2 items respectively and pandas library has been imported as pd.	2

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP**

NAME OF CHAPTER: Series

TOPIC: Series (Create Series, Access element, Filter value)

WORKSHEET NO. 1

QN.	Answers	M
1	import pandas as pd S=pd.Series(5, index=[1,2,3,4,5])	2
2	import pandas as pd F={'Table' :40, 'Sofa' :2, 'Chair' :45, 'Stool' :26} F1=pd.Series(St)	2
3	New Series: 0 18 1 20 2 24 dtype: int64	1
4	import pandas as pd St={'Beas' :18, 'Chenab' :20, 'Ravi' :20, 'Satluj' :18} S1=pd.Series(St)	2
5	d. Error	1
6	[40 50 60 70]	1
7	2 55 dtype: int64	1
8	B 2 D 4 F 6 dtype: int64	1
9	0 False 1 False 2 True 3 False dtype: bool	1
10	0 35 1 45 2 25 3 25 dtype: int64	1
11	>>> i=['KB', 'Mouse', 'computer','printer'] >>> data=[30, 25, 20, 2] >>> comp=pd.Series(data, index=i) >>> print(comp)	2

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Series

TOPIC: Series Attribute and methods

WORKSHEET NO. 2

Q. No	Questions	M
1	Which attribute is used to get total number of elements in a Series? a. size b. itemsize c. shape d. ndim	1
2	To display last five rows of a series object ' S ', you may write: a. S.Head() b. S.Tail(5) c. S.Head(5) d. S.tail()	1
3	To display top five rows of a series object ' S ', you may write: a. S.head() b. S.Tail(5) c. S.Head(5) d. S.tail()	1
4	_____ method in Pandas can be used to change the index of rows and columns of a Series or DataFrame: (i) rename() (ii) reindex() (iii) reframe() (iv) none of the above	1
5	CSV stands for _____	1
6	Pandas Series is: _____ a. 2-Dimensional b. 3-Dimensional c. 1 Dimensional d. Multidimensional	1
7	Python pandas was developed by: _____ a. Guido van Rossum b. Travis Oliphant c. Wes McKinney d. Brendan Eich	1
8	The command to install the pandas is: a. install pip pandas b. install pandas c. pip pandas d. pip install pandas	1
9	The name "Pandas" is derived from the term: a. Panel Data b. Panel Series c. Python Document d. Panel Data Frame	1
10	We can analyse the data in pandas with a. Series b. Data Frame c. Both of the above d. None of the above	1
11	Pandas is a: _____ a. Package b. Language c. Library d. Software	1
12	Which of the following import statement is not correct? a. import pandas as CLASS12 b. import pandas as 1pd c. import pandas as pd1 d. import pandas as pd	1
13	Which of the following is not an attribute of pandas data frame? a. length b. T c. Size d. shape	1
14	import pandas as pd s=pd.Series([1,2,3,4,5], index=['akram','brijesh','charu','deepika','era'])	1

	print(s['charu']) a. 1 b. 2 c. 3 d. 4	
15	Assuming the given series, named stud, which command will be used to print 5 as output? Amit 90 Ramesh 100 Mahesh 50 john 67 Abdul 89 Name: Student, dtype: int64 a. stud.index b. stud.length c. stud.values d. stud.size	1
16	A social science teacher wants to use a pandas series to teach about Indian historical monuments and its states. The series should have the monument names as values and state names as indexes which are stored in the given lists, as shown in the code. Choose the statement which will create the series: import pandas as pd Monument=['Qutub Minar','Gateway of India','Red Fort','Taj Mahal'] State=['Delhi','Maharashtra','Delhi','Uttar Pradesh'] a. S=df.Series(Monument, index=State) b. S=pd.Series(State, Monument) c. S=pd.Series(Monument, index=State) d. S=pd.series(Monument, index=State)	1
17	Difference between loc() and iloc().: a. Both are Label indexed based functions. b. Both are Integer position-based functions. c. loc() is label-based function and iloc() integer position-based function. d. loc() is integer position-based function and iloc() index position-based function.	1
18	Method or function to add a new row in a Series is: a. .locate() b. .loc() c. join d. add()	1
19	Rasha wants to set all the values to zero in Series, choose the right command to do so: a. S1=0 b. S1[]=0 c. S1[:]=0 d. S1[::]=0	1
20	Write the output of the given program: import pandas as pd S1=pd.Series([5,6,7,8,10],index=['v','w','x','y','z']) Output required (5,) a. print(S1.shape()) b. print(S1.shape) c. print(S1.values) d. print(S1.size())	1
21	To check if the Series object contains NaN values, attribute is display. a. hasnan b. nbytes c. ndim d. hasnans	1

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER :Series

TOPIC: Series Attribute and methods

WORKSHEET NO. 2

QN.	Answers	M
1	Size	1
2	s.tail()	1
3	s.head()	1
4	reindex()	1
5	Comma separated value	1
6	c. 1 Dimensional	1
7	c. Wes McKinney	1
8	d. pip install pandas	1
9	a. Panel Data	1
10	c. Both of the above	1
11	c. Library	1
12	b. import pandas as 1pd	1
13	a. length	1
14	c. 3	1
15	d. stud.size	1
16	d. S=pd.Series(Monument,index=State)	1
17	c. loc() is label based function and iloc() integer position based function.	1
18	b.loc()	1
19	S1[:]=0	1
20	b. print(S1.shape)	1
21	(d) hasnans	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Series
 TOPIC: Vector operation, slicing

WORKSHEET NO. 3

QN	Questions	M
1	Consider the following series named animal: <pre> L Lion B Bear E Elephant T Tiger W Wolf dtype: object </pre> Write the output of the command: <code>print(animal[::-3])</code>	2
2	Write the output of the given program: <code>import pandas as pd S1=pd.Series([5,6,7,8,10], index=['v','w','x','y','z'])</code> <code>l=[2,6,1,4,6]</code> <code>S2=pd.Series(l,index=['z','y','a','w','v'])</code> <code>print(S1-S2)</code>	2
3	Give the output: <pre> import pandas as pd name=['Raj','Ankur','Harsh'] p=pd.Series(name,index=[2,5,6]) print(p) p1=p.reindex([2,5]) print (p1) </pre>	2
4	Give the output: <pre> list1=["Dance','Music','violin','guitar','drums'] list2=[100,200,300,400,500,600] list3=list1[:2] list4=list2[2:5] print(list3) print(list4) </pre>	2
5	Consider the following series named color: <pre> Color 1 Red 2 Green 3 Orange 4 Yellow 5 Black </pre> <code>dtype: object</code> Write the command that generates the output as: <pre> 2 Green 4 Yellow </pre> <code>dtype: object</code>	1
6	What will be the output of the given code? <pre> import pandas as pd s=pd.Series([3,6,9,12,14],index=['a','b','c','d','e'])print(s['a']+s['c']) </pre>	2

7	Given two series S1 and S2 <table><thead><tr><th>S1</th><th>S2</th></tr></thead><tbody><tr><td>A 39</td><td>A 10</td></tr><tr><td>B 41</td><td>B 10</td></tr><tr><td>C 42</td><td>D 10</td></tr><tr><td>D 44</td><td>F 10</td></tr></tbody></table> Find the output for following python pandas statements? a. S1[:2]*100 b. S1 * S2 c. S2[::-1]*10	S1	S2	A 39	A 10	B 41	B 10	C 42	D 10	D 44	F 10	2
S1	S2											
A 39	A 10											
B 41	B 10											
C 42	D 10											
D 44	F 10											
8	How many elements will be there in the series named "S1"? <pre>>>> S1 = pd.Series(range(5,10)) >>> print(S1)</pre>	1										
9	Consider the following series <pre>CapCntry = pd.Series(['NewDelhi', 'WashingtonDC', 'London', 'Paris', 'Tokyo', 'Beijing'], index=['India', 'USA', 'UK', 'France', 'Japan', 'China'])</pre> Write the output of the following statements: i) CapCntry[: : 2] ii) CapCntry[5:1:-1] iii) CapCntry[: :-1] iv) CapCntry[3:]	4										
10	Consider the following code. Write appropriate words to complete <pre>Line1: import pandas as pd Line2: import _____ # Library name Line3: A=np._____(2,11,2) # function name to get numpy array Line 4: S=pd.Series(_____, Index=[_____]) # Data name and indexes Line 5: Print(S)</pre>	3										
	TOTAL											

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Series
 TOPIC: Vector operation, slicing

WORKSHEET NO. 3

Q. No.	Answers	M
1	W Wolf B Bear dtype: object	2
2	x NaN a NaN v -1.0 w 2.0 y 2.0 z 8.0 dtype: float64	2
3	2 Raj 5 Ankur 6 Harsh dtype: object 2 Raj 5 Ankur dtype: object	2
4	0 Dance 1 Music 2 300 3 400 4 500	2
5	Color[2:5:2]	2
6	12	2
7	a. A 3900 B 4100 b. A 390 B 410 C NaN D 440 F NaN c. F 100 D 100 B 100 A 100 1 mark for each correct output	2
8	5 s1 0 5 1 6	

	2 7 3 8 4 9	
9	i)India NewDelhi UK London Japan Tokyo dtype: object ii) CapCntry[5:1:-1] China Beijing Japan Tokyo France Paris UK London dtype: object iii) CapCntry[: :-1] China Beijing Japan Tokyo France Paris UK London USA WashingtonDC India NewDelhi dtype: object iv) CapCntry[3:] France Paris Japan Tokyo China Beijing dtype: object	4
10	Line1: import pandas as pd Line2: import_numpy as np # Library name Line3: A=np.array(2,11,2) # function name to get numpy array Line 4: S=pd.Series(_A_____, Index=[_0,1,2]) # Data name and indexes Line 5: Print(S)	1
	TOTAL	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: **DATA FRAME**

TOPIC: **CREATE DATA FRAME by various method**
Remove row and column of DataFrame

WORKSHEET NO. 4

QN	Questions	M
1	Write a Python code to create a DataFrame stock with appropriate column headings from the list given below: [[101,'Gurman',98], [102,'Rajveer',95], [103,'Samar' ,96], [104,'Yuvraj',88]]	2
2	Write a Python code to create a DataFrame 'Stock' by using list: Name 0 Nancy Drew 1 Hardy boys 2 Diary of a wimpy kid 3 Harry Potter Price 150 180 225 500	2
3	Write a Python code to create a DataFrame 'Stock' by using dictionary method: Name 0 Nancy Drew 1 Hardy boys 2 Diary of a wimpy kid 3 Harry Potter Price 150 180 225 500	2
4	Write a Python code to create a DataFrame 'Stock' by using Series method: Name 0 Nancy Drew 1 Hardy boys 2 Diary of a wimpy kid 3 Harry Potter Price 150 180 225 500	2
5	Find output of following code <pre>import pandas as pd Year1={'Q1':[5000,10],'Q2':[8000,20],'Q3':[12000,30],'Q4':[18000,40]} df=pd.DataFrame(Year1) print(df)</pre>	2
6	Find output of following code <pre>import pandas as pd Year1={'Q1':[5000,10],'Q2':[8000,20],'Q3':[12000,30],'Q4':[18000,40]} totSales={1:Year1} df=pd.DataFrame(totSales) print(df)</pre>	2
7	What will be the output of following code and Answer the following: i. List the index of the DataFrame df ii. List the column names of DataFrame df.	2

	import pandas as pd Year1={'Q1':5000,'Q2':8000,'Q3':12000,'Q4': 18000} Year2={'A' :13000,'B':14000,'C':12000} totSales={1:Year1,2:Year2} df=pd.DataFrame(totSales) print(df)																
8	Consider the given DataFrame 'Stock': <table><thead><tr><th></th><th>Name</th><th>Price</th></tr></thead><tbody><tr><td>0</td><td>Nancy Drew</td><td>150</td></tr><tr><td>1</td><td>Hardy boys</td><td>180</td></tr><tr><td>2</td><td>Diary of a wimpy kid</td><td>225</td></tr><tr><td>3</td><td>Harry Potter</td><td>500</td></tr></tbody></table> Write suitable Python statements for the following: i. Add a column called Special_Price with the following data: [135,150,200,440]. ii. Add a new book named 'The Secret' having price 800. iii. Remove the column Price. iv.Remove first and third rows from DataFrame		Name	Price	0	Nancy Drew	150	1	Hardy boys	180	2	Diary of a wimpy kid	225	3	Harry Potter	500	4
	Name	Price															
0	Nancy Drew	150															
1	Hardy boys	180															
2	Diary of a wimpy kid	225															
3	Harry Potter	500															
9	Consider the given DataFrame df: <table><thead><tr><th></th><th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th></tr></thead><tbody><tr><td>0</td><td>5000</td><td>8000</td><td>12000</td><td>18000</td></tr><tr><td>1</td><td>10</td><td>20</td><td>30</td><td>40</td></tr></tbody></table> Write suitable Python statements for the following: i. Add a column called Q5 with the following data: [2000,44]. ii. Add a new record with appropriate values. iii. Remove the column Q2, Q4. iv.Remove first and second rows from DataFrame.		Q1	Q2	Q3	Q4	0	5000	8000	12000	18000	1	10	20	30	40	4
	Q1	Q2	Q3	Q4													
0	5000	8000	12000	18000													
1	10	20	30	40													
10	Write a python code to create empty DataFrame	1															
	TOTAL																

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP**NAME OF CHAPTER: **DATA FRAME**TOPIC: **CREATE DATA FRAME by various method****Remove row and column of DataFrame****WORKSHEET NO. 4 (ANSWERS)**

QN	Answers	M
1	<pre>import pandas as pd d=[[101,'Gurman',98],[102,'Rajveer',95],[103,'Samar',96],[104,'Yuvraj',88]] c=['sno','Name','Score'] stock=pd.DataFrame(d,columns=c) print(stock)</pre>	2
2	<pre>import pandas as pd d=[['Nancy Drew',150],\ ['Hardy boys',180],\ ['Diary of a wimpy kid',225],\ ['Harry Potter',500]] c=['Name','Price'] stock=pd.DataFrame(d,columns=c) print(stock)</pre>	2
3	<pre>d={'Name':['Nancy Drew','Hardy boys','Diary of a wimpy kid','Harry Potter'] 'Price':[150,180,225,500]} stock =pd.DataFrame(d) print(stock)</pre>	2
4	<pre>s1=pd.Series(['Nancy Drew','Hardy boys','Diary of a wimpy kid','Harry Potter']) s2=pd.Series([150,180,225,500]) d ={'Name':s1,'Price':s2} stock=pd.DataFrame(d) print(stock)</pre>	2
5	<pre>Q1 Q2 Q3 Q4 0 5000 8000 12000 18000 1 10 20 30 40</pre>	2
6	<pre>1</pre>	2

	Q1 [5000, 10] Q2 [8000, 20] Q3 [12000, 30]	
7	1 2 Q1 5000.0 NaN Q2 8000.0 NaN Q3 12000.0 NaN Q4 8000.0 NaN A NaN 13000.0 B NaN 14000.0 C NaN 12000.0 Index=['Q1','Q2','Q3','Q4','A','B','C'] Columns=[1,2]	2
8	i. stock['Special_Price']=[135,150,200,440] ii. stock.loc['The Secret']=800 iii. stock.drop(['Price'],axis=1,inplace=True) iv. stock.drop([0,2],axis=0,inplace=True)	4
9	i. df['Q5']=[2000,44] ii. df.loc[2]=[100,200,300,400,500] iii. df.drop(['Q2','Q4'],axis=1,inplace=True) iv. df.drop([0,1],axis=0,inplace=True)	4
10	import pandas as pd df=pd.DataFrame() print(df)	1
	TOTAL	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: **DATA FRAME**

TOPIC: **CREATE DATA FRAME by various method**

Remove row and column of DataFrame

WORKSHEET NO. 5

QN	Questions	M																									
1	Write a Python code to create a DataFrame with appropriate column headings from the csv file given below: <table><thead><tr><th></th><th>city</th><th>Maxtemp</th><th>Mintemp</th><th>Rainfall</th></tr></thead><tbody><tr><td>0</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>1</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>2</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>3</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr></tbody></table>		city	Maxtemp	Mintemp	Rainfall	0	Delhi	40	32	24.1	1	Bengaluru	31	25	36.2	2	Chennai	35	27	40.8	3	Mumbai	29	21	35.2	2
	city	Maxtemp	Mintemp	Rainfall																							
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2	Chennai	35	27	40.8																							
3	Mumbai	29	21	35.2																							
2	Write a Python code to create a DataFrame 'temp' by using list: <table><thead><tr><th></th><th>city</th><th>Maxtemp</th><th>Mintemp</th><th>Rainfall</th></tr></thead><tbody><tr><td>0</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>1</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>2</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>3</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr></tbody></table>		city	Maxtemp	Mintemp	Rainfall	0	Delhi	40	32	24.1	1	Bengaluru	31	25	36.2	2	Chennai	35	27	40.8	3	Mumbai	29	21	35.2	2
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3	Write a Python code to create a DataFrame 'temp' by using dictionary method: <table><thead><tr><th></th><th>city</th><th>Maxtemp</th><th>Mintemp</th><th>Rainfall</th></tr></thead><tbody><tr><td>0</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>1</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>2</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>3</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr></tbody></table>		city	Maxtemp	Mintemp	Rainfall	0	Delhi	40	32	24.1	1	Bengaluru	31	25	36.2	2	Chennai	35	27	40.8	3	Mumbai	29	21	35.2	2
	city	Maxtemp	Mintemp	Rainfall																							
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4	Write a Python code to create a DataFrame 'temp' by using Series method: <table><thead><tr><th></th><th>city</th><th>Maxtemp</th><th>Mintemp</th><th>Rainfall</th></tr></thead><tbody><tr><td>0</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>1</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>2</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>3</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr></tbody></table>		city	Maxtemp	Mintemp	Rainfall	0	Delhi	40	32	24.1	1	Bengaluru	31	25	36.2	2	Chennai	35	27	40.8	3	Mumbai	29	21	35.2	2
	city	Maxtemp	Mintemp	Rainfall																							
0	Delhi	40	32	24.1																							
1	Bengaluru	31	25	36.2																							
2	Chennai	35	27	40.8																							
3	Mumbai	29	21	35.2																							
5	Find output of following code <pre>import pandas as pd x={'Qtr1':[5000,10],'Qtr2':[8000,20],'Qtr3':[12000,30],'Qtr4':[18000,40]} df=pd.DataFrame(x) print(df)</pre>	2																									
6	Find output of following code <pre>import pandas as pd x={'Qtr1':[5000,10],'Qtr2':[8000,20],'Qtr3':[12000,30],'Qtr4':[18000,40]} totSales={1:x} df=pd.DataFrame(totSales) print(df)</pre>	2																									

7	What will be the output of following code and Answer the following: i. List the index of the DataFrame df ii. List the column names of DataFrame df. import pandas as pd x={'Qtr1':5000,'Qtr2':8000,'Qtr3':12000,'Qtr4': 18000} y={'p' :13000,'q':14000,'r':12000} totSales={1:x,2:y} df=pd.DataFrame(totSales) print(df)	2																									
8	Consider the given DataFrame `temp`: <table><thead><tr><th></th><th>city</th><th>Maxtemp</th><th>Mintemp</th><th>Rainfall</th></tr></thead><tbody><tr><td>0</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>1</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>2</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>3</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr></tbody></table> Write suitable Python statements for the following: i. Add a column called area with the following data: [135455,153330,225000,442540]. ii. Add a new city named `calcutta` having maxtemp 20,mintemp 12 and rainfall iii. Remove the column rainfall. iv. iv.Remove first and third rows from DataFrame		city	Maxtemp	Mintemp	Rainfall	0	Delhi	40	32	24.1	1	Bengaluru	31	25	36.2	2	Chennai	35	27	40.8	3	Mumbai	29	21	35.2	4
	city	Maxtemp	Mintemp	Rainfall																							
0	Delhi	40	32	24.1																							
1	Bengaluru	31	25	36.2																							
2	Chennai	35	27	40.8																							
3	Mumbai	29	21	35.2																							
9	Consider the given DataFrame df: <table><thead><tr><th></th><th>Qtr1</th><th>Qtr2</th><th>Qtr3</th><th>Qtr4</th></tr></thead><tbody><tr><td>0</td><td>5000</td><td>8000</td><td>12000</td><td>18000</td></tr><tr><td>1</td><td>10</td><td>20</td><td>30</td><td>40</td></tr></tbody></table> Write suitable Python statements for the following: i. Add a column called Qtr5 with the following data: [1444,20]. ii. Add a new record with appropriate values. iii. Remove the column Qtr1, Qtr3. iv. iv.Remove first and second rows from DataFrame.		Qtr1	Qtr2	Qtr3	Qtr4	0	5000	8000	12000	18000	1	10	20	30	40	4										
	Qtr1	Qtr2	Qtr3	Qtr4																							
0	5000	8000	12000	18000																							
1	10	20	30	40																							
10	Write a python code to create empty DataFrame	1																									
	TOTAL																										

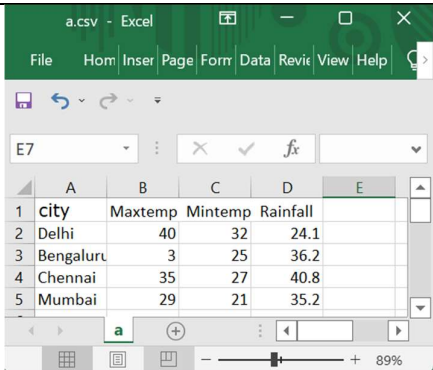
KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: **DATA FRAME**

TOPIC: **CREATE DATA FRAME by various method**

Remove row and column of DataFrame

WORKSHEET NO. 5 (Answers)

QN.	Answers	M
1	 <pre>import pandas as pd df=pd.read_csv(r"C:\Users\rasha\OneDrive\Desktop\a.csv") print(df)</pre>	2
2	<pre>import pandas as pd d=[['Delhi',40,32,24.1],['Bengaluru',31,25,36.2],['Chennai',35,27,40.8], ,['Mumbai',29,21,35.2]] c=['city','Maxtemp','Mintemp','Rainfall'] temp=pd.DataFrame(d,columns=c) print(temp)</pre>	2
3	<pre>import pandas as pd d={'city':['Delhi','Bengaluru','Chennai','Mumbai'],\ 'Maxtemp':[40,31,35,29],\ 'Mintemp':[32,25,27,21],\ 'Rainfall':[24.1,36.2,40.8,35.2]} temp=pd.DataFrame(d) print(temp)</pre>	2
4	<pre>import pandas as pd s1=pd.Series(['Delhi','Bengaluru','Chennai','Mumbai']) s2=pd.Series([40,31,35,29]) s3=pd.Series([32,25,27,21]) s4=pd.Series([24.1,36.2,40.8,35.2]) d={'city':s1,'Maxtemp':s2,'Mintemp':s3,'Rainfall':s4} temp=pd.DataFrame(d) print(temp)</pre>	2

5	Qtr1 Qtr2 Qtr3 Qtr4 0 5000 8000 12000 18000 1 10 20 30 40	2
6	1 Qtr1 [5000, 10] Qtr2 [8000, 20] Qtr3 [12000, 30]	2
7	1 2 Qtr1 5000.0 NaN Qtr2 8000.0 NaN Qtr3 12000.0 NaN Qtr4 18000.0 NaN p NaN 13000.0 q NaN 14000.0 r NaN 12000.0 Index=['Qtr1','Qtr2','Qtr3','Qtr4','p','q','r'] Columns=[1,2]	2
8	i. temp['area `]=[135,150,200,440] ii. temp.loc[4]=['calcutta',20,12,10.2,252522] iii. temp.drop(['rainfall'],axis=1,inplace=True) iv. temp.drop([0,2],axis=0,inplace=True)	4
9	i. df['Qtr5']=[1444,20] ii. df.loc[2]=[11,22,33,40,50] iii. df.drop(['Qtr1','Qtr3'],axis=1,inplace=True) iv. df.drop([0,1],axis=0,inplace=True)	4
10	import pandas as pd df=pd.DataFrame() print(df)	1
	TOTAL	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: **DATA FRAME**

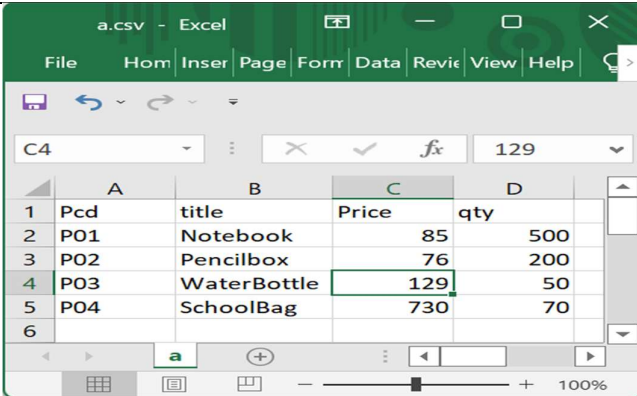
TOPIC: **CREATE DATA FRAME by various method**
Remove row and column of DataFrame

WORKSHEET NO. 6

Q. No	Questions	M
1	Write a Python code to create a DataFrame 'lib' with appropriate column headings from the csv file given below: Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
2	Write a Python code to create a DataFrame 'lib' by using list: Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
3	Write a Python code to create a DataFrame 'lib' by using dictionary method: Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
4	Write a Python code to create a DataFrame 'lib' by using Series method: Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
5	Write a Python code to display output of Transpose of DataFrame . Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
6	Write a Python code to create a DataFrame 'lib' with appropriate column headings save the DataFrame in sample.csv: Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70	2
7	Write a Python code to create a DataFrame 'temp' and save the DataFrame in temp.csv file	2

	<pre> city Maxtemp Mintemp Rainfall 0 Delhi 40 32 24.1 1 Bengaluru 31 25 36.2 2 Chennai 35 27 40.8 3 Mumbai 29 21 35.2 </pre>	
8	Consider the given DataFrame: <pre> Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70 </pre> Write suitable Python statements for the following: - Add a column called ACC_NO with the following data: [135,153,225,442]. - Add a new Record - Remove the column qty. - Remove first and third rows from DataFrame	4
9	Consider the given DataFrame df: <pre> A B C D 0 50 80 120 180 1 110 120 130 140 </pre> Write suitable Python statements for the following: - Add a column called E with the following data: [14,220]. - Add a new record with appropriate values. - Remove the column A, C. - Remove first and second rows from DataFrame.	4
10	Consider the given DataFrame df: <pre> A B C D 0 50 80 120 180 1 110 120 130 140 </pre> Write python code to Transpose df.	1
	TOTAL	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP**NAME OF CHAPTER: **DATA FRAME**TOPIC: **CREATE DATA FRAME by various method****Remove row and column of DataFrame****WORKSHEET NO. 6 (Answers)**

QN	Answers	M
1	 <pre>import pandas as pd lib=pd.read_csv(r"C:\Users\rasha\OneDrive\Desktop\a.csv") print(lib)</pre>	2
2	<pre>import pandas as pd d=[['P01','Notebook',85,500],['P02','Pencilbox',76,200],['P03', 'WaterBottle',129,50],['P04','SchoolBag',730,70]] c=['Pcd','title','Price','qty'] lib=pd.DataFrame(d,columns=c) print(lib)</pre>	2
3	<pre>import pandas as pd d={'Pcd':['P01','P02','P03','P03'],\ 'title':[40,31,35,29],\ 'Price':[85,76,129,730],\ 'qty':[500,200,50,70]} lib=pd.DataFrame(d) print(lib)</pre>	2
4	<pre>import pandas as pd s1=pd.Series(['P01','P02','P03','P03']) s2=pd.Series([40,31,35,29]) s3=pd.Series([85,76,129,730]) s4=pd.Series([500,200,50,70]) d={'Pcd':s1, 'title':s2, 'Price':s3, 'qty':s4} lib=pd.DataFrame(d) print(lib)</pre>	2
5	<pre>Pcd title Price qty 0 P01 Notebook 85 500 1 P02 Pencilbox 76 200 2 P03 WaterBottle 129 50 3 P04 SchoolBag 730 70</pre> Transpose of DATAFRAME df <pre>0 1 2 3</pre>	2

	Pcd P01 P02 P03 P04 Title Notebook Pencilbox WaterBottle SchoolBag Price 85 76 129 730 Qty 500 200 50 70	
6	import pandas as pd d=[['P01','Notebook',85,500],['P02','Pencilbox',76,200],['P03','WaterBottle',129,50],['P04','SchoolBag',730,70]] c=['Pcd','title','Price','qty'] df=pd.DataFrame(d,columns=c) import csv df.to_csv(r"C:\Users\rasha\OneDrive\Desktop\sa.csv")	2
7	import pandas as pd d=[['Delhi',40,32,24.1],['Bengaluru',31,25,36.2],['Chennai',35,27,40.8],['Mumbai',29,21,35.2]] c=['city','Maxtemp','Mintemp','Rainfall'] temp=pd.DataFrame(d,columns=c) import csv temp.to_csv(r"C:\Users\rasha\OneDrive\Desktop\temp.csv")	2
8	i. temp['ACC_NO ']=[135,153,225,442] ii. temp.loc[4]=['p05','bigbook',20,20] iii. temp.drop(['qty'],axis=1,inplace=True) iv. temp.drop([0,2],axis=0,inplace=True)	4
9	i. df['E']=[14,220] ii. df.loc[2]=[11,22,33,40,50] iii. df.drop(['A','C'],axis=1,inplace=True) iv. df.drop([0,1],axis=0,inplace=True)	4
10	print(df.T)	1
	TOTAL	

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Data Frame

TOPIC: max(),min(),sort_values(),sort_index(),sum() function of Data Frame and add two DataFrame, rename index, rename columns and rename both index and columns

WORKSHEET NO. 7

QN	Questions	M																																																								
1	Consider the following dataframe: student_df <table><thead><tr><th>Name</th><th>CLASS</th><th>marks</th></tr></thead><tbody><tr><td>Anamay</td><td>XI</td><td>95</td></tr><tr><td>Aditi</td><td>XI</td><td>82</td></tr><tr><td>Mehak</td><td>XI</td><td>65</td></tr><tr><td>Kriti</td><td>XI</td><td>45</td></tr></tbody></table> 1. Write a statement to get the minimum value of the column marks. 2. Write a statement to get the maximum value of the column marks. 3. Write a statement to get the sum value of the column marks. 4. write a statement to get the average value of the column marks. 5. Write a statement to get Transpose of DataFrame student_df. 6. Write a statement to get the sorted value of the column marks. 7. Write a statement to get the sorted value of the column name ascending. 8. Write a statement to get the sorted value of the column name descending. 9. Write a statement to get the sort index of DataFrame. 10. Write a statement to get the sorted column index of DataFrame.	Name	CLASS	marks	Anamay	XI	95	Aditi	XI	82	Mehak	XI	65	Kriti	XI	45	[10x1]																																									
Name	CLASS	marks																																																								
Anamay	XI	95																																																								
Aditi	XI	82																																																								
Mehak	XI	65																																																								
Kriti	XI	45																																																								
2	Write the code in pandas to create the following DataFrames: <table><thead><tr><th colspan="2">df1</th><th colspan="2">df2</th></tr><tr><th>mark1</th><th>mark2</th><th>mark1</th><th>mark2</th></tr></thead><tbody><tr><td>0</td><td>10 15</td><td>0</td><td>30 20</td></tr><tr><td>1</td><td>40 45</td><td>1</td><td>20 25</td></tr><tr><td>2</td><td>15 30</td><td>2</td><td>20 30</td></tr><tr><td>3</td><td>40 70</td><td>4</td><td>40 10</td></tr><tr><td>5</td><td>10 50</td><td>3</td><td>50 30</td></tr></tbody></table> Write the commands to do the following operations on the DataFrames given above: 1.To add DataFrames df1 and df2. 2.To add 10 values into df1 DataFrame 3.To add 5 values into mark1 columns of DataFrame 4.To add DataFrame d1 into d2 <table><thead><tr><th colspan="2">d1</th><th colspan="2">d2</th></tr><tr><th>mark1</th><th>mark2</th><th>mark1</th><th>mark2</th></tr></thead><tbody><tr><td>0</td><td>10 15</td><td>0</td><td>30 20</td></tr><tr><td>1</td><td>40 45</td><td>1</td><td>20 25</td></tr><tr><td>2</td><td>15 30</td><td>2</td><td>20 30</td></tr><tr><td>3</td><td>40 70</td><td>4</td><td>40 10</td></tr><tr><td>5</td><td>10 50</td><td>3</td><td>50 30</td></tr></tbody></table> 5.To subtract df2 from df1	df1		df2		mark1	mark2	mark1	mark2	0	10 15	0	30 20	1	40 45	1	20 25	2	15 30	2	20 30	3	40 70	4	40 10	5	10 50	3	50 30	d1		d2		mark1	mark2	mark1	mark2	0	10 15	0	30 20	1	40 45	1	20 25	2	15 30	2	20 30	3	40 70	4	40 10	5	10 50	3	50 30	[10x1]
df1		df2																																																								
mark1	mark2	mark1	mark2																																																							
0	10 15	0	30 20																																																							
1	40 45	1	20 25																																																							
2	15 30	2	20 30																																																							
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mark1	mark2	mark1	mark2																																																							
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2	15 30	2	20 30																																																							
3	40 70	4	40 10																																																							
5	10 50	3	50 30																																																							

	6.To rename column mark1 as m1 in df2. 7.To change index label of df1 from 0 to zero and from 1 to one 8.To rename column mark1 as m1, mark2 as m2 and row 0 to 00 and 1 to 01 of df2 DataFrame 9.To change the column heading of df1 to m11 for mark1 and m12 for mark2 10. Do for following d1 <table> <thead> <tr> <th></th><th>mark1</th><th>mark2</th></tr> </thead> <tbody> <tr> <td>0</td><td>10</td><td>15</td></tr> <tr> <td>1</td><td>40</td><td>45</td></tr> </tbody> </table> f1 <table> <thead> <tr> <th></th><th>m1</th><th>m2</th></tr> </thead> <tbody> <tr> <td>0</td><td>10</td><td>15</td></tr> <tr> <td>1</td><td>40</td><td>45</td></tr> </tbody> </table> d2 <table> <thead> <tr> <th></th><th>mark1</th><th>mark2</th></tr> </thead> <tbody> <tr> <td>0</td><td>30</td><td>20</td></tr> <tr> <td>1</td><td>20</td><td>25</td></tr> </tbody> </table> f2 <table> <thead> <tr> <th></th><th>mark1</th><th>mark2</th></tr> </thead> <tbody> <tr> <td>0</td><td>30</td><td>20</td></tr> <tr> <td>1</td><td>20</td><td>25</td></tr> </tbody> </table> Print(d1[:2]+d2[:2]) Print(f1[:2]+f2[:2])		mark1	mark2	0	10	15	1	40	45		m1	m2	0	10	15	1	40	45		mark1	mark2	0	30	20	1	20	25		mark1	mark2	0	30	20	1	20	25	
	mark1	mark2																																				
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TOTAL		20																																				

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Data Frame

TOPIC: max(),min(),sort_values(),sort_index(),sum() function of Data Frame and add two DataFrame,rename index,rename columns and rename both index and columns

WORKSHEET NO. 7 (Answers)

QN	Answers	M
1	Consider the following DataFrame: student_df <pre>Name CLASS marks Anamay XI 95 Aditi XI 82 Mehak XI 65 Kriti XI 45</pre> 1. Write a statement to get the minimum value of the column marks. >>> student_df["marks"].min() 45 2. Write a statement to get the maximum value of the column marks. >>> student_df["marks"].max() 95 3. Write a statement to get the sum value of the column marks. >>> student_df["marks"].sum() 287 4. write a statement to get the average value of the column marks. >>> student_df["marks"].mean() 71.75 5. Write a statement to get Transpose of DataFrame student_df. student_df.T <pre> 0 1 2 3 Name Anamay Aditi Mehak Kriti CLASS XI XI XI XI marks 95 82 65 45</pre> 6. Write a statement to get the sorted value of the column marks. Default: ascending student_df.sort_values(by=["marks"]) or student_df.sort_values(by=["marks"],ascending=True) <pre> Name CLASS marks 3 Kriti XI 45 2 Mehak XI 65 1 Aditi XI 82 0 Anamay XI 95</pre> 7. Write a statement to get the sorted value of the column name ascending.	2

	<pre>student_df.sort_values(by=["Name"],ascending=True)</pre> <table><thead><tr><th></th><th>Name</th><th>CLASS</th><th>marks</th></tr></thead><tbody><tr><td>1</td><td>Aditi</td><td>XI</td><td>82</td></tr><tr><td>0</td><td>Anamay</td><td>XI</td><td>95</td></tr><tr><td>3</td><td>Kriti</td><td>XI</td><td>45</td></tr><tr><td>2</td><td>Mehak</td><td>XI</td><td>65</td></tr></tbody></table> 8. Write a statement to get the sorted value of the column name descending. <pre>student_df.sort_values(by=["Name"],ascending=False)</pre> <table><thead><tr><th></th><th>Name</th><th>CLASS</th><th>marks</th></tr></thead><tbody><tr><td>2</td><td>Mehak</td><td>XI</td><td>65</td></tr><tr><td>3</td><td>Kriti</td><td>XI</td><td>45</td></tr><tr><td>0</td><td>Anamay</td><td>XI</td><td>95</td></tr><tr><td>1</td><td>Aditi</td><td>XI</td><td>82</td></tr></tbody></table> 9. Write a statement to get the sort index of DataFrame. <pre>student_df.sort_index()</pre> or <pre>student_df.sort_index(ascending=True)</pre> <table><thead><tr><th></th><th>Name</th><th>CLASS</th><th>marks</th></tr></thead><tbody><tr><td>0</td><td>Anamay</td><td>XI</td><td>95</td></tr><tr><td>1</td><td>Aditi</td><td>XI</td><td>82</td></tr><tr><td>2</td><td>Mehak</td><td>XI</td><td>65</td></tr><tr><td>3</td><td>Kriti</td><td>XI</td><td>45</td></tr></tbody></table> 10. Write a statement to get the sorted column index of DataFrame. <pre>student_df.sort_index(axis=1,ascending=False)</pre> <table><thead><tr><th></th><th>marks</th><th>CLASS</th><th>Name</th></tr></thead><tbody><tr><td>0</td><td>95</td><td>XI</td><td>Anamay</td></tr><tr><td>1</td><td>82</td><td>XI</td><td>Aditi</td></tr><tr><td>2</td><td>65</td><td>XI</td><td>Mehak</td></tr><tr><td>3</td><td>45</td><td>XI</td><td>Kriti</td></tr></tbody></table>		Name	CLASS	marks	1	Aditi	XI	82	0	Anamay	XI	95	3	Kriti	XI	45	2	Mehak	XI	65		Name	CLASS	marks	2	Mehak	XI	65	3	Kriti	XI	45	0	Anamay	XI	95	1	Aditi	XI	82		Name	CLASS	marks	0	Anamay	XI	95	1	Aditi	XI	82	2	Mehak	XI	65	3	Kriti	XI	45		marks	CLASS	Name	0	95	XI	Anamay	1	82	XI	Aditi	2	65	XI	Mehak	3	45	XI	Kriti	
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2	1. To add DataFrames df1 and df2. <pre>df1+df2</pre> <table><thead><tr><th></th><th>mark1</th><th>mark2</th></tr></thead><tbody><tr><td>0</td><td>40</td><td>35</td></tr><tr><td>1</td><td>60</td><td>70</td></tr><tr><td>2</td><td>35</td><td>60</td></tr><tr><td>3</td><td>90</td><td>100</td></tr></tbody></table> 2. To add 10 values into df1 DataFrame <pre>df1+10</pre> <table><thead><tr><th></th><th>mark1</th><th>mark2</th></tr></thead><tbody><tr><td>0</td><td>20</td><td>25</td></tr><tr><td>1</td><td>50</td><td>55</td></tr><tr><td>2</td><td>25</td><td>40</td></tr><tr><td>3</td><td>50</td><td>80</td></tr></tbody></table> 3. To add 5 values into mark1 columns of DataFrame <pre>df1["mark1"]+5</pre>		mark1	mark2	0	40	35	1	60	70	2	35	60	3	90	100		mark1	mark2	0	20	25	1	50	55	2	25	40	3	50	80	2																																																		
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3	90	100																																																																																
	mark1	mark2																																																																																
0	20	25																																																																																
1	50	55																																																																																
2	25	40																																																																																
3	50	80																																																																																

```

0  15
1  45
2  20
3  45
Name:          mark1,          dtype:          int64

```

```

4.d1          d2
   mark1 mark2      mark1 mark2
0   10    15        0   30    20
1   40    45        1   20    25
2   15    30        2   20    30
3   40    70        4   40    10
5   10    50        3   50    30

```

To add DataFrame d1 into d2

```

d1+d2
   mark1 mark2
0  40.0  35.0
1  60.0  70.0
2  35.0  60.0
3  90.0 100.0
4   NaN   NaN
5   NaN   NaN
>>>

```

5. To subtract df2 from df1

```

df2-df1
   mark1 mark2
0    20     5
1   -20   -20
2     5     0
3    10   -40

```

6.To rename column mark1 as m1 in df2.

```
df2.rename(columns={"mark1":"m1"})
```

```

   m1 mark2
0  30    20
1  20    25
2  20    30
3  50    30
4  40    10

```

7.To change index label of df1 from 0 to zero and from 1 to one

```
>>> df1.index=["zero","one","two","three","five"]
```

```

>>> df1
   mark1 mark2
zero    10    15
one     40    45
two     15    30
three   40    70
five    10    50

```

	8 .To rename column mark1 as m1,mark2 as m2 and row 0 to 00 and 1 to 01 of df2 DataFrame <pre>df2.rename(index={0:"00",1:"01"},columns={"mark1":"m1","mark2":"m2"})</pre> <pre> m1 m2 00 30 20 01 20 25 2 20 30 3 40 10 4 50 30 </pre> 9.To change the column heading of df1 to m11 for mark1 and m12 for mark2 <pre>df1.columns=["m11","m12"] # changes in original variable</pre> <pre>>>> df1</pre> <pre> m11 m12 0 30 20 1 20 25 2 20 30 3 40 10 4 50 30 </pre> 10. 10.do for following d1 <pre> mark1 mark2 0 10 15 1 40 45 </pre> f1 <pre> m1 m2 0 10 15 1 40 45 </pre> d2 <pre> mark1 mark2 0 30 20 1 20 25 </pre> f2 <pre> mark1 mark2 0 30 20 1 20 25 </pre> <pre> Print(d1[:2]+d2[:2]) Print(f1[:2]+f2[:2]) >>> d1[:2]+d2[:2] mark1 mark2 0 40 35 1 60 70 >>> f1[:2]+f2[:2] m1 m2 mark1 mark2 0 NaN NaN NaN NaN 1 NaN NaN NaN NaN </pre>	
TOTAL		

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP**

NAME OF CHAPTER: Data Frame

TOPIC: max(),min(),sort_values(),sort_index(),sum() function of Data Frame and add two DataFrame, rename index, rename columns and rename both index and columns:

WORKSHEET NO. 8

Q. No	Questions	M
1	Create following batsman DataFrame using csv method <pre>Bno name score1 score2 0 1 Sunil Grover 90 80 1 2 sourav ganguli 65 45 2 3 virat kohli 70 90 3 4 Rahul dravid 80 70</pre> Do following operation 1) Add score1 and score2 and assign it to column total 2) Display lowest score of score1. 3) Display highest score of score2 4) change index to player1,player2, player3,player4 5) Display all the details of DataFrame whose score1 <75 6) Display only name of DataFrame whose score1 <75 7) Display name and score1 of DataFrame whose score1 <75 8) Display DataFrame in descending order of score2 9) Change the column name to batsmanno,bname, s1 ,s2 and sum of DataFrame 10)Add 5 score to those who have more than 75 score2	[1x10]
	TOTAL	10

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: Data Frame

TOPIC: max(),min(),sort_values(),sort_index(),sum() function of Data Frame and add two DataFrame, rename index, rename columns and rename both index and columns, filtering of DataFrame

WORKSHEET NO. 8 (Answers)

QN	Answers	M																																																																			
1	<pre>import pandas as pd >>> batsman=pd.read_csv(r"C:\Users\rasha\OneDrive\Desktop\batsman.csv") >>> batsman</pre> <table><tr><th></th><th>Bno</th><th>name</th><th>score1</th><th>score2</th></tr><tr><td>0</td><td>1</td><td>Sunil Grover</td><td>90</td><td>80</td></tr><tr><td>1</td><td>2</td><td>sourav ganguli</td><td>65</td><td>45</td></tr><tr><td>2</td><td>3</td><td>virat kohli</td><td>70</td><td>90</td></tr><tr><td>3</td><td>4</td><td>Rahul dravid</td><td>80</td><td>70</td></tr></table> 1.Add score1 and score2 and assign it to column total <pre>>>> batsman["total"]=batsman["score1"]+batsman["score2"] >>> batsman</pre> <table><tr><th></th><th>Bno</th><th>name</th><th>score1</th><th>score2</th><th>total</th></tr><tr><td>0</td><td>1</td><td>Sunil Grover</td><td>90</td><td>80</td><td>170</td></tr><tr><td>1</td><td>2</td><td>sourav ganguli</td><td>65</td><td>45</td><td>110</td></tr><tr><td>2</td><td>3</td><td>virat kohli</td><td>70</td><td>90</td><td>160</td></tr><tr><td>3</td><td>4</td><td>Rahul dravid</td><td>80</td><td>70</td><td>150</td></tr></table> 2 Display lowest score of score1. <pre>>>> min(batsman["score1"]) 65 or >>> batsman["score1"].min() 65</pre> 3 Display highest score of score2. <pre>>>> max(batsman["score2"]) 90 or >>> batsman["score2"].max() 90</pre> 4. change index to player1,player2, player3,player4 <pre>>>> batsman.index=["player1","player2","player3","player4"] Or >>> batsman.rename(index={0:"player1",1:"player2",2:"player3",3:"player4"}, inplace=True) >>> batsman</pre> <table><tr><th></th><th>Bno</th><th>name</th><th>score1</th><th>score2</th><th>total</th></tr><tr><td>player1</td><td>1</td><td>Sunil Grover</td><td>90</td><td>80</td><td>170</td></tr></table>		Bno	name	score1	score2	0	1	Sunil Grover	90	80	1	2	sourav ganguli	65	45	2	3	virat kohli	70	90	3	4	Rahul dravid	80	70		Bno	name	score1	score2	total	0	1	Sunil Grover	90	80	170	1	2	sourav ganguli	65	45	110	2	3	virat kohli	70	90	160	3	4	Rahul dravid	80	70	150		Bno	name	score1	score2	total	player1	1	Sunil Grover	90	80	170	2
	Bno	name	score1	score2																																																																	
0	1	Sunil Grover	90	80																																																																	
1	2	sourav ganguli	65	45																																																																	
2	3	virat kohli	70	90																																																																	
3	4	Rahul dravid	80	70																																																																	
	Bno	name	score1	score2	total																																																																
0	1	Sunil Grover	90	80	170																																																																
1	2	sourav ganguli	65	45	110																																																																
2	3	virat kohli	70	90	160																																																																
3	4	Rahul dravid	80	70	150																																																																
	Bno	name	score1	score2	total																																																																
player1	1	Sunil Grover	90	80	170																																																																

player2	2	sourav Ganguli	65	45	110
player3	3	virat kohli	70	90	160
player4	4	Rahul dravid	80	70	150

5) Display all the details of DataFrame whose score1 < 75

```
batsman[batsman["score1"]<75]
```

	Bno	name	score1	score2	total
player2	2	sourav ganguli	65	45	110
player3	3	virat kohli	70	90	160

6) Display only name of DataFrame whose score1 < 75

```
>>> batsman[batsman["score1"]<75].name
```

```
player2    sourav ganguli
player3    virat kohli
Name: name, dtype: object
or
```

```
>>> batsman[batsman["score1"]<75]["name"]
```

```
player2    sourav ganguli
player3    virat kohli
Name: name, dtype: object
```

7) Display name and score1 of DataFrame whose score1 < 75

```
>>> batsman[batsman["score1"]<75][["name","score1"]]
```

	name	score1
player2	sourav ganguli	65
player3	virat kohli	70

8) Display DataFrame in descending order of score2

```
batsman.sort_values(by=["score1"],ascending=False)
```

	Bno	name	score1	score2	total
player1	1	Sunil Grover	90	80	170
player4	4	Rahul dravid	80	70	150
player3	3	virat kohli	70	90	160
player2	2	sourav ganguli	65	45	110

9) Change the column name to batsmanno, bname, s1, s2 and sum of DataFrame

```
>>> batsman.columns=["batsmanno","bname","s1","s2","sum"]
```

```
>>> batsman
```

	batsmanno	bname	s1	s2	sum
player1	1	Sunil Grover	90	80	170
player2	2	sourav ganguli	65	45	110
player3	3	virat kohli	70	90	160
player4	4	Rahul dravid	80	70	150

10) Add 5 score to those who have more than 75 score2

```
batsman[batsman["s2"]>75]["s2"]+5
```

```
player1    85
player3    95
```

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: DataFrame

TOPIC: Access row and column using loc and iloc method, access and change individual element of data frame by at and iat

WORKSHEET NO. 9

QN	Questions					M																																																		
1	loc and iloc Create DataFrame df using csv method and write python code as per direction <table><tr><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><th></th><th>Product</th><th>Company</th><th>qty</th><th>price</th></tr><tr><td>0</td><td>101</td><td>cpu</td><td>compaq</td><td>40 9000</td></tr><tr><td>1</td><td>102</td><td>mouse</td><td>compaq</td><td>20 400</td></tr><tr><td>2</td><td>103</td><td>keyboard</td><td>dell</td><td>10 700</td></tr><tr><td>3</td><td>104</td><td>printer</td><td>hp</td><td>2 20000</td></tr><tr><td>4</td><td>105</td><td>hdd</td><td>sony</td><td>500 450</td></tr><tr><td>5</td><td>106</td><td>cd</td><td>sony</td><td>1000 25</td></tr><tr><td>6</td><td>107</td><td>scanner</td><td>hp</td><td>4 5500</td></tr><tr><td>7</td><td>108</td><td>speaker</td><td>dell</td><td>6 900</td></tr></table> 1)Display all product except product no 101 and 102 2)Display all the product details of record no 102,104 and 106. 3)Display product and company details of all records of DataFrame 4)Display product and company details of 101 and 104 records of DataFrame 5)Display name of all products of DataFrame. 6)Display first record of DataFrame. 7)Display price of all product of DataFrame. 8)Display company name of all product of DataFrame. 9)Display quantity and company details of all records of DataFrame 10)Display the details of record no 104						0	1	2	3		Product	Company	qty	price	0	101	cpu	compaq	40 9000	1	102	mouse	compaq	20 400	2	103	keyboard	dell	10 700	3	104	printer	hp	2 20000	4	105	hdd	sony	500 450	5	106	cd	sony	1000 25	6	107	scanner	hp	4 5500	7	108	speaker	dell	6 900	
	0	1	2	3																																																				
	Product	Company	qty	price																																																				
0	101	cpu	compaq	40 9000																																																				
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2	<table><tr><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><th></th><th>Product</th><th>Company</th><th>qty</th><th>price</th></tr><tr><td>0</td><td>101</td><td>cpu</td><td>compaq</td><td>40 9000</td></tr><tr><td>1</td><td>102</td><td>mouse</td><td>compaq</td><td>20 400</td></tr><tr><td>2</td><td>103</td><td>keyboard</td><td>dell</td><td>10 700</td></tr><tr><td>3</td><td>104</td><td>printer</td><td>hp</td><td>2 20000</td></tr><tr><td>4</td><td>105</td><td>hdd</td><td>sony</td><td>500 450</td></tr><tr><td>5</td><td>106</td><td>cd</td><td>sony</td><td>1000 25</td></tr><tr><td>6</td><td>107</td><td>scanner</td><td>hp</td><td>4 5500</td></tr><tr><td>7</td><td>108</td><td>speaker</td><td>dell</td><td>6 900</td></tr></table> 1)Display quantity of first record. 2)display company name of record no 105 3)Change the quantity of record no.104 to 50 4)Add new record ["mic","dell",100,450] into df DataFrame 5) change record no 105 with following details ["plotter","sony",2,26000] 6) Change the company name to lenovo of record no 101 and 102 7) Change the company name to acer and quantity ot 400 of record no 101 and 102 8) change the company and quantity details of 101 and 102 record As per given below						0	1	2	3		Product	Company	qty	price	0	101	cpu	compaq	40 9000	1	102	mouse	compaq	20 400	2	103	keyboard	dell	10 700	3	104	printer	hp	2 20000	4	105	hdd	sony	500 450	5	106	cd	sony	1000 25	6	107	scanner	hp	4 5500	7	108	speaker	dell	6 900	
	0	1	2	3																																																				
	Product	Company	qty	price																																																				
0	101	cpu	compaq	40 9000																																																				
1	102	mouse	compaq	20 400																																																				
2	103	keyboard	dell	10 700																																																				
3	104	printer	hp	2 20000																																																				
4	105	hdd	sony	500 450																																																				
5	106	cd	sony	1000 25																																																				
6	107	scanner	hp	4 5500																																																				
7	108	speaker	dell	6 900																																																				
TOTAL																																																								

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: DataFrame

TOPIC: Access row and column using loc and iloc method, access and change individual element of DataFrame by at and iat

WORKSHEET NO. 9 (Answers)

QN	Answers	M																																																																																																																						
1	<pre>import pandas as pd >>>df=pd.read_csv(r"C:\Users\rasha\OneDrive\Desktop\comp.csv") >>> df df.index=["101","102","103","104","105","106","107","108"]</pre> <table><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><th></th><th></th><th>Product</th><th>Company</th><th>qty</th><th>price</th></tr><tr><td>0</td><td>101</td><td>cpu</td><td>compaq</td><td>40</td><td>9000</td></tr><tr><td>1</td><td>102</td><td>mouse</td><td>compaq</td><td>20</td><td>400</td></tr><tr><td>2</td><td>103</td><td>keyboard</td><td>dell</td><td>10</td><td>700</td></tr><tr><td>3</td><td>104</td><td>printer</td><td>hp</td><td>2</td><td>20000</td></tr><tr><td>4</td><td>105</td><td>hdd</td><td>sony</td><td>500</td><td>450</td></tr><tr><td>5</td><td>106</td><td>cd</td><td>sony</td><td>1000</td><td>25</td></tr><tr><td>6</td><td>107</td><td>scanner</td><td>hp</td><td>4</td><td>5500</td></tr><tr><td>7</td><td>108</td><td>speaker</td><td>dell</td><td>6</td><td>900</td></tr></table> <pre>>>> df[101:] Empty DataFrame Columns: [Product, Company, qty, price] Index: [] 1)Display all product except product no 101 and 102 df["103":] or df.loc["103":] or df.iloc[2:]</pre> <table><tr><th></th><th>Product</th><th>Company</th><th>qty</th><th>price</th></tr><tr><td>103</td><td>keyboard</td><td>dell</td><td>10</td><td>700</td></tr><tr><td>104</td><td>printer</td><td>hp</td><td>2</td><td>20000</td></tr><tr><td>105</td><td>hdd</td><td>sony</td><td>500</td><td>450</td></tr><tr><td>106</td><td>cd</td><td>sony</td><td>1000</td><td>25</td></tr><tr><td>107</td><td>scanner</td><td>hp</td><td>4</td><td>5500</td></tr><tr><td>108</td><td>speaker</td><td>dell</td><td>6</td><td>900</td></tr></table> 2)Display all the product details of record no 102,104 and 106. <pre>df.loc[["102","104","106"]] or df.iloc[[1,3,5]]</pre> <table><tr><th></th><th>Product</th><th>Company</th><th>qty</th><th>price</th></tr><tr><td>102</td><td>mouse</td><td>compaq</td><td>20</td><td>400</td></tr><tr><td>104</td><td>printer</td><td>hp</td><td>2</td><td>20000</td></tr><tr><td>106</td><td>cd</td><td>sony</td><td>1000</td><td>25</td></tr></table> 3)Display product and company details of all records of DataFrame <pre>df.loc[:,['Product','Company']] or df.iloc[:,[0,1]]</pre> <table><tr><th></th><th>Product</th><th>Company</th></tr></table>			0	1	2	3			Product	Company	qty	price	0	101	cpu	compaq	40	9000	1	102	mouse	compaq	20	400	2	103	keyboard	dell	10	700	3	104	printer	hp	2	20000	4	105	hdd	sony	500	450	5	106	cd	sony	1000	25	6	107	scanner	hp	4	5500	7	108	speaker	dell	6	900		Product	Company	qty	price	103	keyboard	dell	10	700	104	printer	hp	2	20000	105	hdd	sony	500	450	106	cd	sony	1000	25	107	scanner	hp	4	5500	108	speaker	dell	6	900		Product	Company	qty	price	102	mouse	compaq	20	400	104	printer	hp	2	20000	106	cd	sony	1000	25		Product	Company	2
		0	1	2	3																																																																																																																			
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101	cpu	compaq
102	mouse	compaq
103	keyboard	dell
104	printer	hp
105	hdd	sony
106	cd	sony
107	scanner	hp
108	speaker	dell

4) Display product and company details of 101 and 104 records of DataFrame

```
df.loc[["101","104"],['Product','Company']]  
or df.iloc[[0,3],[0,1]]
```

	Product	Company
101	cpu	compaq
104	printer	hp

5) Display name of all products of DataFrame.

```
df['Product'] or df.loc[:, 'Product'] or df.iloc[:,1]
```

101	cpu
102	mouse
103	keyboard
104	printer
105	hdd
106	cd
107	scanner
108	speaker

Name: Product, dtype: object

6) Display first record of DataFrame.

```
df.iloc[:1] or df.iloc[0] or df.loc["101"] or df.loc[:"101"]
```

	Product	Company	qty	price
101	cpu	compaq	40	9000

7) Display price of all product of DataFrame.

```
df.loc[:, 'price'] or df.iloc[:,3] or df['price']
```

101	9000
102	400
103	700
104	20000
105	450
106	25
107	5500
108	900

8) Display company name of all product of DataFrame.

```
df.loc[:, 'Company'] or df.iloc[:,1] or df['Company']
```

101	compaq
102	compaq
103	dell

	<pre> 104 hp 105 sony 106 sony 107 hp 108 dell 9)Display quantity and company details of all records of DataFrame df.loc[:,['Product','qty']] or df.iloc[:,[0,2]] Product qty 101 cpu 40 102 mouse 20 103 keyboard 10 104 printer 2 105 hdd 500 106 cd 1000 107 scanner 4 108 speaker 6 10)Display the details of record no 104 df.loc["104"]or df.iloc[3] or df.loc["104":"104"] or df.iloc[3:4] Product Company qty price 104 printer hp 2 20000 </pre>	
2	<pre> 1)Display quantity of first record. df.at["101",'qty'] or df.iat[0,2] 40 2)display company name of record no 105 df.at["105",'Company'] or >>> df.iat[4,1] 'sony' 3)Change the quantity of record no.104 to 50 df.at["104",'qty'] =50 or df.iat[3,2] =50 4)Add new record ["mic","dell",100,450] into df DataFrame >>> df.loc["109"]=["mic","dell",100,450] >>> df Product Company qty price 101 cpu compaq 40 9000 102 mouse compaq 20 400 103 keyboard dell 10 700 104 printer hp 50 20000 105 hdd sony 500 450 106 cd sony 1000 25 107 scanner hp 4 5500 108 speaker dell 6 900 109 mic dell 100 450 . 5) change record no 105 with following details ["plotter","sony",2,26000] >>> df.loc["105"]=["plotter","sony",2,26000] </pre>	2

```
>>> df
      Product  Company  qty  price
101    cpu    compaq   40   9000
102  mouse    compaq   20    400
103 keyboard    dell   10    700
104  printer     hp   50  20000
105  plotter    sony    2  26000
106    cd      sony  1000    25
107 scanner     hp    4   5500
108 speaker    dell    6    900
109    mic      dell   100   450
```

6) Change the company name to lenove of record no 101 and 102

```
df.loc["101":"102",'Company']="lenovo"
```

```
>>> df
      Product  Company  qty  price
101    cpu    lenovo   40   9000
102  mouse    lenovo   20    400
103 keyboard    dell   10    700
104  printer     hp   50  20000
105  plotter    sony    2  26000
106    cd      sony  1000    25
107 scanner     hp    4   5500
108 speaker    dell    6    900
109    mic      dell   100   450
```

7) Change the company name to acer and quantity ot 400 of record no 101 and 102

```
df.loc["101":"102",'Company':'qty']=["acer",400]
```

```
>>> df
      Product  Company  qty  price
101    cpu      acer   400   9000
102  mouse      acer   400    400
103 keyboard    dell   10    700
104  printer     hp   50  20000
105  plotter    sony    2  26000
106    cd      sony  1000    25
107 scanner     hp    4   5500
108 speaker    dell    6    900
109    mic      dell   100   450
```

8) change the company and quantity details of 101 and 102 record

As per given below

101 intel 50

102 samsung 50

```
>>>
```

```
df.loc["101":"102",'Company':'qty']=[["intel",50],["samsung",50]]
```

```
>>> df
      Product  Company  qty  price
101    cpu      intel   50   9000
102  mouse    samsung   50    400
```

	103	keyboard	dell	10	700	
	104	printer	hp	50	20000	
	105	plotter	sony	2	26000	
	106	cd	sony	1000	25	
	107	scanner	hp	4	5500	
	108	speaker	dell	6	900	
	109	mic	dell	100	450	
	TOTAL					

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: DataFrame

TOPIC: Access row and column using loc and iloc method, access and change individual element of DataFrame by at and iat

WORKSHEET NO. 10

Q. No	Questions	M																																																												
1	loc and iloc Create DataFrame df using csv method and write python code as per direction <table><tr><th></th><th></th><th>0</th><th>1</th><th>2</th><th>3</th></tr><tr><td></td><td></td><td>name</td><td>dept</td><td>age</td><td>salary</td></tr><tr><td>0</td><td>101</td><td>Heena</td><td>sales</td><td>40</td><td>14000</td></tr><tr><td>1</td><td>102</td><td>Ayush</td><td>Purchase</td><td>28</td><td>20400</td></tr><tr><td>2</td><td>103</td><td>diohm</td><td>sales</td><td>30</td><td>37700</td></tr><tr><td>3</td><td>104</td><td>varshabh</td><td>Purchase</td><td>25</td><td>20000</td></tr><tr><td>4</td><td>105</td><td>shubhi</td><td>Purchase</td><td>22</td><td>45000</td></tr><tr><td>5</td><td>106</td><td>priyansh</td><td>sales</td><td>21</td><td>10000</td></tr><tr><td>6</td><td>107</td><td>ankush</td><td>IT</td><td>40</td><td>55000</td></tr><tr><td>7</td><td>108</td><td>samy</td><td>IT</td><td>36</td><td>60900</td></tr></table> 1)Display all product except product no 101 and 102 2)Display all the product details of record no 102,104 and 106. 3)Display product and company details of all records of DataFrame 4)Display product and company details of 101 and 104 records of DataFrame 5)Display name of all products of DataFrame. 6)Display first record of DataFrame. 7)Display price of all product of DataFrame. 8)Display company name of all product of DataFrame. 9)Display quantity and company details of all records of DataFrame 10)Display the details of record no 104			0	1	2	3			name	dept	age	salary	0	101	Heena	sales	40	14000	1	102	Ayush	Purchase	28	20400	2	103	diohm	sales	30	37700	3	104	varshabh	Purchase	25	20000	4	105	shubhi	Purchase	22	45000	5	106	priyansh	sales	21	10000	6	107	ankush	IT	40	55000	7	108	samy	IT	36	60900	1x10
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7	108	samy	IT	36	60900																																																									
2	1)Display name of first record. 2)display name of record no 105 3)Change the salary of record no.104 to 50000 4) Add new record ["raksha","comp",40,45000]into df DataFrame 5) 5) change record no 105 with following details ["subhi","sales",27,26000] 6) Change the deptt name to lenovo of record no 101 and 102 7) Change the department name to comp and age to 30 of record no 101 and 102 8) change the dept and salary details of 101 and 102 record	1x8																																																												
	TOTAL	18																																																												

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER: DataFrame

TOPIC: Access row and column using loc and iloc method, access and change individual element of DataFrame by at and iat

WORKSHEET NO. 10 (Answers)

QN	Answers	M																																																																																																																									
1	<pre>import pandas as pd >>> df=pd.read_csv(r"C:\Users\rasha\OneDrive\Desktop\comp.csv") >>> df df.index=["101","102","103","104","105","106","107","108"]</pre> <table><tr><th></th><th>⁰name</th><th>¹dept</th><th>²age</th><th>³salary</th></tr><tr><td>101</td><td>Heena</td><td>sales</td><td>40</td><td>14000</td></tr><tr><td>102</td><td>Ayush</td><td>Purchase</td><td>28</td><td>20400</td></tr><tr><td>103</td><td>diohm</td><td>sales</td><td>30</td><td>37700</td></tr><tr><td>104</td><td>varshabh</td><td>Purchase</td><td>25</td><td>20000</td></tr><tr><td>105</td><td>shubhi</td><td>Purchase</td><td>22</td><td>45000</td></tr><tr><td>106</td><td>priyansh</td><td>sales</td><td>21</td><td>10000</td></tr><tr><td>107</td><td>ankush</td><td>IT</td><td>40</td><td>55000</td></tr><tr><td>108</td><td>samy</td><td>IT</td><td>36</td><td>60900</td></tr></table> 1)Display all employee except employee no 101 and 102 df["103":] or df.loc["103":] or df.iloc[2:] <table><tr><th></th><th>name</th><th>dept</th><th>age</th><th>salary</th></tr><tr><td>103</td><td>diohm</td><td>sales</td><td>30</td><td>37700</td></tr><tr><td>104</td><td>varshabh</td><td>Purchase</td><td>25</td><td>20000</td></tr><tr><td>105</td><td>shubhi</td><td>Purchase</td><td>22</td><td>45000</td></tr><tr><td>106</td><td>priyansh</td><td>sales</td><td>21</td><td>10000</td></tr><tr><td>107</td><td>ankush</td><td>IT</td><td>40</td><td>55000</td></tr><tr><td>108</td><td>samy</td><td>IT</td><td>36</td><td>60900</td></tr></table> 2)Display all the employee details of record no 102,104 and 106. df.loc[["102","104","106"]] or df.iloc[[1,3,5]] <table><tr><th></th><th>name</th><th>dept</th><th>age</th><th>salary</th></tr><tr><td>102</td><td>Ayush</td><td>Purchase</td><td>28</td><td>20400</td></tr><tr><td>104</td><td>varshabh</td><td>Purchase</td><td>25</td><td>20000</td></tr><tr><td>106</td><td>priyansh</td><td>sales</td><td>21</td><td>10000</td></tr></table> 3)Display name of employee and department of DataFrame df.loc[:,['name','dept']] or df.iloc[:,[0,1]] <table><tr><th></th><th>name</th><th>dept</th></tr><tr><td>101</td><td>Heena</td><td>sales</td></tr><tr><td>102</td><td>Ayush</td><td>Purchase</td></tr><tr><td>103</td><td>diohm</td><td>sales</td></tr><tr><td>104</td><td>varshabh</td><td>Purchase</td></tr><tr><td>105</td><td>shubhi</td><td>Purchase</td></tr><tr><td>106</td><td>priyansh</td><td>sales</td></tr></table>		⁰ name	¹ dept	² age	³ salary	101	Heena	sales	40	14000	102	Ayush	Purchase	28	20400	103	diohm	sales	30	37700	104	varshabh	Purchase	25	20000	105	shubhi	Purchase	22	45000	106	priyansh	sales	21	10000	107	ankush	IT	40	55000	108	samy	IT	36	60900		name	dept	age	salary	103	diohm	sales	30	37700	104	varshabh	Purchase	25	20000	105	shubhi	Purchase	22	45000	106	priyansh	sales	21	10000	107	ankush	IT	40	55000	108	samy	IT	36	60900		name	dept	age	salary	102	Ayush	Purchase	28	20400	104	varshabh	Purchase	25	20000	106	priyansh	sales	21	10000		name	dept	101	Heena	sales	102	Ayush	Purchase	103	diohm	sales	104	varshabh	Purchase	105	shubhi	Purchase	106	priyansh	sales	1x10
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107 ankush IT
108 samy IT

4)Display employee name and salary details of 101 and 104 records of DataFrame

```
df.loc[["101","104"],["name','salary']]  
or df.iloc[[0,3],[0,1]]
```

	name	salary
101	Heena	14000
104	varshabh	20000

5)Display name of all employee of DataFrame.

```
df['name'] or df.loc[:, 'name'] or df.iloc[:,1]
```

101	Heena
102	Ayush
103	diohm
104	varshabh
105	shubhi
106	priyansh
107	ankush
108	samy

Name: name, dtype: object

6)Display first record of DataFrame.

```
df.iloc[:1] or df.iloc[0] or df.loc["101"] or df.loc[:"101"]
```

	name	dept	age	salary
101	Heena	sales	40	14000

7)Display salary of all employee of DataFrame.

```
df.loc[:, 'salary'] or df.iloc[:,3] or df['salary']
```

101	14000
102	20400
103	37700
104	20000
105	45000
106	10000
107	55000
108	60900

Name: salary, dtype: int64

8)Display employee name of DataFrame.

```
df.loc[:, 'name'] or df.iloc[:,1] or df['name']
```

101	Heena
102	Ayush
103	diohm
104	varshabh
105	shubhi
106	priyansh
107	ankush
108	samy

	Name: name, dtype: object 9)Display name and age details of all records of DataFrame df.loc[:,['name','age']] or df.iloc[:,[0,2]] <pre> Product qty 101 cpu 40 102 mouse 20 103 keyboard 10 104 printer 2 105 hdd 500 106 cd 1000 107 scanner 4 108 speaker 6 </pre> 10)Display the details of record no 104 df.loc["104"] o r df.iloc[3] or df.loc["104":"104"] or df.iloc[3:4] <pre> name varshabh dept Purchase age 25 salary 20000 Name: 104, dtype: object </pre>	
2	1)Display name of first record. df.at["101",'name'] or df.iat[0,0] 40 2)display name of record no 105 df.at["105",'name'] or >>> df.iat[4,0] 'sony' 3)Change the salary of record no.104 to 50000 df.at["104",'salary'] =50000 or df.iat[3,3] =50000 <pre> name dept age salary 101 Heena sales 40 14000 102 Ayush Purchase 28 20400 103 diohm sales 30 37700 104 varshabh Purchase 25 50000 105 shubhi Purchase 22 45000 106 priyansh sales 21 10000 107 ankush IT 40 55000 108 samy IT 36 60900 </pre> 4)Add new record ["raksha","comp",40,45000]into df DataFrame >>> df.loc["109"]=["raksha","comp",40,45000] >>> df <pre> name dept age salary 101 Heena sales 40 14000 102 Ayush Purchase 28 20400 103 diohm sales 30 37700 104 varshabh Purchase 25 50000 105 shubhi Purchase 22 45000 106 priyansh sales 21 10000 </pre>	1x8

107	ankush	IT	40	55000
108	samy	IT	36	60900
109	raksha	comp	40	45000.

5) change record no 105 with following details
["subhi","sales",27,26000]

```
>>> df.loc["105"]=["subhi","sales",27,26000]
```

```
>>> df
```

	name	dept	age	salary
101	Heena	sales	40	14000
102	Ayush	Purchase	28	20400
103	diohm	sales	30	37700
104	varshabh	Purchase	25	50000
105	subhi	sales	27	26000
106	priyansh	sales	21	10000
107	ankush	IT	40	55000
108	samy	IT	36	60900
109	raksha	comp	40	45000

6) Change the deptt name to lenovo of record no 101 and 102

```
df.loc["101":"102",'dept']="admin"
```

```
>>> df
```

	name	dept	age	salary
101	Heena	admin	40	14000
102	Ayush	admin	28	20400
103	diohm	sales	30	37700
104	varshabh	Purchase	25	50000
105	subhi	sales	27	26000
106	priyansh	sales	21	10000
107	ankush	IT	40	55000
108	samy	IT	36	60900
109	raksha	comp	40	45000

7) Change the department name to comp and age to 30 of record no 101 and 102

```
df.loc["101":"102",'dept':'age']=["comp",30]
```

```
>>> df
```

	name	dept	age	salary
101	Heena	comp	30	40000
102	Ayush	comp	30	40000
103	diohm	sales	30	37700
104	varshabh	Purchase	25	50000
105	subhi	sales	27	26000
106	priyansh	sales	21	10000
107	ankush	IT	40	55000
108	samy	IT	36	60900
109	raksha	comp	40	45000

8) change the dept and salary details of 101 and 102 record

As per given below

101 office 25 25050

	102 comp 38 30050																																																			
	<pre>>>> df.loc["101":"102",'dept':'salary']=[["office",25,25050],["comp",38,30050]] >>> df</pre> <table><tr><th></th><th>name</th><th>dept</th><th>age</th><th>salary</th></tr><tr><td>101</td><td>Heena</td><td>office</td><td>25</td><td>25050</td></tr><tr><td>102</td><td>Ayush</td><td>comp</td><td>38</td><td>30050</td></tr><tr><td>103</td><td>diohm</td><td>sales</td><td>30</td><td>37700</td></tr><tr><td>104</td><td>varshabh</td><td>Purchase</td><td>25</td><td>50000</td></tr><tr><td>105</td><td>subhi</td><td>sales</td><td>27</td><td>26000</td></tr><tr><td>106</td><td>priyansh</td><td>sales</td><td>21</td><td>10000</td></tr><tr><td>107</td><td>ankush</td><td>IT</td><td>40</td><td>55000</td></tr><tr><td>108</td><td>samy</td><td>IT</td><td>36</td><td>60900</td></tr><tr><td>109</td><td>raksha</td><td>comp</td><td>40</td><td>45000</td></tr></table>		name	dept	age	salary	101	Heena	office	25	25050	102	Ayush	comp	38	30050	103	diohm	sales	30	37700	104	varshabh	Purchase	25	50000	105	subhi	sales	27	26000	106	priyansh	sales	21	10000	107	ankush	IT	40	55000	108	samy	IT	36	60900	109	raksha	comp	40	45000	
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	TOTAL	18																																																		

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII – IP**NAME OF CHAPTER: -**CREATE DATA FRAME**

TOPIC: Assertion & Reason

WORKSHEET NO. 11

QN	Questions	M
	Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as: (A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A). (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A). (C) Assertion (A) is true, but Reason (R) is false. (D) Assertion (A) is false, but Reason (R) is true.	
1	Q.1. Assertion (A): DataFrame is a two-dimensional labelled array. Its columns types can be heterogeneous i.e., of varying types. Reason (R): We need a DataFrame with a Boolean index to use the Boolean indexing.	1
2	Assertion (A): Iteration is a general term for taking each item of something one after another. Reason (R): <code>itertuples()</code> returns the iterator yielding each index value along with a series containing the data in each row.	1
3	Assertion (A): Indexing can also be known as sub selection. Reason (R): Pandas DataFrame.loc attribute access group of rows and columns by label(s) or a boolean array in the given DataFrame.	1
4	Assertion (A): To delete a column from Panda DataFrame, <code>drop()</code> method is used. Reason (R): Columns are deleted by dropping columns with index label.	1
5	Assertion (A): Rows can also be selected by passing integer location. Reason (R): Integer location can be pass to the <code>iloc[]</code> method	1
6	Assertion (A): <code>head()</code> function returns first n rows from the object based on position. Reason (R): n is the selected number of rows whose default value is 3.	1
7	Assertion (A): List of dictionary can be passed to form a DataFrame. Reason (R): Keys of dictionary are taken as row names by default.	1
8	Assertion (A): Indexing can also be known as sub selection. Reason (R): Pandas DataFrame.loc attribute access group of rows and columns by label(s) or a Boolean array in the given DataFrame.	1
9	Assertion (A): CSV files are available to open in any spreadsheet program, including Google Sheets, Open Office, and Microsoft Excel. Reason (R): Using a spreadsheet program can serve a user's needs better since it has cells where data sorted in rows and columns.	1
10	Assertion (A):- While creating a DataFrame with a nested or 2D dictionary, Python interprets the outer dict keys as the columns and the inner keys as the row indices. Reasoning (R):- A column can be deleted using remove command	1
	TOTAL	10

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII – IP

NAME OF CHAPTER / TOPIC: **CREATE DATA FRAME by various method**
Remove row and column of data frame

WORKSHEET NO. 11 (Answers)

QN	Answers	M
1	Ans. Option (C) is correct. C) Assertion (A) is true, but Reason (R) is false.	1
2	Ans. Option (C) is correct. Explanation: Iteration is the repetition of a process in order to generate an outcome. The sequence will approach some end point or end value. Each repetition of the process is a single iteration, and the outcome of each iteration is then the starting point of the next iteration. iterrows() returns the iterator yielding each index value along with a series containing the data in each row.	1
3	Ans. Option (D) is correct. Explanation: Indexing can also be known as subse selection. loc takes two single/list/range operator separated by 7. The first one indicates the row and the second one indicates columns.	1
4	Ans. Option (C) is correct. Explanation: To delete a column from Pandas DataFrame, drop() method is used. Columns are deleted by dropping columns with column names.	1
5	Ans. Option (B) is correct. Explanation: To retrieve rows from a DataFrame, a special method is used named DataFrame.loc[]. Rows can also be selected by passing integer location to iloc[] method.	1
6	Ans. Option (C) is correct. Explanation: head() function returns first n rows from the object based on position. It is useful for quickly verifying data. for example, after sorting Syntax, DataFrame.head(n = 5) Here, n is the selected number of rows whose default value is 5.	1
7	Ans. Option (C) is correct. Explanation: List of dictionary can be passed to form a DataFrame. Keys of dictionary are taken	1
8	Ans. Option (D) is correct. Explanation: Indexing can also be known as subse selection.loc takes two single/list/range operator separated by 7. The first one indicates the row and the second one indicates columns.	1
9	Ans. Option (A) is correct. Explanation: A CSV file stores data, both numbers and text in a plain text. All fields are separated by commas while all records are separated by an elaborate line of characters. A spreadsheet program sorts the data in a CSV file systematically via columns. This helps to filter all the contents in the file.	1
10	Ans. Option (C) is correct.	1
	TOTAL	10

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
CLASS XII :- INFORMATICS PRACTICES (065)
TOPIC :- DATA HANDLING USING PANDAS (UNIT – 1)

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET – 12

1. To get the number of dimensions of a Series object, _____ attribute is used.
2. To get the number of elements in a Series object, _____ attribute may be used.
3. To get the number of bytes of the Series data, _____ attribute is used.
4. What statement(s) is use to display last five rows of a Series object S
(a) head() (b) head(5) (c) tail(5) (d) tail()
5. Series is _____ mutable but not _____ mutable.
6. A Series S consist of 1000 rows of data. Write a statement to display
a) First 50 records (b) Last 50 records
7. Consider the following two series S1 and S2:

S1		S2	
A	10	A	11
B	20	P	12
C	30	D	13
D	40	B	14

Find the result of S1 + S2 and S1-S2

8. Consider a Series object S created using the following statement:
`S = pd.Series([10, 20, 30, 40, 50, 60, 70], index = ['a','b','c','d','e','f','g'])`
Based on the series object, write statement to do the following:
(i) print the third element.
(ii) print the last four elements.
(iii) print the first five elements.

9. What will be the output of the following code:

```
import pandas as pd
s = pd.Series(data = [5, 6, 7] , index = ['a','b','c'])
print(s[['b', 'a']])
```

10. Write a program to create a Series object S and store percentage of 10 students in the series with student name as index. Find and print the name and percentage of the topper.

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET – 13

1. Given a series object S with 10 values. Write a statement to change the values at row3(index 2), row6(index 5) and row 8(index 7) to 50.

2. Consider the following Series object S:

0	34
1	-7
2	20
3	4

dtype: int64

Find the output for the following statements:

(i) print(S+3) (ii) print(S>0) (iii) print(S[S>0])

3. Consider the following Series object S and find the output of (i) and (ii)

A	10
B	20
C	30
D	40
E	50

(i) print(S.iloc[1:3])

(ii) print(S.loc['B' : 'D'])

4. Consider a list L and a Series object S storing 3 values (10, 20 and 30). What will be the output of the following statements.

(i) L*2

(ii) S*2

5. Find the output of the following code:

```
import pandas as pd
S = pd.Series(10, index = ['a', 'b', 'c'])
print(S.size)
print(S.ndim)
print(S.hasnans)
```

6. Find the output of the following code:

```
import pandas as pd
x = (10,4)
S = pd.Series(data = x*2)
print(S)
```

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CLASS XII :- INFORMATICS PRACTICES (065)
TOPIC :- DATA HANDLING USING PANDAS (UNIT – 1)

Roll No: **2023-24** Date:
Name of the Student:

WORKSHEET – 14

1. The axis 0 identifies a dataframe's
(a) rows (b) columns (c) values (d) datatype
2. Write a statement to change the 5th column's value at 3rd row in a dataframe df to 50.
3. Consider the following program:

```
import pandas as pd
Y1 = {'Q1' : 10000, 'Q2' : 18000, 'Qtr3' : 14500, 'Q4' : 21000}
Y2 = {'A' : 11000, 'B' : 16000, 'Qtr4' : 26000}
DF = pd.DataFrame({1:Y1, 2:Y2})
```

- (i) list the index label of the DataFrame DF
 - (ii) list the column names of DataFrame DF
4. Given a DataFrame namely aid that stores the aid by NGOs for different states:

	Toys	Books	Uniform	Shoes
Andhra	7916	6189	610	8810
Odisha	8508	8208	508	6798
M.P.	7226	6149	611	9611
U.P.	7617	6157	457	6457

Write statement to display the aid for

- (i) Books and uniform only
 - (ii) Shoes only
 - (iii) states Andhra and Odisha for books and uniform only
5. Consider the dataframe of Question 4, add a new column Bread with the values 1245, 956, 1546, 933 for the states Andhra, Odisha, MP and UP respectively.
 6. Given a dataframe df as shown below:

	A	B	C
0	10	11	12
1	25	26	27
2	51	52	53

What will be the result of the following code statements?

- (i) df['C'] = np.NaN (ii) df['C'] = [1,2] (iii) df['C'] = [4,5,6]

7. Write a statement to delete a column Sales from a DataFrame df.
8. Write a statement to change the value at 5th row and 6th column to 100 in a dataframe df.

9. Write a statement to transpose a dataframe df.

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WORKSHEET – 15

1. Consider the following dataframe ndf as shown below:

	col1	col2	col3	Res
t1	100.0	100.0	60.00	True
t2	95.8	100.0	57.48	True
t3	89.3	100.0	53.58	False
t4	82.0	85.4	49.20	False

(A) Write statements to do the following:

- (a) Extract column col3
- (b) Extract row t3
- (c) Extract row t2's column col2's value
- (d) Extract row t4's columns col2, col3, and Res
- (e) Delete rows t2 and t3
- (f) Delete columns col2 and Res

(B) What will be the output produced by the following statements?

- (a) `print(df.at['t3', 'Res'], df.at['t1', 'col3'])`
- (b) `print(df.iat[3,2], df.iat[2,3])`
- (c) `print(df.loc['t2' : , : ])`
- (d) `print(df.loc[ : , 'col3' : ] )`
- (e) `print(print(df.loc['t2' : 't3', 'col3' : ] ) )`
- (f) `print(df.iloc[ :2, 2:] )`
- (g) `print(df.iloc[2: , :3] )`
- (h) `print(df.iloc[1:3, 2:3])`

2. Write the correct output on execution of the following Pandas code:

```
import pandas as pd
df = pd.DataFrame({"A" : ["P01", "P02", "P03"], "B":["Pen", "Pencil", "Eraser"]})
df = df.rename(columns = {"A" : "PID", "B" : "PNAME"})
df = df.rename(index = {0 : 'A', 1 : 'B', 2 : 'C' } )
print(df)
```

3. Write a small python code to create a dataframe with the headings (a and b) from the list given below:

`[[1,2] , [3, 4], [5, 6], [7, 8]]`

4. What will be the output of the following code:

```
import pandas as pd
d = {'one' : pd.Series([1., 2., 3.], index = ['a', 'b', 'c']),
     'two' : pd.Series([1., 2., 3., 4.], index = ['a', 'b', 'c', 'd' ] ) }
df = pd.DataFrame(d)
df1 = pd.DataFrame(d, index = ['d', 'b', 'a'])
df2 = pd.DataFrame(d, index = ['d', 'a'], columns = ['two', 'three'])
print(df)
print(df1)
```

print(df2)

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WORKSHEET – 16

1. A Python list namely section stores the section names ('A', 'B', 'C', 'D') of class 12 in your school. Another list contri stores the contribution made by these students to a charity fund endorsed by the school. Write code to create a Series object that stores the contribution amount as the values and the section names as the indexes.
2. While reading from a csv file using read_csv() into a dataframe, what argument will you add so that the first row is not used as the column heading?
3. You want to read data from a CSV file in a dataframe but you want to provide your own column names to dataframe. What additional argument would you specify in read_csv()?
4. While reading from a csv file using read_csv() into a dataframe, what argument will you add so that the top n number of rows are not read into the dataframe?
5. Which argument would you give to read_csv() if you want to read top 10 rows of data only?
6. Write statement to read from a CSV file Employee.csv and create a dataframe from it. Assume pandas library has been imported as pd.
7. Write a statement to read only three records from the file employee.csv in dataframe. Assume that Pandas library has been imported as pd.
8. Write statement to read from sport.csv file where the separator is a tab character. Assume that pandas library has been imported as pd.
9. Given a dataframe allDF. Write a statement to write the data in this dataframe into a csv file namely all.csv. Assume that pandas library has been imported as pd.
10. Write command to store data of dataframe mdf into a csv file Mydata.csv, with separator character as '@'.

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WORKSHEET – 17

1. Explain briefly the CSV format of storing files.
2. Write a program that reads from a CSV file where a CSV file where the separator character is '\$'. Read only first five rows in your dataframe. Give column heading as ItemName, Quantity, Price. Make sure to read first row as data and not as column header.
3. Write a program to read a CSV file Employee.csv and create a dataframe from it but dataframe should not use file's column header rather should use own column number as 0, 1, 2 and so on.
4. Write a program to read from a CSV file Employee.csv and create a dataframe from it. Use Empno column as index labels.
5. Are the following two statements same? Why/Why not?
6. How are the following two codes similar or different? What output will they produce?
7. Write a program that reads from a csv file(marks.csv stored in data folder C: drive having data as shown : Name and marks in 3 subjects) in a dataframe. Then the program should add a column 'Total' storing total of marks in three subjects and another column storing average marks. Print the dataframe after adding these columns.

Megha,65,67,76

Rachit,73,78,83

Nevan,45,34,30

Tim,66,56,60

Ali,85,90,87

8. Name two functions provided by Pandas library that help you to read and write to CSV files from Python code.
9. Which Pandas' data structure does the read_csv() function read the data into?

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WORKSHEET – 18

1. How is Series data structure is different from a Dataframe data structure?
2. If you have a dataframe having a single column then isn't it the same as a series object?
3. What is the difference between following two statements?
(i) `df2 = pd.DataFrame(df1)`
(ii) `df3 = pd.DataFrame(df1, copy = True)`
4. Consider the following Series object, `S_amt`

Table	350
Chair	200
Sofa	800
Stool	150

(a) Write the command which will display the names of the furniture having rent > 250

(b) Write command to name the series as Furniture.

5. Write a program to create a Series object with 6 random integers and having indexes as: `['p', 'q', 'r', 's', 't', 'v']`.
6. A dataframe namely Result stores the details of students' marks in different subjects for a class of 50 students. The records are arranged in the descending order of total marks obtained by a student:

	Eng	IP	Maths
23	77	78	78
11	82	85	67
22	55	66	66
34	66	76	73
9	78	60	44
:	:	:	:

- (i) Write a statement to print the five least scoring students' details.
- (ii) Write a statement to get the maximum marks stored in subject IP.
- (iii) Write a statement to print the details of the student who scored maximum marks in the subject Eng.
- (iv) Write a statement to print the three highest scoring students.
- (v) Write a statement to display the marks scored by a student with roll number 22, in the subject Math.

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WORKSHEET – 19

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

```
import Pandas as pd
Import numpy as np
s = pd.Series [1, 2, 3, 4, 5 ]
Print(s.index)
```

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

```
import pandas as pd
S1 = Pd.Series([1,2,3,4])
S2 = pd.Series([5,6,7,8])
df = pd.DataFrame(s1,s2)
Print(DF)
```

3. Study the following code and answer the questions.

```
import pandas as pd
df = pd.DataFrame([[13, 23, 37], [19, 20, 21], [11, 12, 13], [13, 14, 15]],
                  _____)                # statement 1
n1 = _____                        # statement 2
n1['C4'] = _____                    # statement 3
n1. _____                          # statement 4
n1 = _____                        # statement 5
df. _____                          # statement 6
```

(i) statement 1: fill the blank to give column heading as 'C1', 'C2' and 'C3'.

(ii) statement 2: fill statement that creates dataframe n1 that stores the values of dataframe df multiplied by 3.

(iii) statement 3: fill statement that adds a new column 'C4' in the dataframe n1, which stores the difference of column 'C3' with column 'C2'.

(iv) statement 4: fill statement to drop column 'C4'.

(v) statement 5: fill statement to drop the index 2 from dataframe n1.

(vi) statement 6: fill statement to display the sum of rows with indexes 2 onwards from the dataframe df.

Answers(Worksheet 12):

1. ndim

2. size

3. nbytes

4. (c) and (d)

5. value, size

6. (a) S.head(50), (b) S.tail(50)

7.

A	21.0
B	34.0
C	NaN
D	53.0
P	NaN

dtype: float64

8. (i) print(S[2])

(ii) print(S[-3:])

(iii) print(S[:5])

9 b 6

a 5

dtype: int64

10 import pandas as pd

```
S = pd.Series([76.6, 48.8, 96.8, 85.0, 78.2, 77.6, 92.8, 88.2, 66.8, 81.4], index
= ['A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J'])

print(S.sort_values().tail(1))
```

Answers(Worksheet 13):

1. $S[[2, 5, 7]] = 50$

2. (i)

0	37
1	-4
2	23
3	7

dtype : int64

(ii)

0	True
1	False
2	True
3	True

dtype: bool

(iii)

0	34
2	20
3	4

dtype: int64

3. (i)

B	20
C	30

dtype: int64

(ii)

B	20
C	30
D	40

dtype:int64

4. $L*2 = [10, 20, 30, 10, 20, 30]$

$S*2 =$

0	20
1	40
2	60

dtype: int64

5.

3
1
False

6.

0	10
1	4
2	10
3	4

dtype: int64

Answers(Worksheet 14)

1. (a) rows
2. `df.iat[3,5] = 50`
3. (i) A, B, Q1, Q2, Q4, Qtr3, Qtr4
(ii) 1, 2
4. (i) `print(aid[['Books', 'Uniform']])`
(ii) `print(aid.Shoes)`
(iii) `print(aid.loc['Andhra':'Odisha', 'Books':'Uniform'])`
5. `aid['Bread'] = [1245, 956, 1546, 933]`
6. (i)

	A	B	C
0	10	11	NaN
1	25	26	NaN
2	51	52	NaN

(ii) Error, because the number of values being assigned are not equal to the number of indexes.

(iii)

	A	B	C
0	10	11	4
1	25	26	5
2	51	52	6

7. `df.drop['Sales']`
8. `df.iloc[4,5] = 100`
9. `df.T`

Answers(Worksheet 15)

1. (A)

- (a) `df['col3'] or df.loc[:, 'col3']`
- (b) `df.loc['t3', :]`
- (c) `df.loc['t2', 'col2']`
- (d) `df.loc['t4', 'col2' : 'Res']`
- (e) `df.drop(['t2', 't3'])`
- (f) `df.drop(['col2', 'Res'], axis = 1)`

(B)

- (a) False 60.0
- (b) 49.2 False
- (c)

	col1	col2	col3	Res
t2	95.8	100.0	57.48	True
t3	89.3	100.0	53.58	False
t4	82.0	85.4	49.20	False

(d)

	col3	Res
t1	60.00	True
t2	57.48	True
t3	53.58	False
t4	49.20	False

(e)

	col3	Res
t2	57.48	True
t3	53.58	False

(f)

	col3	Res
t1	60.00	True
t2	57.48	True

(g)

	col1	col2	col3
t3	89.3	100.0	53.58
t4	82.0	85.4	49.20

(h)

	col3
t2	57.48
t3	53.58

2.

PID

PNAME

A	P01	Pen
B	P02	Pencil
C	P03	Eraser

3. `import pandas as pd`
`df = pd.DataFrame([[1,2], [3, 4],[5, 6], [7, 8]], columns = ['a', 'b'])`
`print(df)`

4.

	one	two
a	1.0	1.0
b	2.0	2.0
c	3.0	3.0
d	NaN	4.0
	one	two
d	NaN	4.0
b	2.0	2.0
a	1.0	1.0
	two	three
d	4.0	NaN
a	1.0	NaN

Answers(Worksheet 16):

1.

```
import pandas as pd  
section = ['A', 'B', 'C', 'D']  
contri = [6500, 4500, 5000, 5600]  
s = pd.Series(contri, index = section)  
print(s)
```
2. To suppress first row as header, the additional argument will be:

```
header = None
```
3. To specify own column names, the additional argument will be:

```
name = <sequence with column names>
```
4. To skip top n rows, the additional argument will be:

```
skiprows = n
```
5. To read top 10 rows from a csv file, the additional argument will be:

```
nrows = 10
```
6.

```
df = pd.read_csv("Employee.csv")
```
7.

```
df = pd.read_csv('employee.csv', nrows = 3)
```
8.

```
df = pd.read_csv("sport.csv", sep = '\t')
```
9.

```
allIDF.to_csv("all.csv")
```
10.

```
mdf.to_csv("Mydata.csv", sep = "@")
```

Answers(Worksheet 17):

1. The acronym CSV is short for Comma-Separated Values, which refers to a tabular data saved as plaintext where data values are separated by commas.

2. `import pandas as pd`

```
df = pd.read_csv('data.csv', sep = '$', names = ['ItemName', 'Quantity', 'Price'],  
header = None, nrows = 5)
```

```
print(df)
```

3. `import pandas as pd`

```
df = pd.read_csv('Employee.csv', header = None, skiprows = 1)
```

```
print(df)
```

4. `import pandas as pd`

```
df = pd.read_csv("Employee.csv", index_col = 'Empno')
```

```
print(df)
```

5. Yes, both the given statements will work identically even if this code is slightly different. The reason being – in that first statement the `sep` argument is used, which specifies the separator character or the delimiter of the csv files being read. Here the value of `sep` argument is given as `','`.

Even if we skip the `sep` argument, it takes its value as `','` by default, which is happening in the second case.

Hence both the statements will behave in the same way even with their slight code difference.

6. The two given code fragments are different from one another as:

The code (i) will read only the first 5 rows from the file `data.csv` into the dataframe `df` whereas the code (ii) will read all the data data stored in the file `data.csv` and store it in the dataframe `df`.

7. `import pandas as pd`

```
df = pd.read_csv("C:\\marks.csv", names = ["Name", "Marks1", "Marks2",  
"Marks3"] )
```

```
print("Dataframe after fetching data from CSV file:")
```

```
print(df)
```

```
df['Total'] = df['Marks1'] + df['Marks2'] + df['Marks3']
```

```
df['AvgMarks'] = df['Total']/3
```

```
print("Dataframe after all the calculations")
```

```
print(df)
```

8. `read_csv()` for reading from a csv file and `to_csv()` for writing onto a csv file.

9. DataFrame

Answers(Worksheet 18):

1.

Series	DataFrame
A Series is a one-dimensional data structure.	A Dataframe is a two-dimensional data structure
A Series object is value mutable but not size mutable.	A Dataframe object is value as well as size mutable both
Multiple Series can hold the same data as a dataframe but ease of operation is lost.	A Dataframe can hold the data of multiple series under one name and hence ease of operation

2. A Dataframe having a single column may look same as a Series but there is a key difference. As both the Series and the dataframe data structure are value mutable, but dataframe is size mutable while series is size immutable. Thus, even though the series object and a dataframe object with single column appear the same, they behave differently when their size is changed.

3. (a) This statement will create a dataframe df2 as a shallow copy and not as a True copy of the dataframe df1. That is, just another label by the name df2 has been created for the dataframe df1. Hence all the changes made to df1 will be reflected in df2 and vice-versa.

(b) This statement will create a dataframe df3 as a True copy of the dataframe df1, because of the argument copy = True. That is, df1 and df3 are two separate entities now and changes in df1 will not affect df3 and vice-versa.

4. (a) `print(s_amt[S_amt > 250] )`

(b) `S_amt.name = "Furniture"`

5. `import pandas as pd`

`import numpy as np`

`s = pd.Series(np.random.randint(6, size = 6), index = ['p', 'q', 'r', 's', 't', 'v'])`

`print(s)`

6.

(i) `Result.tail()` or `Result.tail(5)`

(ii) `Result['IP'].max()`

(iii) `Result[Result['Eng'] == Result['Eng'].max()]`

(iv) `Result.head(3)`

(v) `Result.at[22, 'Math']`

Answers(Worksheet 19):

1.

```
import pandas as pd
import numpy as np
s = pd.Series ( [1, 2, 3, 4, 5 ] )
print(s.index)
```
2.

```
import pandas as pd
S1 = pd.Series([1,2,3,4])
S2 = pd.Series([5,6,7,8])
df = pd.DataFrame([S1,S2])
print(df)
```
3. (i) `columns = ['C1', 'C2', 'C3']`
(ii) `n1 = df * 3`
(iii) `n1['C4'] = n1['C3'] - n1['C2']`
(iv) `n1.pop('C4')`
(v) `n1 = n1.drop(2)`
(vi) `df.iloc[2:].sum()`

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CLASS XII :- INFORMATICS PRACTICES (065)

TOPIC :- DATA VISUALISATION (UNIT – 1)

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET - 1

1. A graph is a type of chart which displays information as a series of data points connected by straight line segments.
a. line b. bar c. pie d. boxplot
2. Which function lets you set the title of plot?
a. title() b. plottitle() c. graphtitle() d. All of the above
3. Pyplot's function is used to create a vertical bar charts.
(bar() / barh())
4. Pyplot interface is a collection of methods within library of python.
5. Which of the following is not a valid plotting function of pyplot?
a. plot() b. bar() c. line() d. pie()
6. is the function to save the graph.
a. save.figure() b. savefig() c. Save.figure() d. Savechart()
7. Which graph should be used where each column represents a range of values, and the height of a column corresponds to how many values are in that range?
a. plot b. bar c. boxplot d. histogram
8. Which function is used to create a histogram ?
a. histo() b. histogram() c. hist() d. histype()
9. What is the purpose of a legend?
10. The _____ module allows you to represent data visually in various forms.
11. The _____ library provides the interface and functionality for plotting the graphs.
12. A _____ chart displays information as a markers connected by a straight lines.
13. A bar chart is also known as column chart. (True/False)
14. Which is a common method used to plot data on the chart?
a) plot() b) show()
c) legend() d) title()
15. To give a title to x-axis, which of the following method is useful?
a) pl.xtitle("title") b) pl.xlabel("title")
c) pl.xheader("title") d) pl.xlabel.show("title")
16. The pl.show() method must be used to display the chart in the end of the chart specification. (True/False)
17. The _____ method is used to create a line chart.
a) pl.pie() b) pl.col()
c) pl.plot() d) pl.line()
18. To create a horizontal bar chart, bar() function is used. (True/False)
19. To change the width of bars in bar chart, which of the following argument with a float value is used?
a) thick b) thickness
c) width d) barwidth

20. You can set different width for different bars in bar chart. (True/False)

21 If you are given to plot a histogram using numpy array as per the code given below then answer any of four question from (i) to (v)

```
from matplotlib import _____ as plt           #line 1
import numpy as np
fig, ax = plt._____ (1, 1)                     #line 3
a= np.array([26,59,44,39,76,16,23,11,18,78])
ax.hist(a, bins=[0,10,20,30,40])
ax._____ ('Histogram')                         #line 6
ax.set_xticks ([0,10,20,30,40, ])
ax.set_xlabel('Percentage')
ax._____ ('Students')                          #line 9
_____                                           #line 10
```

(i) Choose the correct option to import for given program:

- | | |
|----------------|-------------|
| (a) matplotlib | (b) matplot |
| (c) pyplot | (d) plot |

(ii) Fill in the blank at Line 3

- | | |
|--------------|-------------|
| (a) subplots | (b) subplot |
| (c) plot | (d) subplt |

(iii) Which statement is used to set title in Line 6 ?

- | | |
|-----------|---------------|
| (a) title | (b) set_title |
| (c) set | (d) Title |

(iv) How to set Y-axis label ?

- | | |
|----------------|----------------|
| (a) label() | (b) set_y |
| (c) set_ylab() | (d) set_ylabel |

(v) To fill in blank on Line 10 for showing histogram what can be used ?

- | | |
|-----------------|----------------|
| (a) plt.show() | (b) plt_show() |
| (c) plot_show() | (d) plt.show |

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION

CLASS XII :- INFORMATICS PRACTICES (065)

TOPIC :- DATA VISUALISATION (UNIT – 1)

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET - 2

1. What is true about Data Visualization?

- A. Data Visualization is used to communicate information clearly and efficiently to users by the usage of information graphics such as tables and charts.
- B. Data Visualization helps users in analyzing a large amount of data in a simpler way.
- C. Data Visualization makes complex data more accessible, understandable, and usable.
- D. All of the above

2. Which method is used to save the output of pyplot in the form of image file ?

- A. savefig('filename')
- B. save_fig('filename')
- C. save_figure('filename')
- D. save_img('filename')

3. Data visualization is also an element of the broader _____.

- A. deliver presentation architecture
- B. data presentation architecture
- C. dataset presentation architecture
- D. data process architecture

4. The command used to give a heading to a graph is _____

- A. plt.show()
- B. plt.plot()
- C. plt.xlabel()
- D. plt.title()

5. Common use cases for data visualization include?

- A. Politics
- B. Sales and marketing
- C. Healthcare
- D. All of the above

6. Which are pros of data visualization?

- A. It can be accessed quickly by a wider audience.
- B. It can misrepresent information
- C. It can be distracting
- D. None Of the above

7. Which are cons of data visualization?

- A. It conveys a lot of information in a small space.
- B. It makes your report more visually appealing.
- C. visual data is distorted or excessively used.
- D. None Of the above

8. Identify the right type of chart using the following hints.

Hint 1: This chart is often used to visualize a trend in data over intervals of time.

Hint 2: The line in this type of chart is often drawn chronologically.

- A. Line chart

- B. Bar chart
 - C. Pie chart
 - D. Scatter plot
9. Which method is used to plot horizontal bar graph in pyplot ?
- A. horizontal_bar()
 - B. barh()
 - C. hbar()
 - D. bar()
10. Which method is used to plot histogram in pyplot?
- A. his()
 - B. hist()
 - C. Hist()
 - D.histogram()

11. Consider the following program and answer any four question from (i) to (v):

```
import _____ as plt           #line 1
plt.bar ([2,3,4,8,1],[2,4,7,3,5], label= _____ ) #line 2
plt.legend( )                       #line 3
plt.xlabel(_____ )              #line 4
plt.ylabel('Height')               #line 5
plt._____ ('Vertical Bar Chart') #line 6
_____                             #line 7
```

- (i) Which Module will be imported in Line 1 for above code ?
- a) matplotlib (b) matplotlib.pyplot
 - b) plotlib (d) None of these
- (ii) Name the label that can be used to represent the bar chart in Line 2 .
- a) Data (b) Data Values
 - b) Values for X axis (d) All of these
- (iii) Which message is best suited for xlabel ?
- a) X values (b) Y values
 - b) Legend (d) Vertical
- (iv) Which method will take place at Line 6 for setting heading on the top of Chart ?
- (a) Title() (b) title()
 - (c) Head() (d) All of these.
- (v) Choose the statement to be place at Line7 of the above code .
- (a) Plt.print() (b) plt.show()
 - (c) Plt.display() (d) plot.show()

12. Consider the following case and answer the from (i) to (v)

```

import ..... as pd                                #line 1
import matplotlib. _____ as plt                 #line 2
data= {'Name' : ['Karan', 'Adi', 'Abhinav', 'Kirti', 'Rahul' ],
'Height' : [60,61,63,65,61],
'Weight' : [47,89,52,58,50,47]}
df=pd. _____ (data)                            #line 6
df._____ (Kind ='hist', edgecolor = 'Green', linewidth =2, linestyle=':', fill= False)
#line 7
_____                                             #line 8

```

(i) Fill in the blank in Line 1.

- | | |
|------------|----------------|
| (a) numpy | (b) pandas |
| (c) Python | (d) matplotlib |

(ii) Fill in the blank in Line 2.

- | | |
|------------|-------------------|
| (a) pyplot | (b) plot |
| (c) pyp | (d) None of these |

(iii) Which of the following is used in Line 6 to represent the data ?

- | | |
|---------------|-------------|
| (a) Series | (b) Matplot |
| (c) DataFrame | (d) Plot |

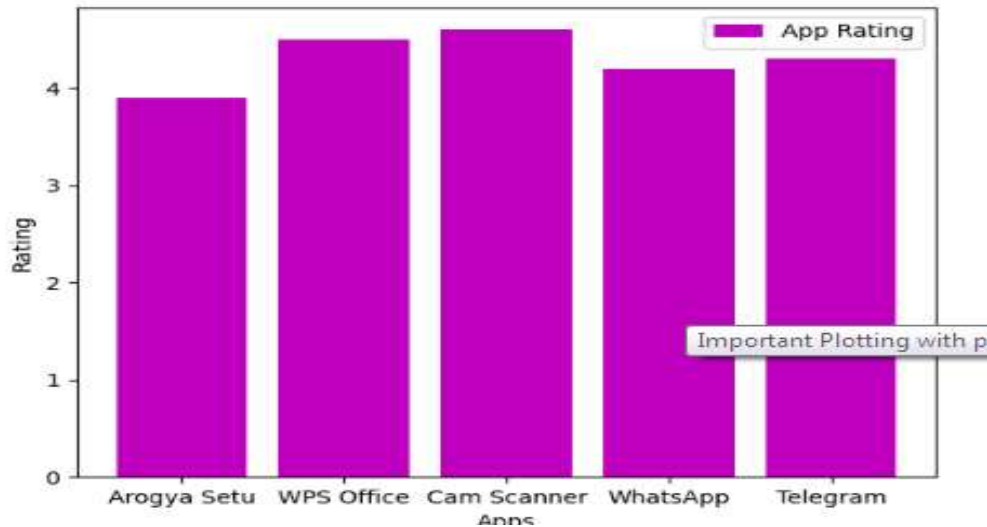
(iv) For blank of Line 7 command used may be :

- | | |
|----------|------------|
| (a) plt | (b) pyplot |
| (c) plot | (d) figure |

(v) To show the above graph , which statement is used in Line 8 ?

- | | |
|--------------|-----------------|
| (a) plot.sho | (b) plot.show() |
| (c) plt.show | (d) plt.show() |

13. Mr. Vijay is working in the mobile app development industry and he was comparing the given chart on the basis of the rating of the various apps available on the play store and answer the questions (i) to (v).



He is trying to write a code to plot the graph. Help Mr. Vijay to fill in the blanks of the code and get the desired output.

```
import _____ as plt #Statement 1
apps=["ArogyaSetu","WPS Office","CamScanner","WhatsApp","Telegram"]
ps_rating=[3.9,4.5,4.6,4.2,4.3]

plt._____(apps,ps_rating,color='m',label=_____) #Statement 2
                                                ,Statement 3

plt.xlabel("Apps")
plt._____("Rating") #Statement 4
plt._____ #Statement 5
plt._____ #Statement 6
```

- Write the appropriate statement for #statement 1 to import the module.
- Write the function name and label name as displayed in the output for #statement 2 and #statement 3 respectively.
- Which word should be used for #statement 4?
- Write appropriate method names for #Statement 5 to display legends and #Statement 6 to open the figure.
- Mr. Vijay wants to change the chart type to a line chart. Which statement should be updated and which method or function is used?

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION

CLASS XII :- INFORMATICS PRACTICES (065)

TOPIC :- DATA VISUALISATION (UNIT – 1)

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET - 3

1. What is the purpose of the Matplotlib library?
2. What are some of the major components of any graphs or plot?
3. Name the function which is used to save the plot.
4. Write short notes on different customization options available with any plot.
5. What is the purpose of a legend?
6. Define Pandas visualization.
7. Name the plot which displays the statistical summary.
8. Compare bar() and barh() functions.
9. What is the role of legends in a graph/chart?
10. What do you understand by x limit and ylimit ? How are these linked to data being plotted?
11. When should you use (i) a line chart (ii) a bar chart (iii) a pie chart?
12. A company has three offices across India: Delhi, Mumbai, Kolkata. Each of the offices has sent a compiled list sharing sales in quarter1, quarter2, quarter3 and quarter4.
(a) Suggest the best chart type to plot all the above data?
(b) Why did you choose that specific chart type?
(c) Can you create a pie chart from above data?

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII :- INFORMATICS PRACTICES (065)****TOPIC :- DATA VISUALISATION (UNIT – 1)**

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET - 4

1. Plot the following data using a line plot:

Day	1	2	3	4	5	6	7
Tickets Sold	2000	2800	3000	2500	2300	2500	1000

- Before displaying the plot display "Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday" in place of Day 1, 2, 3, 4, 5, 6, 7
 - Change the color of the line to 'Magenta'.
2. Collect data about colleges in Delhi University or any other university of your choice and number of courses they run for Science, Commerce and Humanities, store it in a CSV file and present it using a bar plot.
3. Collect the minimum and maximum temperature of your city for a month and present it using a histogram plot.
4. Plot the following data on line chart:

Runs in Overs	10	20
MI	110	224
RCB	85	210

5. Write code to plot a line chart to depict the run rate of T20 match from given data:

Overs	Runs
5	45
10	79
15	145
20	234

6. Plot following data on bar graph:

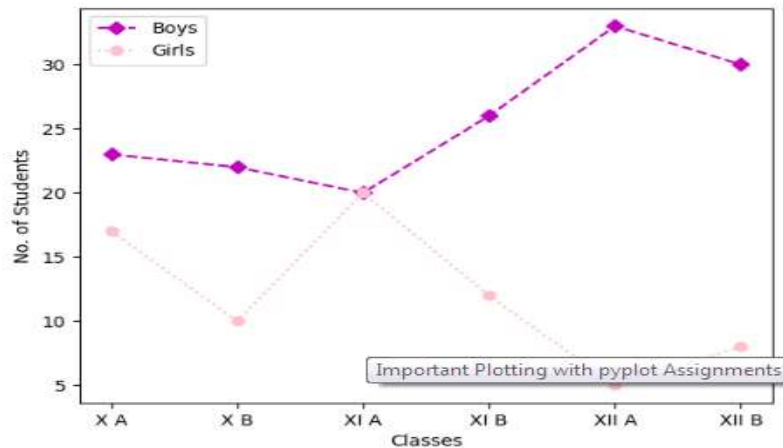
English: 56,78,90,34

Science: 65,77,54,32

Maths: 45,67,43,41

7. How to change the thickness of line, line style, line color, and marker properties of a chart?

8. Mrs. Sharma is a coordinator in the senior section school. She represented data on number of students who passed the exam on line chart as follows:



She has written the following code but not getting the desired output. Help her by correcting her code.

```
import matplotlib.pyplot as plt
CLASSES=["X A","X B","XI A","XI B","XII A","XII B"]
no_of_boys=[23,22,20,26,33,30]
no_of_girls=[17,10,20,12,5,8]
plt.line(CLASSES,no_of_boys)           #Statement 1
plt.line(CLASSES,no_of_girls)         #Statement 2
plt.xtitle("No of Stdudents")          #Statement 3
plt.ytitle("CLASSES")                  #Statement 4
plt.show()
```

- What will be the correct code for Statement 1 and Statement 2?
- What is the correct function name for Statement 3 and Statement 4?
- Write a method and parameter required to display legends?
- Name the parameter and values used to apply the marker as given in the output.
- Name the parameter and values used to apply linestyle as given in the output.
- How to apply the line colours as given in the figure?
- Write to save the figure as image.

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION**CLASS XII :- INFORMATICS PRACTICES (065)****TOPIC :- DATA VISUALISATION (UNIT – 1)**

Roll No:

2023-24

Date:

Name of the Student:

WORKSHEET - 5

1. Consider that a survey has to be done on how much distance the following vehicles have covered in a span of five days. The data collected can be plotted in different plotting methods. plot the data using **Line plot**:

BIKES				
DAYS	DISTANCE COVERED IN KMS			
	ENFIELD	HONDA	YAHAMA	KTM
DAY 1	50	80	70	80
DAY 2	40	20	20	20
DAY 3	70	20	60	20
DAY 4	80	50	40	50
DAY 5	20	60	60	60

2. Consider question No.9 and plot the data using **Bar Chart**.
3. Consider question No.9 and plot the data using **Pie Plot**.
4. Consider question No.9 and plot the data using **Scatter Plot**.
5. Consider question No.9 and plot the data using **Histogram Plot**.
6. Write a Python program to draw line charts from the given financial data of ABC Co. for 5 days in the form a DataFrame namely fdf as shown below :

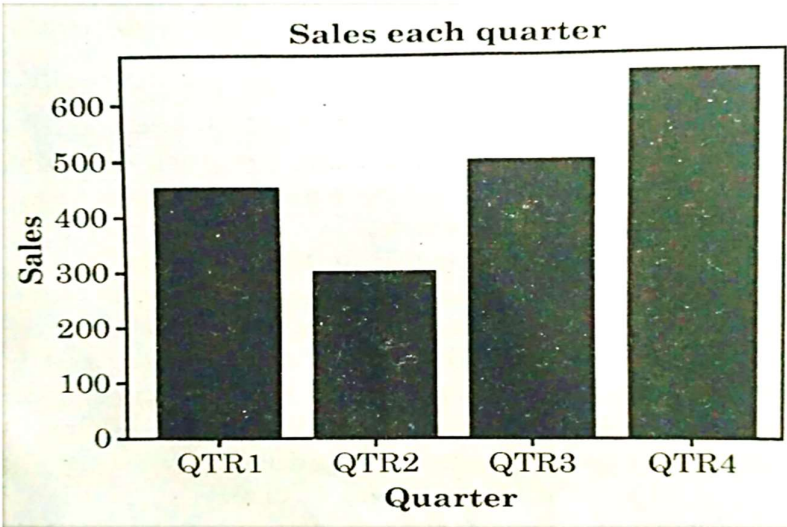
	Day1	Day2	Day3	Day4	Day5
0	74.25	56.03	59.30	69.00	89.65
1	76.06	68.71	72.07	78.47	79.65
2	69.50	62.89	77.65	65.53	80.75
3	72.55	56.42	66.46	76.85	85.08

7. Write a program to create a horizontal bar chart for India's medal tally.

Country	Gold	Silver	Bronze	Total
Australia	80	59	59	198
England	45	45	46	136
India	26	20	20	66
Canada	15	40	27	82

8. Write a python code to draw the following bar graph representing the total sales in each quarter. Add the title, label for X-axis, Y-axis. Use the following data for plotting the graph.

Sales = [450,300,500,850]
Qtr = ["Qtr1", "Qtr2", "Qtr3","Qtr4"]



.....

TOPIC :- DATA VISUALISATION (UNIT – 1)

WORKSHEET – 1 (Answer Key)

1. a) line
2. a) title()
3. barh())
4. Matplotlib library
5. c) line()
6. b) savefig
7. d) histogram
8. c) hist()
9. What is the purpose of a legend?
10. pyplot
11. matplotlib
12. line
13. True
14. a) plot()
15. b) pl.xlabel("title")
16. True
17. c) pl.plot
18. True
19. c)
20. True
21. (c) pyplot
 - (a) subplots
 - (b) set_title
 - (d) set_ylabelplt.show()

UNIT – 1

TOPIC: DATA VISUALISATION

WORKSHEET – 2 (Answer Key)

- D) All of the above
 - A) savefig('filename')
 - B) data presentation architecture
 - D) plt.title()
 - D) All of the above
 - A) It can be accessed quickly by a wider audience.
 - C) visual data is distorted or excessively used.
 - A) Line chart
 - D) bar()
 - B) hist()
 - - (i) (b) matplotlib.pyplot
 - (ii) (d) All of these
 - (iii) (a) X values
 - (iv) (a) title()
 - (v) (b) plt.show()
 - - (i) (b) pandas
 - (ii) (a) pyplot
 - (iii) (c) DataFrame
 - (iv) (c) plot
 - (v) (d) plt.show()
- 13.
- i) matplotlib.pyplot
 - ii) bar, App Rating
 - iii) ylabel
 - iv) legend(), show()
 - v) Statement 2 should be changed. It requires plot() method to plot the data.

UNIT – 1

TOPIC: DATA VISUALISATION

WORKSHEET – 3 (Answer Key)

1. What is the purpose of the Matplotlib library?

Answer:

- The purpose of Matplotlib Library is to present data on graphs.
- You can create, animate interactive 2D plots or figures by using Matplotlib library.
- By plotting data you can visualize variation or show the relationships between various data elements.

2. What are some of the major components of any graphs or plot?

Answer:

Some of the major components of any graphs or plot are:

- Plot Area or Figure or Chart Area
- Legend
- X Axis
- Y Axis
- Plot Title
- ticks
- Artists

3. Name the function which is used to save the plot.

- `savefig()`

4. Write short notes on different customization options available with any plot.

Answer:

1. Chart customization refers to the process of changing the chart components' styles, design and adds more attractive features to the graph.
2. The most common options used to customize the plot are as following:
 - **title()** – Applies titles for graphs with font size and color
 - **grid()** – Show/Hide the gridlines on plot
 - **legend()**: Represents the data displayed in the graph's Y-axis
 - **loc**– Specify the location of the legend as "upper left" or "upper right", "lower left", "lower right"
 - **plot()**: Allows changing the linestyle, linewidth, color, marker ,marker size etc.
 - **xlabel(), ylabel()**: Specify the x and the y titles respectively you can change the fontsize and color
 - **show()**: displays the plot
 - **savefig()**: saves the plot at the specified location

5. What is the purpose of a legend?

Answer:

- Legend represents the data displayed in the graph's Y-axis.
- It helps to understand what the colors and shapes in the graph mean in terms of data.

6. Define Pandas visualization.

Answer:

- Pandas Visualization refers to the process of presenting data in pictorial or graphical form.
- Visualization helps in a better and depth understanding of numerical data.
- Pandas support visualization libraries and packages which is easy to use.
- Pandas visualization also offers methods and properties to create graphs.
- Pandas offer a single and convenient place to plot graphs i.e. matplotlib for visualization and data analysis through graphs.

7. Name the plot which displays the statistical summary.

Answer:

- To displays the statistical summary you can use bar plot and histogram.

8. Compare bar() and barh() functions.

Answer:

Both bar() and barh() are used to plot bar charts. barh() just plots horizontal bar charts. e.g.

`bar('cities','popul')` #cities in the horizontal axis and bars grows upwards

`barh('cities','popul')` #cities in vertical axis and bars grow toward the right.

9. What is the role of legends in a graph/chart?

Answer:

When we plot multiple ranges on a single plot, it becomes necessary that legends are specified. Legends are color or mark linked to a specific data range plotted. `legend()` function is used to add legends to a plot.

10. What do you understand by x limit and ylimit ? How are theses linked to data being plotted?

Answer:

`xlimit` and `ylim` are used to set limit on the x & y axis range on which the data being plotted is shown. `xlim()` & `ylim()` functions are used for this.e.g.

`plt.xlim(-2.0,4.0)`

The data on the chart will now be plotted only for the range from -2 to 4.

11. **When should you use (i) a line chart (ii) a bar chart (iii)a pie chart?**

Answer:

i)line chart

Line charts should be used when we need to connect all the data points and see patterns.

ii)bar chart

Bar charts should be used when we need to visualize categorical data. It helps to see trends.

iii)Pie chart

A pie chart shows how some total amount is divided among distinct categories as a circle (the namesake pie) divided into radial slices. Each category is associated with a single slice whose size corresponds with the category's proportion of the total.

12. **A company has three offices across India: Delhi,Mumbai,Kolkata. Each of the offices has sent a compiled list sharing sales in quarter1, quarter2,quarter3 and quarter4.**
(a) suggest the best chart type to plot all the above data?
(b)Why did you choose that specific chart type?
(c)Can you create a pie chart from above data?

Answer:

- (a) A bar Graph.
(b) In this a direct compare of the all quarter for various company will be done easily.
(c) Yes, we can have three pie charts each for the different city branch.

UNIT – 1
TOPIC: DATA VISUALISATION

WORKSHEET – 4 (Answer Key)

1. Plot the following data using a line plot:

Day	1	2	3	4	5	6	7
Tickets Sold	2000	2800	3000	2500	2300	2500	1000

- Before displaying the plot display "Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday" in place of Day 1, 2, 3, 4, 5, 6, 7
- Change the color of the line to 'Magenta'.

Ans:

```
import pandas as pd
import matplotlib.pyplot as plt
x=["Mon","Tue","Wed","Thu","Fri","Sat","Sun"]
y=[2000,2800,3000,2500,2300,2500,1000]
plt.plot(x,y,color="magenta",marker="*", label="No. of tickets")
plt.title("Day wise Tickets sold ")
plt.xlabel("Days")
plt.ylabel("No of tickets sold")
plt.legend()
plt.grid(True)
plt.savefig("d:\ Tickets.jpg")
plt.show()
```

2. Collect data about colleges in Delhi University or any other university of your choice and number of courses they run for Science, Commerce and Humanities, store it in a CSV file and present it using a bar plot.

Ans:

```
import pandas as pd
import matplotlib.pyplot as p
df=pd.read_csv("D:\Python\IP NCERT XII Chapter 4\data.csv", index_col=0)
print(df)
df.plot(kind="bar")
p.title("Stream wise number of courses ")
p.xlabel("Stream")
p.ylabel("No of Courses")
p.xticks(rotation="15")
p.legend()
p.show()
```

3. Collect the minimum and maximum temperature of your city for a month and present it using a histogram plot.

Ans:

```
import pandas as pd
import matplotlib.pyplot as plt
min_temp=[6,5,6,5,5,5,4,9,11,12,14,15,12,13,11,11,8,7,10,10,9,9,7,8,9,5,6,6,7,10]
max_temp=[16,15,15,16,18,19,15,14,18,27,17,20,17,18,15,16,14,17,20,17,18,15,16]
plt.hist(min_temp,bins=5,color="brown",edgecolor="black")
plt.title("Minimum Temperatures in city During Fenruary 2021")
plt.ylabel("Frequency")
plt.xlabel("Temperature")
plt.show()
```

4. Plot the following data on line chart:

Runs in Overs	10	20
MI	110	224
RCB	85	210

Ans:

```
import matplotlib.pyplot as mpp
overs = [10,20]
mi = [110,224]
mpp.plot(overs,mi,'blue')
rcb=[109,210]
mpp.plot(overs,rcb,'red')
mpp.xlabel('Runs')
mpp.ylabel('Overs')
mpp.title('Match Summary')
mpp.show()
```

5. Write code to plot a line chart to depict the run rate of T20 match from given data:

Overs	Runs
5	45
10	79
15	145
20	234

Ans: import matplotlib as pp
overs = [5,10,15,20]
runs = [54,79,145,234]
pp.plot(overs,runs)
pp.xlabel('Overs')
pp.ylabel('Runs')
pp.show()

6. Plot following data on bar graph:

English: 56,78,90,34
Science: 65,77,54,32
Maths: 45,67,43,41

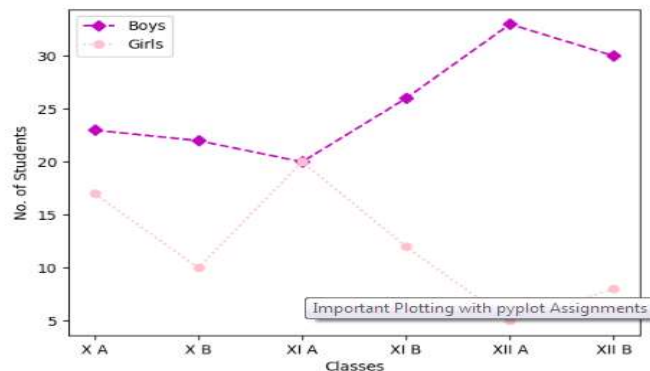
Ans:

```
import matplotlib.pyplot as pp
eng = [56,78,90,34]
sci = [65,77,54,32]
maths=[45,67,43,41]
pp.bar(eng,sci,maths)
pp.xlabel('Marks')
pp.ylabel('Subjects')
pp.show()
```

7. How to change the thickness of line, line style, line color, and marker properties of a chart?

To change the thickness of line, use the linewidth parameter inside matplotlib.pyplot.plot() function with a numeric value. For ex.:
pp.plot(x,y,linewidth=2)

8. Mrs. Sharma is a coordinator in the senior section school. She represented data on number of students who passed the exam on line chart as follows:



She has written the following code but not getting the desired output. Help her by correcting her code.

```
import matplotlib.pyplot as plt
CLASSES=["X A","X B","XI A","XI B","XII A","XII B"]
no_of_boys=[23,22,20,26,33,30]
no_of_girls=[17,10,20,12,5,8]
plt.line(CLASSES,no_of_boys)           #Statement 1
plt.line(CLASSES,no_of_girls)          #Statement 2
plt.xtitle("No of Stdudents")           #Statement 3
plt.ytitle("CLASSES")                   #Statement 4
plt.show()
```

- What will be the correct code for Statement 1 and Statement 2?
- What is the correct function name for Statement 3 and Statement 4?
- Write a method and parameter required to display legends?
- Name the parameter and values used to apply the marker as given in the output.
- Name the parameter and values used to apply linestyle as given in the output.

- vi. How to apply the line colours as given in the figure?
- vii. Write to save the figure as image.

Ans.:

i) The code for statement 1 and statement 2 is as follows:

1. Statement 1: `plt.plot(CLASSes,no_of_boys)`
2. Statement 2: `plt.plot(CLASSes,no_of_girls)`

ii) The correct code for statement 3 and statement 4 is as follows:

1. `plt.xlabel('CLASSes')`
2. `plt.ylabel('No of stduents')`

iii) To display the legend she need to add label parameter in the plot method as following:

1. `plt.plot(CLASSes,no_of_boys,label='Boys')`
2. `plt.plot(CLASSes,no_of_girls,label='Girls')`

To display legend she need to write this function: `plt.legend()`

iv) To apply the marker as given in the figure she needs to write the code as follows:

```
plt.plot(CLASSes,no_of_boys,marker='D')  
plt.plot(CLASSes,no_of_girls,marker='o')
```

v) To apply the lines styles she needs to use a parameter linestyle or ls with the values 'dashed' and 'dotted' respectively as follows:

```
plt.plot(CLASSes,no_of_boys,ls='dashed')  
plt.plot(CLASSes,no_of_girls,ls='dotted')
```

vi) She can use color parameter to apply colours as follows:

```
plt.plot(CLASSes,no_of_boys,color='m')  
plt.plot(CLASSes,no_of_girls,color='pink')
```

vii) To save the figure as image she needs to use `savefig()` method as follows:

```
plt.savefig('boygirlspass.jpg')
```

UNIT – 1
TOPIC: DATA VISUALISATION

WORKSHEET – 5 (Answer Key)

1. Consider that a survey has to be done on how much distance the following vehicles have covered in a span of five days. The data collected can be plotted in different plotting methods.

BIKES				
DAYS	DISTANCE COVERED IN KMS			
	ENFIELD	HONDA	YAHAMA	KTM
DAY 1	50	80	70	80
DAY 2	40	20	20	20
DAY 3	70	20	60	20
DAY 4	80	50	40	50
DAY 5	20	60	60	60

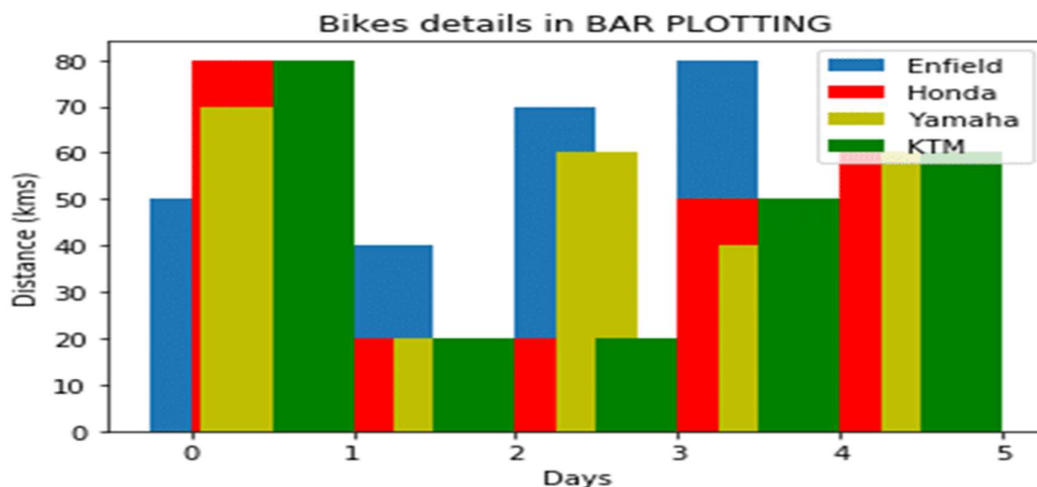
plot the data using **Line plot:**

```
import matplotlib.pyplot as plt
x = [1,2,3,4,5]
y = [50,40,70,80,20]
y2 = [80,20,20,50,60]
y3 = [70,20,60,40,60]
y4 = [80,20,20,50,60]
plt.plot(x,y,'g',label='Enfield', linewidth=5)
plt.plot(x,y2,'c',label='Honda',linewidth=5)
plt.plot(x,y3,'k',label='Yahama',linewidth=5)
plt.plot(x,y4,'y',label='KTM',linewidth=5)
plt.title('bike details in line plot')
plt.ylabel(' Distance in kms')
plt.xlabel('Days')
plt.legend()
plt.show()
```



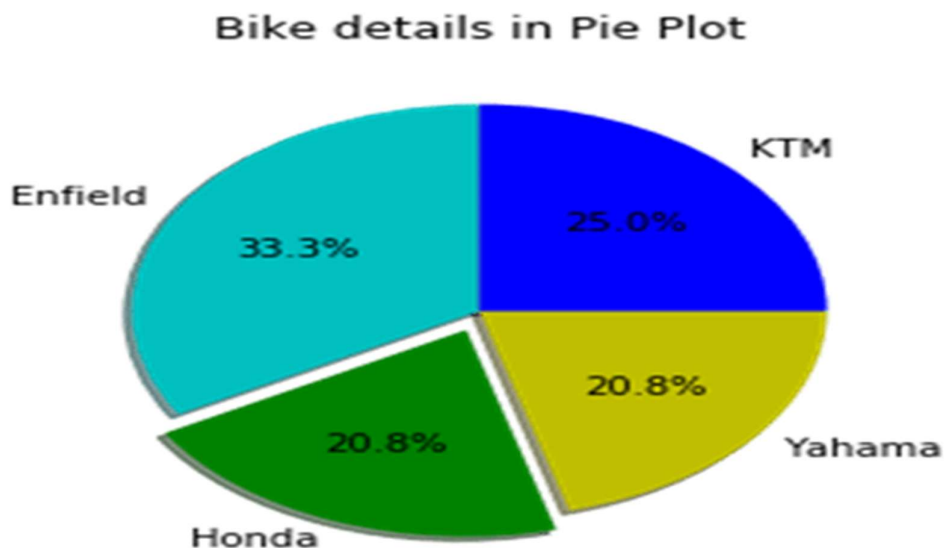
2. Consider question No.9 and plot the data using Bar Chart.

```
import matplotlib.pyplot as plt
plt.bar([0.25,1.25,2.25,3.25,4.25],[50,40,70,80,20],
label="Enfield",width=.5)
plt.bar([0.26,1.25,2.25,3.25,4.25],[80,20,20,50,60],
label="Honda", color='r',width=.5)
plt.bar([0.31,1.5,2.5,3.5,4.5],[70,20,60,40,60],
label="Yamaha", color='y',width=.5)
plt.bar([.75,1.75,2.75,3.75,4.75],[80,20,20,50,60],
label="KTM", color='g',width=.5)
plt.legend()
plt.xlabel('Days')
plt.ylabel('Distance (kms)')
plt.title('Bikes details in BAR PLOTTING')
plt.show()
```



3. Consider question No.9 and plot the data using Pie Plot.

```
import matplotlib.pyplot as plt
days = [1,2,3,4,5]
Enfield = [50,40,70,80,20]
Honda = [80,20,20,50,60]
Yahama = [70,20,60,40,60]
KTM = [80,20,20,50,60]
slices = [8,5,5,6]
activities = ['Enfield','Honda','Yahama','KTM']
cols = ['c','g','y','b']
plt.pie(slices,
labels=activities,
colors=cols,
startangle=90,
shadow= True,
explode=(0,0.1,0,0),
autopct='%1.1f%%')
plt.title('Bike details in Pie Plot')
plt.show()
```



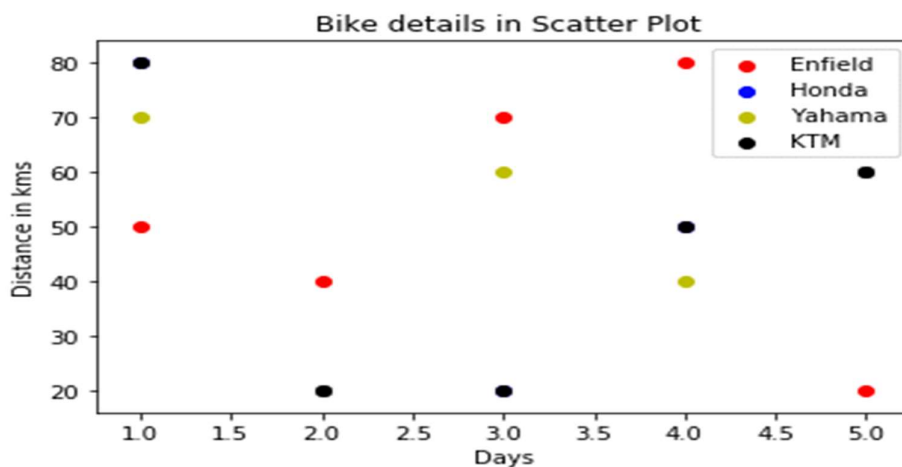
4. Consider question No.9 and plot the data using Scatter Plot.

```
import matplotlib.pyplot as plt
days = [1, 2, 3, 4, 5]
Y1 = [50, 40, 70, 80, 20]
Y2=[80, 20, 20, 50, 60]
```

```

Y3=[70, 20, 60, 40, 60]
Y4=[80, 20, 20, 50, 60]
plt.scatter(days,Y1, label='Enfield',color='r')
plt.scatter(days,Y2,label='Honda',color='b')
plt.scatter(days,Y3,label='Yahama',color='y')
plt.scatter(days,Y4,label='KTM',color='k')
plt.xlabel('Days')
plt.ylabel('Distance in kms')
plt.title(' Bike details in Scatter Plot')
plt.legend()
plt.show()

```



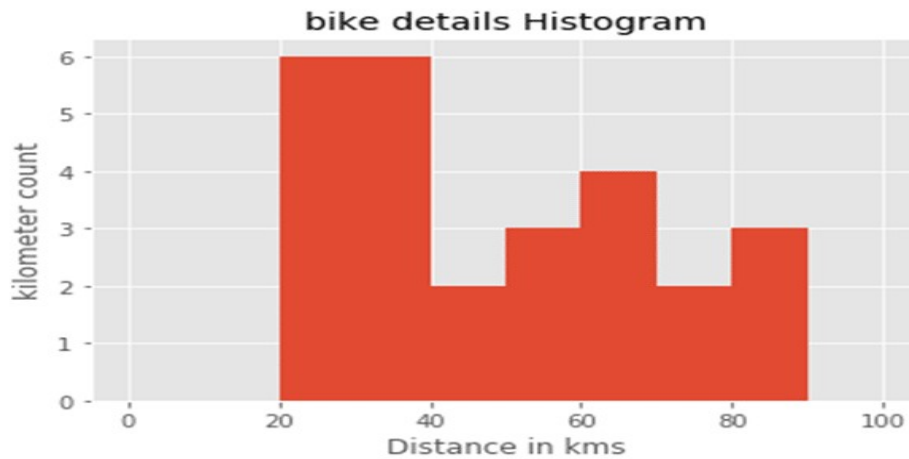
5. Consider question No.9 and plot the data using [Histogram Plot](#).

The plotting of numerical data in a precise manner by using rectangular blocks forms the basis of histogram plotting. A probability distribution can be estimated using a histogram plot. The data is mostly represented in a continuous manner based on the data set provided to plot the graph.

```

import matplotlib.pyplot as plt
days = [50,80,70,80,40,20,20,20,70,20,60,20,80,50,40,50,20,60,60,60]
bins = [0,10,20,40,50,60,70,80,90,100]
plt.hist(days, bins, histtype='stepfilled', rwidth=0.88)
plt.xlabel('Distance in kms')
plt.ylabel('kilometer count')
plt.title('bike details Histogram')
plt.show()

```



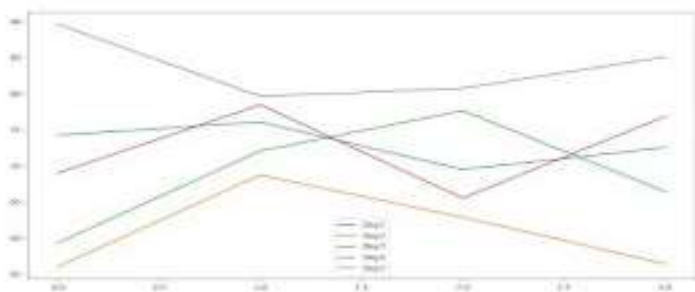
6. Write a Python program to draw line charts from the given financial data of ABC Co. for 5 days in the form a DataFrame namely fdf as shown below :

	Day1	Day2	Day3	Day4	Day5
0	74.25	56.03	59.30	69.00	89.65
1	76.06	68.71	72.07	78.47	79.65
2	69.50	62.89	77.65	65.53	80.75
3	72.55	56.42	66.46	76.85	85.08

Ans:

```
import matplotlib.pyplot as plt
import pandas as pd
x = {"Day1": [74.25, 76.06, 69.50, 72.55],\
     "Day2": [56.03, 68.71, 62.89, 56.42],\
     "Day3": [59.30, 72.07, 77.65, 66.46],\
     "Day4": [69.00, 78.47, 65.53, 76.85],\
     "Day5": [89.65, 79.65, 80.75, 85.08]}
fdf = pd.DataFrame(x)
fdf.plot()
plt.show()
```

Output:



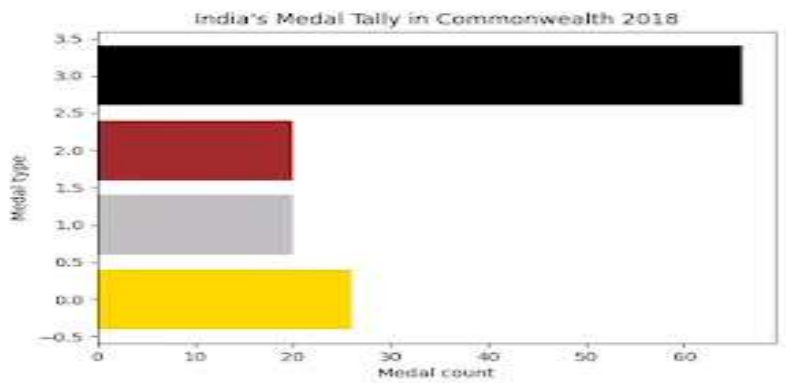
7. Write a program to create a horizontal bar chart for India's medal tally.

Country	Gold	Silver	Bronze	Total
Australia	80	59	59	198
England	45	45	46	136
India	26	20	20	66
Canada	15	40	27	82

Answer:

```
import matplotlib.pyplot as plt
Info = ['Gold', 'Silver', 'Bronze', 'Total']
India = [26, 20, 20, 66]
plt.ylabel("Medal type")
plt.xlabel("Medal count")
plt.title("India's Medal Tally in Commonwealth 2018")
X = range(len(Info))
plt.barh(X, India, color = ['gold', 'silver', 'brown', 'black'])
plt.show()
```

Output:



KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:1 (Questions) ::CLASS XII – IP

Q.No.	Question	Marks																																																						
1	The count() function in MySql is an example of _____. a. Math function b. Text function c. Date Function d. Aggregate Function	1																																																						
2	Which of the following SQL function will display the current time and date. a. now() b. year() c. day() d. All of the above	1																																																						
3	The _____ function is used in SQL to find one string into another. a. substr() b. mid() c. instr() d. left()	1																																																						
4	What is the purpose of GROUP BY Clause?	2																																																						
5	Define a function. Name different types of it.	2																																																						
6	Differentiate between Order By and Group By clause.	2																																																						
7	Differentiate between WHERE and HAVING clause.	2																																																						
8	What is aggregate function? Write its names.	2																																																						
9	Write outputs for SQL queries (i) to (iii) which are based on the given table PURCHASE. Table : PURCHASE <table><tr><th>CNO</th><th>CNAME</th><th>CITY</th><th>QUANTITY</th><th>DOP</th></tr><tr><td>C01</td><td>GURPREET</td><td>NEW DELHI</td><td>150</td><td>2022-06-11</td></tr><tr><td>C02</td><td>MALIKA</td><td>HYDERABAD</td><td>10</td><td>2022-02-19</td></tr><tr><td>C03</td><td>NADAR</td><td>DALHOUSIE</td><td>100</td><td>2021-12-04</td></tr><tr><td>C04</td><td>SAHIB</td><td>CHANDIGARH</td><td>50</td><td>2021-10-10</td></tr><tr><td>C05</td><td>MEHAK</td><td>CHANDIGARH</td><td>15</td><td>2021-10-20</td></tr></table> i. SELECT LENGTH(CNAME) FROM PURCHASE WHERE QUANTITY>100; ii. SELECT CNAME FROM PURCHASE WHERE MONTH(DOP)=3; iii. SELECT MOD(QUANTITY,DAY(DOP)) FROM PURCHASE WHERE CITY = 'CHANDIGARH';	CNO	CNAME	CITY	QUANTITY	DOP	C01	GURPREET	NEW DELHI	150	2022-06-11	C02	MALIKA	HYDERABAD	10	2022-02-19	C03	NADAR	DALHOUSIE	100	2021-12-04	C04	SAHIB	CHANDIGARH	50	2021-10-10	C05	MEHAK	CHANDIGARH	15	2021-10-20	3																								
CNO	CNAME	CITY	QUANTITY	DOP																																																				
C01	GURPREET	NEW DELHI	150	2022-06-11																																																				
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C03	NADAR	DALHOUSIE	100	2021-12-04																																																				
C04	SAHIB	CHANDIGARH	50	2021-10-10																																																				
C05	MEHAK	CHANDIGARH	15	2021-10-20																																																				
10	Observe the table student carefully and answer questions given below. Table : Student <table><tr><th>SID</th><th>SNAME</th><th>CLASS</th><th>HOUSE</th><th>FEES</th><th>ADMYEAR</th></tr><tr><td>S1021</td><td>AMAN</td><td>12</td><td>RED</td><td>2400</td><td>2016</td></tr><tr><td>S1022</td><td>SUNIL</td><td>11</td><td>RED</td><td>2400</td><td>2015</td></tr><tr><td>S1023</td><td>REENA</td><td>10</td><td>BLUE</td><td>1800</td><td>2014</td></tr><tr><td>S1024</td><td>MOHIT</td><td>12</td><td>BLUE</td><td>3150</td><td>2016</td></tr><tr><td>S1025</td><td>VINIT</td><td>11</td><td>GREEN</td><td>2700</td><td>2021</td></tr><tr><td>S1026</td><td>MAYA</td><td>10</td><td>GREEN</td><td>1800</td><td>2022</td></tr><tr><td>S1027</td><td>JAMES</td><td>12</td><td>YELLOW</td><td>2900</td><td>2020</td></tr><tr><td>S1028</td><td>DIPAK</td><td>11</td><td>YELLOW</td><td>2900</td><td>2019</td></tr></table>	SID	SNAME	CLASS	HOUSE	FEES	ADMYEAR	S1021	AMAN	12	RED	2400	2016	S1022	SUNIL	11	RED	2400	2015	S1023	REENA	10	BLUE	1800	2014	S1024	MOHIT	12	BLUE	3150	2016	S1025	VINIT	11	GREEN	2700	2021	S1026	MAYA	10	GREEN	1800	2022	S1027	JAMES	12	YELLOW	2900	2020	S1028	DIPAK	11	YELLOW	2900	2019	4
SID	SNAME	CLASS	HOUSE	FEES	ADMYEAR																																																			
S1021	AMAN	12	RED	2400	2016																																																			
S1022	SUNIL	11	RED	2400	2015																																																			
S1023	REENA	10	BLUE	1800	2014																																																			
S1024	MOHIT	12	BLUE	3150	2016																																																			
S1025	VINIT	11	GREEN	2700	2021																																																			
S1026	MAYA	10	GREEN	1800	2022																																																			
S1027	JAMES	12	YELLOW	2900	2020																																																			
S1028	DIPAK	11	YELLOW	2900	2019																																																			

	a. Write SQL query to print records in descending order of year of admission. b. Write SQL query to display house and number of students in each house. c. Write SQL query to display CLASS wise highest fees. d. Predict output. SELECT LENGTH(SNAME) FROM STUDENT;	
11	Write suitable SQL query for the following: i. Display 7 characters extracted from 7th left character onwards from the string 'INDIA SHINING' ii. Display the position of occurrence of string 'COME' in the string 'WELCOME WORLD'. iii. Round off the value 23.78 to one decimal place. iv. Display the remainder of 100 divided by 9. v. Remove all the expected leading and trailing spaces from a column userid of the table 'USERS'.	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:1 (Answers) ::CLASS XII – IP

QN	Answers	M						
1	d) Aggregate function	1						
2	a)Now()	1						
3	c)Instr()	1						
4	GROUP BY clause is used in a SELECT statement in conjunction with aggregate functions to group the result based on distinct values in a column.	2						
5	Function is a special type of predefined command set that performs some operations and returns a single value. Types of functions: i) Single row functions a) Mathematical/Numeric function b) String functions c) Date and Time Functions ii) Multiple row functions	2						
6	Order by clause is used to sort data in ascending or descending order based on one or more column. Group by clause can be used in a SELECT statement to collect data across multiple records and group the result by one or more columns.	2						
7	- WHERE clause works in respect to the whole table but HAVING clause works on Group only. - If where and having both are used then where can be executed first. - Where is used to put a condition on individual row of a table whereas HAVING is used to put a condition on an individual group formatted by GROUP BY clause in select statement. - Having clause support aggregate functions	2						
8	Aggregate function is a function where the values of multiple rows are grouped together as input based on a certain criterion to form a single value of more significant meaning. Different aggregate functions are : SUM(), AVG(), MAX(), MIN(), COUNT()	2						
9	I. 8 II. NO OUTPUT III. 0 15	3						
10	i. SELECT * FROM STUDENT ORDER BY ADMYEAR DESC; ii. SELECT HOUSE, COUNT(HOUSE) FROM STUDENT GROUP BY HOUSE; iii. SELECT CLASS, MAX(FEES) FROM STUDENT GROUP BY CLASS; iv. <table><tr><td>LENGTH(SNAME)</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>5</td></tr><tr><td>5</td></tr><tr><td>5</td></tr></table>	LENGTH(SNAME)	4	5	5	5	5	4
LENGTH(SNAME)								
4								
5								
5								
5								
5								

	4		
	5		
	5		
11	i. SELECT MID('INDIA SHINING',7,7); ii. SELECT INSTR('WELCOME WORLD','COME'); iii. SELECT ROUND(23.78,1); iv. SELECT MOD(100,9); v. SELECT TRIM(USERID) FROM USERS;		5
	TOTAL		25

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:2 (Questions) ::CLASS XII – IP

Q.No.	Question	Marks																																								
1	NULL value means : (i) 0 value (ii) 1 value (iii) None value (iv) None of the above	1																																								
2	Write the output for the following SQL commands: Select round(15.193 , -1); (i) 11 (ii) 10 (iii) 15 (iv) 14	1																																								
3	The clause that is used to arrange the result of SQL command into groups. a. Order by b. Group in c. Groups by d. Group by	1																																								
4	Shewani has recently started working in MySQL. Help her in understanding the difference between the following : Count(column_name) and count(*)	2																																								
5	Predict the output of the following queries: i. Select power(5,3); ii. Select mod(5,3);	2																																								
6	Help Reshma in predicting the output of the following queries: i) select round(8.72,3); ii) select round(9.8);	2																																								
7	Mr. Som, a HR Manager in a multinational company "Star-X world" has created the following table to store the records of employees: He has written following queries: Table: Emp <table><tr><th>Eid</th><th>ENAME</th><th>Department</th><th>DOB</th><th>DOJ</th></tr><tr><td>Star1</td><td>Ivan</td><td>Sales</td><td>1994-08-28</td><td>2020-02-14</td></tr><tr><td>Star2</td><td>Melinda</td><td>IT</td><td>1997-10-15</td><td>2021-11-19</td></tr><tr><td>Star3</td><td>Raj</td><td>Accounts</td><td>1998-10-02</td><td>2019-04-02</td></tr><tr><td>Star4</td><td>Michael</td><td>Sales</td><td>2000-02-17</td><td>2020-05-01</td></tr><tr><td>Star5</td><td>Sajal</td><td>IT</td><td>2001-12-05</td><td>2018-06-13</td></tr><tr><td>Star6</td><td>John</td><td>Accounts</td><td>1995-01-03</td><td>2019-07-15</td></tr><tr><td>Star7</td><td>Julia</td><td>Sales</td><td>1985-11-13</td><td>2020-08-19</td></tr></table> i) select max(year(DOB)) from emp; ii) select ENAME from emp where month(DOJ)=11; Predict the output.	Eid	ENAME	Department	DOB	DOJ	Star1	Ivan	Sales	1994-08-28	2020-02-14	Star2	Melinda	IT	1997-10-15	2021-11-19	Star3	Raj	Accounts	1998-10-02	2019-04-02	Star4	Michael	Sales	2000-02-17	2020-05-01	Star5	Sajal	IT	2001-12-05	2018-06-13	Star6	John	Accounts	1995-01-03	2019-07-15	Star7	Julia	Sales	1985-11-13	2020-08-19	2
Eid	ENAME	Department	DOB	DOJ																																						
Star1	Ivan	Sales	1994-08-28	2020-02-14																																						
Star2	Melinda	IT	1997-10-15	2021-11-19																																						
Star3	Raj	Accounts	1998-10-02	2019-04-02																																						
Star4	Michael	Sales	2000-02-17	2020-05-01																																						
Star5	Sajal	IT	2001-12-05	2018-06-13																																						
Star6	John	Accounts	1995-01-03	2019-07-15																																						
Star7	Julia	Sales	1985-11-13	2020-08-19																																						
8	Give any two differences between POW() and SUM().	2																																								
9	Predict the output of the following SQL queries i) SELECT TRIM(" ALL THE BEST "); ii) SELECT LEFT('INFORMATICS',5);	3																																								

	iii) SELECT UPPER (MID("start up india",10));																																					
10	Shreya, a database administrator has designed a database for a clothing shop. Help her by writing answers of the following questions based on the given table: TABLE : CLOTH <table><tr><th>CCODE</th><th>CNAME</th><th>SIZE</th><th>COLOUR</th><th>PRICE</th><th>DOP</th></tr><tr><td>C001</td><td>JEANS</td><td>XL</td><td>BLUE</td><td>990</td><td>2022-01-21</td></tr><tr><td>C002</td><td>T SHIRT</td><td>M</td><td>RED</td><td>599</td><td>2021-12-12</td></tr><tr><td>C003</td><td>TROUSER</td><td>M</td><td>GREY</td><td>399</td><td>2021-11-10</td></tr><tr><td>C004</td><td>SAREE</td><td>FREE</td><td>GREEN</td><td>1299</td><td>2019-11-12</td></tr><tr><td>C005</td><td>KURTI</td><td>L</td><td>WHITE</td><td>399</td><td>2021-12-07</td></tr></table> i. Write a query to display cloth names in lower case. (1) ii. Write a query to display the lowest price of the cloths.(1) iii. Write a query to count total number of cloths purchased of medium size. iv. Write a query to count year wise total number of cloths purchased.	CCODE	CNAME	SIZE	COLOUR	PRICE	DOP	C001	JEANS	XL	BLUE	990	2022-01-21	C002	T SHIRT	M	RED	599	2021-12-12	C003	TROUSER	M	GREY	399	2021-11-10	C004	SAREE	FREE	GREEN	1299	2019-11-12	C005	KURTI	L	WHITE	399	2021-12-07	4
CCODE	CNAME	SIZE	COLOUR	PRICE	DOP																																	
C001	JEANS	XL	BLUE	990	2022-01-21																																	
C002	T SHIRT	M	RED	599	2021-12-12																																	
C003	TROUSER	M	GREY	399	2021-11-10																																	
C004	SAREE	FREE	GREEN	1299	2019-11-12																																	
C005	KURTI	L	WHITE	399	2021-12-07																																	
11	Write suitable SQL query for the following: i. Display name of the Month from your date of birth. ii. Convert email-id to lowercase. iii. Count the number of characters in your name. iv. To remove leading spaces from the ` VANDE BHARAT `. v. Display the string `CHEST` from the string `MANCHESTER UNITED`.	5																																				
	TOTAL	25																																				

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:2 (Answers) ::CLASS XII – IP

QN	Answers	M
1	iii) None value	1
2	ii) 10	1
3	d. Group by	1
4	The function COUNT(column_name) counts the number of records in a particular column but not includes null value While COUNT(*) will count total no of rows in a table , null value doesn't affect the result.	2
5	i. 125 ii. 2	2
6	i) 8.720 ii) 10	2
7	i) 2001 ii) Melinda	2
8	POW() – return the value m raise to power n, Type of mathematical function SUM() – return the sum of all the values of a given column, aggregate function	2
9	i) "ALL THE BEST" ii) INFOR iii) INDIA	3
10	i. Select lower(CNAME) from cloth; ii. Select min(price) from cloth; iii. SELECT COUNT(*) FROM CLOTH GROUP BY SIZE HAVING SIZE='M'; iv. SELECT YEAR(DOP) , COUNT(*) FROM CLOTH GROUP BY YEAR(DOP);	4
11	i. SELECT MONTHNAME('2022-10-12'); ii. SELECT LOWER('abc@gmail.com'); iii. SELECT COUNT('ROMIL'); iv. SELECT LTRIM(' VANDE BHARAT '); v. SELECT MID('MANCHESTER UNITED', 4,5);	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:3 (Questions) ::CLASS XII – IP

QN	Question	M																																				
1	The function works with data of multiple rows at a time and returns aggregate value. a. SUM() b. AVG() c. MAX() d. COUNT()	1																																				
2	The Clause arrange the result set in the order of single column, multiple columns and custom sort order too. a. HAVING b. GROUP BY c. ORDER BY d. DISTINCT	1																																				
3	Which clause is used in query to place the condition on group in clause. a. WHERE b. HAVING c. GROUP BY d. Both (a) and (b)	1																																				
4	Give output of the following queries as per given table: Table: Interior <table><tr><th>NO</th><th>ITEMNAME</th><th>TYPE</th><th>DATEOFSTOCK</th><th>PRICE</th><th>DISCOUNT</th></tr><tr><td>1</td><td>RED ROSE</td><td>DOUBLE BED</td><td>2022-02-23</td><td>2000</td><td>15</td></tr><tr><td>2</td><td>SOFT TOUCH</td><td>BABY COT</td><td>2020-01-22</td><td>9000</td><td>10</td></tr><tr><td>3</td><td>ROUGH WOOD</td><td>BABY COT</td><td>2021-02-15</td><td>3500</td><td>10</td></tr><tr><td>4</td><td>COMFORT ZONE</td><td>OFFICE TABLE</td><td>2020-09-27</td><td>0000</td><td>20</td></tr><tr><td>5</td><td>LION KING</td><td>DOULE BED</td><td>2015-07-15</td><td>0000</td><td>20</td></tr></table> I. SELECT COUNT(DISTINCT TYPE) FROM INTERIORS; II. SELECT SUM(PRICE) FROM INTERIORS WHERE TYPE = 'BABY COT';	NO	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT	1	RED ROSE	DOUBLE BED	2022-02-23	2000	15	2	SOFT TOUCH	BABY COT	2020-01-22	9000	10	3	ROUGH WOOD	BABY COT	2021-02-15	3500	10	4	COMFORT ZONE	OFFICE TABLE	2020-09-27	0000	20	5	LION KING	DOULE BED	2015-07-15	0000	20	2
NO	ITEMNAME	TYPE	DATEOFSTOCK	PRICE	DISCOUNT																																	
1	RED ROSE	DOUBLE BED	2022-02-23	2000	15																																	
2	SOFT TOUCH	BABY COT	2020-01-22	9000	10																																	
3	ROUGH WOOD	BABY COT	2021-02-15	3500	10																																	
4	COMFORT ZONE	OFFICE TABLE	2020-09-27	0000	20																																	
5	LION KING	DOULE BED	2015-07-15	0000	20																																	
5	Aryan, a database administrator, has grouped records of a table with the help of group by clause. He needs to further filter groups of records generated through group by clause. Suggest suitable clause for it and properly explain its usage with the help of an example.	2																																				
6	Predict the output of the following queries: i. Select instr('EK BHARAT SHRESHT BHARAT','BH'); ii. select substr('SWACHH BHARAT ABHIYAN',8,8);	2																																				
7	Ms. Vini is working on a MySQL table named 'Passenger' having following structure: <table><tr><th>FNO</th><th>FNAME</th><th>FROM</th><th>TO</th><th>Fare</th></tr><tr><td>F101</td><td>AIR INDIA</td><td>DELHI</td><td>JAISALMER</td><td>5000</td></tr><tr><td>F102</td><td>AIR ASIA</td><td>GUWAHTI</td><td>JAIPUR</td><td>6000</td></tr><tr><td>F103</td><td>GO AIR</td><td>JAIPUR</td><td>KOCHI</td><td>3500</td></tr><tr><td>F104</td><td>INDIGO</td><td>JAIPUR</td><td>GUWAHATI</td><td>7500</td></tr></table>	FNO	FNAME	FROM	TO	Fare	F101	AIR INDIA	DELHI	JAISALMER	5000	F102	AIR ASIA	GUWAHTI	JAIPUR	6000	F103	GO AIR	JAIPUR	KOCHI	3500	F104	INDIGO	JAIPUR	GUWAHATI	7500	2											
FNO	FNAME	FROM	TO	Fare																																		
F101	AIR INDIA	DELHI	JAISALMER	5000																																		
F102	AIR ASIA	GUWAHTI	JAIPUR	6000																																		
F103	GO AIR	JAIPUR	KOCHI	3500																																		
F104	INDIGO	JAIPUR	GUWAHATI	7500																																		

	She need to perform following task on the table so help her to write the SQL query: - i. To fetch last 1 character from the flight number column. ii. To display the values of flight name column in upper case.																																																							
8	Given Table Course: Find out the output for given SQL command: <table><tr><th>CID</th><th>CNAME</th><th>FEES</th><th>STARTDATE</th><th>TID</th></tr><tr><td>C201</td><td>AGDCA</td><td>12000</td><td>2018-07-02</td><td>101</td></tr><tr><td>C202</td><td>ADCA</td><td>15000</td><td>2018-07-15</td><td>103</td></tr><tr><td>C203</td><td>DCA</td><td>10000</td><td>2018-10-01</td><td>102</td></tr><tr><td>C204</td><td>DDTP</td><td>9000</td><td>2018-09-15</td><td>104</td></tr><tr><td>C205</td><td>DHN</td><td>20000</td><td>2018-08-01</td><td>101</td></tr><tr><td>C206</td><td>O LEVEL</td><td>18000</td><td>2018-07-25</td><td>105</td></tr></table> i) SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(*)>1; ii) SELECT FEES, DAY(STARTDATE) FROM COURSE WHERE FEES>15000;	CID	CNAME	FEES	STARTDATE	TID	C201	AGDCA	12000	2018-07-02	101	C202	ADCA	15000	2018-07-15	103	C203	DCA	10000	2018-10-01	102	C204	DDTP	9000	2018-09-15	104	C205	DHN	20000	2018-08-01	101	C206	O LEVEL	18000	2018-07-25	105	2																			
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C205	DHN	20000	2018-08-01	101																																																				
C206	O LEVEL	18000	2018-07-25	105																																																				
9	Predict the output of the following queries: i. select instr('exams@cbse.nic.in','.'); ii. select substr('exams@cbse.nic.in',7,4); iii. select left('exams@cbse.nic.in',5);	3																																																						
10	Consider the following table: Table: ITEM <table><tr><th>SNO</th><th>ITEMNAME</th><th>TYPE</th><th>PRICE</th><th>STOCKDATE</th></tr><tr><td>1</td><td>Chaises</td><td>Living</td><td>11500.58</td><td>2020-02-19</td></tr><tr><td>2</td><td>Accent Chairs</td><td>Living</td><td>31000.67</td><td>2021-02-15</td></tr><tr><td>3</td><td>Baker Racks</td><td>Kitchen</td><td>25000.623</td><td>2019-01-01</td></tr><tr><td>4</td><td>Sofa</td><td>Living</td><td>7000.3</td><td>2020-10-18</td></tr><tr><td>5</td><td>Nightstand</td><td>Bedroom</td><td>Null</td><td>2021-07-23</td></tr></table> Write SQL queries for the following: i. Display all the records in descending order of stockdate. ii. Display the type and total number of items of each type. iii. Display the least price. iv. Display the itemname with their price rounded to 1 decimal place.	SNO	ITEMNAME	TYPE	PRICE	STOCKDATE	1	Chaises	Living	11500.58	2020-02-19	2	Accent Chairs	Living	31000.67	2021-02-15	3	Baker Racks	Kitchen	25000.623	2019-01-01	4	Sofa	Living	7000.3	2020-10-18	5	Nightstand	Bedroom	Null	2021-07-23	4																								
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11	<table><tr><th>SNO</th><th>SNAME</th><th>SALARY</th><th>BONUS</th><th>DATE_OF_JOIN</th><th>STORE_TYPE</th></tr><tr><td>A01</td><td>ANIL</td><td>30000</td><td>45.23</td><td>29-10-2019</td><td>Grocery</td></tr><tr><td>A02</td><td>DEEPAK</td><td>50000</td><td>25.34</td><td>13-03-2018</td><td>Grocery</td></tr><tr><td>B03</td><td>NIRBHAY</td><td>30000</td><td>35.00</td><td>18-03-2017</td><td>Hardware</td></tr><tr><td>B04</td><td>UBESH</td><td>80000</td><td>NULL</td><td>31-12-2018</td><td>Hardware</td></tr><tr><td>C05</td><td>AATIF</td><td>20000</td><td>NULL</td><td>23-01-1989</td><td>Health</td></tr><tr><td>C06</td><td>KRITIKA</td><td>50000</td><td>25.34</td><td>13-03-2018</td><td>Health</td></tr><tr><td>E07</td><td>ANGEL</td><td>30000</td><td>35.00</td><td>18-03-2017</td><td>Software</td></tr><tr><td>E08</td><td>PAYAL</td><td>80000</td><td>NULL</td><td>31-12-2018</td><td>Software</td></tr></table> Devansh, a database analyst has created the following table: Salesman He has written following queries: (a) select sum(salary) from salesman where bonus is null and Salary>20000; (b) select avg(salary)+min(bonus) from salesman where storetype='Health'; (c) select max(salary) from salesman where storetype='software'; (d) select length(SNAME) from salesman where bonus is NULL; (e) select count(bonus) from salesman ;	SNO	SNAME	SALARY	BONUS	DATE_OF_JOIN	STORE_TYPE	A01	ANIL	30000	45.23	29-10-2019	Grocery	A02	DEEPAK	50000	25.34	13-03-2018	Grocery	B03	NIRBHAY	30000	35.00	18-03-2017	Hardware	B04	UBESH	80000	NULL	31-12-2018	Hardware	C05	AATIF	20000	NULL	23-01-1989	Health	C06	KRITIKA	50000	25.34	13-03-2018	Health	E07	ANGEL	30000	35.00	18-03-2017	Software	E08	PAYAL	80000	NULL	31-12-2018	Software	5
SNO	SNAME	SALARY	BONUS	DATE_OF_JOIN	STORE_TYPE																																																			
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	TOTAL	25																																																						

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:3 (Answers) ::CLASS XII – IP

QN	Answers	M
1	b.AVG()	1
2	c. ORDER BY	1
3	b. HAVING	1
4	i. 3 ii. 17500	2
5	With group by clause for more filter Having clause is used. Example: SELECT DEPTNO, COUNT(*) FROM EMP GROUP BY DEPTNO HAVING COUNT(*)>3;	2
6	I. 4 II. BHARAT A	2
7	i. SELECT RIGHT(FNO,1) FROM PASSENGER; ii. SELECT UPPER(FNAME) FROM PASSENGER;	2
8	i) TID COUNT(*) MIN(FEES) 101 2 12000 ii) FEES DAY(STARTDATE) 20000 1 18000 25	2
9	I. 11 II. cbse III. exams	3
10	i. SELECT * FROM ITEM ORDER BY STOCKDATE DESC; ii. SELECT TYPE, COUNT(*) FROM ITEM GROUP BY TYPE; iii. SELECT MIN(PRICE) FROM ITEM; iv. SELECT ITEMNAME, ROUND(PRICE,1) FROM ITEM;	4
11	i. 180000 ii. 35025.34 iii. 80000 iv. 5 5 5 v. 5	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:4 (Questions) ::CLASS XII – IP

QN	Question	M
1	The COUNT() function ignores duplicate and null values while counting the records. State True or False. a. True b. False	1
2	In MYSQL, ... option causes a group function to consider only unique values of the argument expression. a. DESC b. ORDER BY c. DISTINCT d. None of the above	1
3	Which SQL statement do we used to find the total number of records present in the table product? a. SELECT * FROM PRODUCT; b. SELECT COUNT(*) FROM PRODUCT; c. SELECT FIND(*) FROM PRODUCT; d. SELECT SUM() FROM PRODUCT;	1
4	Briefly explain the purpose of the following SQL functions: i. power() ii. mod()	2
5	Mr. Roger is using a table LIBRARY. It has the following columns: BCode, BName, Price, author. He wants to display maximum price Author wise. He wrote the following command: SELECT Author, Max(Price) FROM LIBRARY; But he did not get desired result. Rewrite the above query with necessary change to help him get the desired output and explain the reason.	2
6	Consider a string text1 , "Kendriya Vidyalaya Sangathan" stored in a column text1. What will be the output of the following queries? i) SELECT substr(text1,-9,4); iii) SELECT Right(text1,4);	2
7	Heena has created a table ' student' with the attributes id varchar(20), name varchar(50), city varchar(50), contactno varchar(11) She wants to write the queries for the following. Help her write the queries for the same i. To extract the first four characters from the name ii. To display the characters from 4th position of column city	2
8	Briefly explain the purpose of the following SQL functions: i. ROUND() ii. SQRT()	2
9	Reena is working with functions of MySQL. Explain her following: i. What is the purpose of now () function? ii. How many parameters does it accept? iii. What is the general format of its return type?	3

10	<table><tr><th>NO</th><th>TITLE</th><th>TYPE</th><th>RATING</th><th>SEATS_LEFT</th><th>PRICE</th></tr><tr><td>1</td><td>SANJU</td><td>BIOPIC</td><td>A</td><td>4</td><td>250</td></tr><tr><td>2</td><td>RAID</td><td>ACTION</td><td>B</td><td>2</td><td>175</td></tr><tr><td>3</td><td>RACE3</td><td>ACTION</td><td>C</td><td>7</td><td>245</td></tr><tr><td>4</td><td>HAAMI</td><td>COMEDY</td><td>A</td><td>3</td><td>130</td></tr></table>						NO	TITLE	TYPE	RATING	SEATS_LEFT	PRICE	1	SANJU	BIOPIC	A	4	250	2	RAID	ACTION	B	2	175	3	RACE3	ACTION	C	7	245	4	HAAMI	COMEDY	A	3	130	
NO	TITLE	TYPE	RATING	SEATS_LEFT	PRICE																																
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3	RACE3	ACTION	C	7	245																																
4	HAAMI	COMEDY	A	3	130																																
	Write SQL commands for the following table MOVIE: (I)select TYPE,COUNT(*) from MOVIE group by TYPE; (ii)select TITLE,max(PRICE),min(PRICE) from MOVIE; (iii)select TITLE,TYPE,SEATS_LEFT from MOVIE order by SEATS_LEFT desc; (iv)select * from MOVIE where TYPE='ACTION' and PRICE>200;						4																														
11	<table><tr><th>SNO</th><th>SNAME</th><th>SALARY</th><th>BONUS</th><th>DOJ</th></tr><tr><td>A01</td><td>AKASH</td><td>25000</td><td>106.25</td><td>2019-10-14</td></tr><tr><td>A02</td><td>ANKITA</td><td>15000</td><td>67.33</td><td>2012-08-23</td></tr><tr><td>B02</td><td>BINAYA</td><td>12500</td><td>52.41</td><td>2015-02-03</td></tr><tr><td>B03</td><td>NEESHA</td><td>35000</td><td>NULL</td><td>2012-10-08</td></tr><tr><td>C07</td><td>LALITA</td><td>10600</td><td>45.78</td><td>2021-03-17</td></tr></table> Consider a table SALESMAN with the following data: 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 highest salary and lowest salary.						SNO	SNAME	SALARY	BONUS	DOJ	A01	AKASH	25000	106.25	2019-10-14	A02	ANKITA	15000	67.33	2012-08-23	B02	BINAYA	12500	52.41	2015-02-03	B03	NEESHA	35000	NULL	2012-10-08	C07	LALITA	10600	45.78	2021-03-17	5
SNO	SNAME	SALARY	BONUS	DOJ																																	
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KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:4 (Answers):: – CLASS XII – IP

QN	Answers	M
1	a. False	1
2	b. DISTINCT	1
3	b. SELECT COUNT(*) FROM PRODUCT;	1
4	i. pow(m,n) returns the value m raise to power n ii. mod(a,b) returns the remainder after a divide by b	2
5	SELECT Author, Max(Price) FROM LIBRARY GROUP BY AUTHOR; Group By clause is used to group the rows together that contain the same values in a specified column.so to display maximum price of each author , the table must be grouped author wise using group by clause.	2
6	i. Sang ii. than	2
7	i. SELECT LEFT(NAME,4) FROM STUDENT; ii. SELECT SUBSTR(CITY,4) FROM STUDENT;	2
8	ROUND () – Converts the value to rounded upto n decimal SQRT() – Finds the square root of a given number n	2
9	i. Now() returns system date and time ii. No parameter iii. Yyyy-mm-dd hh:mm:ss	3
10	(III) TITLE TYPE SEATS_LEFT RAID ACTION 2 HAMMI COMEDY 3 SANJU BIOPIC 4 RACE3 ACTION 7	4
11	(a)Select SNAME,ROUND(BONUS,0) from salesman; (b)select INSTR(SNAME,"TA") from salesman; (c)select Mid(SNAME,2,4) from salesman; (d)select monthname(DOJ) from salesman; (e)select max(salary), min(salary) from salesman;	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:5 (Questions)

QN	Question	M																																			
1	Write the output of the following command: SELECT ROUND(49.88); a. 49.88 b. 49.0 c. 9.8 d. 50	1																																			
2	Write output of the following : SELECT LEFT('INDIA IS GREAT',5); a. INDIA b. GREAT c. INDIA IS d. IS GREAT	1																																			
3	Assertion (A) : SELECT MOD(15,3); will produce the output as 0. Reason (R) : POWER() function is used to get the power of the given values. a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A). b. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason(R) is false. d. Assertion (A) is false but reason(R) is true.	1																																			
4	Find the output of the following query: (i) SELECT ROUND(7658.345,2); (ii) SELECT MOD(ROUND(13.9,0),3);	2																																			
5	Find the output of the following SQL queries: i) SELECT SUBSTR('FIT INDIA MOVEMENT',5); ii) SELECT INSTR('ARTIFICIAL INTELIGENCE', 'AI');	2																																			
6	A relation Vehicles is given below : <table border="1"><thead><tr><th>V_no</th><th>Type</th><th>Company</th><th>Price</th><th>Qty</th></tr></thead><tbody><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><tr><td>M0892</td><td>Mini van</td><td>Datsun</td><td>1500000</td><td>26</td></tr><tr><td>W9760</td><td>SUV</td><td>Maruti</td><td>2500000</td><td>18</td></tr><tr><td>R2409</td><td>Mini van</td><td>Mahindra</td><td>350000</td><td>15</td></tr></tbody></table> Find out the Output: a. select Company, count(*) from Vehicles group by company; b. select V_no,Type,Price from Vehicles where Price>350000;	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	2
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W9760	SUV	Maruti	2500000	18																																	
R2409	Mini van	Mahindra	350000	15																																	
7	Predict the output of the following queries: I. SELECT SUBSTR('ABCDEFGG', -5 ,3) II. SELECT INSTR("AZADI KA AMRIT MAHOTSAV", 'AV');	2																																			
8	Consider a string "AS YOU know MORE" Write the queries for the following tasks. i) Write a command to display "know". ii) Write a command to check the first occurrence of letter 'O'	2																																			

9	Consider a table "MYPET" with the following data: Table : MYPET <table><tr><th>Pet_id</th><th>Pet_Name</th><th>Breed</th><th>LifeSpan</th><th>Price</th><th>Discount</th></tr><tr><td>101</td><td>Rocky</td><td>Labrador Retriever</td><td>12</td><td>16000</td><td>5</td></tr><tr><td>202</td><td>Duke</td><td>German Shepherd</td><td>13</td><td>22000</td><td>10</td></tr><tr><td>303</td><td>Oliver</td><td>Bulldog</td><td>10</td><td>18000</td><td>7</td></tr><tr><td>404</td><td>Cooper</td><td>Yorkshire Terrier</td><td>16</td><td>20000</td><td>12</td></tr><tr><td>505</td><td>Oscar</td><td>Shih Tzu</td><td>NULL</td><td>25000</td><td>8</td></tr></table> Write SQL queries for the following: (i) Display the Breed of all the pets in uppercase. (ii) Display the total price of all the pets. (iii) Display the average life span of all the pets.	Pet_id	Pet_Name	Breed	LifeSpan	Price	Discount	101	Rocky	Labrador Retriever	12	16000	5	202	Duke	German Shepherd	13	22000	10	303	Oliver	Bulldog	10	18000	7	404	Cooper	Yorkshire Terrier	16	20000	12	505	Oscar	Shih Tzu	NULL	25000	8	3									
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404	Cooper	Yorkshire Terrier	16	20000	12																																										
505	Oscar	Shih Tzu	NULL	25000	8																																										
10	Katna an IT student is confused about finding the outputs of the SQL queries. Help her find the outputs : Table: food <table><tr><th>scode</th><th>pname</th><th>sname</th><th>City</th><th>price</th></tr><tr><td>S1001</td><td>bread</td><td>britannia</td><td>Cochin</td><td>50</td></tr><tr><td>S1002</td><td>jam</td><td>kissan</td><td>Trivandrum</td><td>40</td></tr><tr><td>S1003</td><td>chocolate</td><td>nestle</td><td>kollam</td><td>30</td></tr><tr><td>S1004</td><td>Cake</td><td>britannia</td><td>Thrissur</td><td>20</td></tr><tr><td>S1005</td><td>icecream</td><td>amul</td><td>Trivandrum</td><td>40</td></tr><tr><td>S1006</td><td>biscuit</td><td>britannia</td><td>NULL</td><td>20</td></tr><tr><td>S1007</td><td>butter</td><td>amul</td><td>Cochin</td><td>30</td></tr><tr><td>S10078</td><td>cheese</td><td>amul</td><td>kollam</td><td>35</td></tr></table> a) select sname, min(price)+max(price) from food group by sname; b) select count(city) from food; c) select length(pname) from food where city is NULL; d) select count(distinct(sname)) from food;	scode	pname	sname	City	price	S1001	bread	britannia	Cochin	50	S1002	jam	kissan	Trivandrum	40	S1003	chocolate	nestle	kollam	30	S1004	Cake	britannia	Thrissur	20	S1005	icecream	amul	Trivandrum	40	S1006	biscuit	britannia	NULL	20	S1007	butter	amul	Cochin	30	S10078	cheese	amul	kollam	35	4
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S1005	icecream	amul	Trivandrum	40																																											
S1006	biscuit	britannia	NULL	20																																											
S1007	butter	amul	Cochin	30																																											
S10078	cheese	amul	kollam	35																																											
11	Write SQL queries using SQL functions to perform the following operations: Note: The table EMPLOYEE (EMPNO,ENAME, DESG, SALARY, BONUS, DOJ) a. Display employee name and bonus after rounding off to zero decimal places. b. Display the position of occurrence of the string "an" in employee name. c. Display the 3 characters from employee name starting from second character. d. Display the month name for the DOJ of employees. e. Display the name of the weekday for the DOJ of Employee.	5																																													
	TOTAL	25																																													

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:5 (Answers)

Q.No.	Answers	Marks										
1	d. 50	1										
2	a. INDIA	1										
3	c. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A).	1										
4	i) 7658.34 ii) 2	2										
5	i) 'INDIA MOVEMENT' ii) 0	2										
6	a. COMPANY COUNT(*) Maruti 2 Mahindra 2 Mitsubishi 1 Datsun 1 b. V_no Type Price J0083 Jeep 4000000	2										
7	i)CDE ii) 22	2										
8	(i) select mid("AS YOU know MORE",8,4); (ii) select instr("AS YOU know MORE","O");	2										
9	i) Select ucase(breed) from mypet; ii) Select sum(price) from mypet; iii) Select avg(lifespan) from mypet;	3										
10 (a)	<table><tr><td>sname</td><td>Min(price)+max(price)</td></tr><tr><td>britania</td><td>70</td></tr><tr><td>kissan</td><td>80</td></tr><tr><td>nestle</td><td>60</td></tr><tr><td>amul</td><td>70</td></tr></table>	sname	Min(price)+max(price)	britania	70	kissan	80	nestle	60	amul	70	
sname	Min(price)+max(price)											
britania	70											
kissan	80											
nestle	60											
amul	70											
(b)	<table><tr><td>Count(city)</td></tr><tr><td>7</td></tr></table>	Count(city)	7									
Count(city)												
7												
(c)	<table><tr><td>Length(pname)</td></tr><tr><td>7</td></tr></table>	Length(pname)	7									
Length(pname)												
7												
d)	<table><tr><td>count(distinct(sname))</td></tr><tr><td>4</td></tr></table>	count(distinct(sname))	4	4								
count(distinct(sname))												
4												
11	a. SELECT ENAME, ROUND(BONUS) FROM EMPLOYEE; b. SELECT INSTR(ENAME,'AN') FROM EMPLOYEE; c. SELECT SUBSTR(ENAME,2,3) FROM EMPLOYEE; d. SELECT MONTHNAME(DOJ) FROM EMPLOYEE; e. SELECT DAYNAME(DOJ) FROM EMPLOYEE;	5										
	TOTAL	25										

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:6 (Questions)

QN	Question	M																																
1	Write the output of the following SQL statement: SELECT ROUND(458.45,-1); a. 450 b. 460 c. 458 d. 500	1																																
2	The SUBSTR() function in MYSQL is an example of a. Date function b. Text function c. Aggregate function d. Math function	1																																
3	Assertion (A) :SELECT INSTR('WORD MAP', 'MAP'); will produce the output 6. Reason (R) : INSTR() function takes two arguments as string and substring and returns the position of the first occurrence of a specified substring from a given string. a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A). b. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason(R) is false. d. Assertion (A) is false but reason(R) is true.	1																																
4	Sreenath created the following table STUDENT in his database. Table : STUDENT <table><tr><th>Rollno</th><th>Name</th><th>CLASS</th><th>Mark</th></tr><tr><td>1</td><td>Ritika</td><td>12</td><td>40</td></tr><tr><td>2</td><td>Angad</td><td>12</td><td>35</td></tr><tr><td>3</td><td>Kaveri</td><td>11</td><td>42</td></tr><tr><td>4</td><td>Lalitha</td><td>12</td><td>21</td></tr><tr><td>5</td><td>Daniel</td><td>11</td><td>44</td></tr><tr><td>6</td><td>Rabindra</td><td>11</td><td>39</td></tr><tr><td>7</td><td>Rabia</td><td>11</td><td>28</td></tr></table> He wants to now count number of students in each CLASS where the number of students is more than 3. He has executed the following query. SELECT MAX(MARKS) FROM STUDENT WHERE COUNT(*)>3 GROUP BY CLASS; But, he got an error. Identify the error and rewrite the query.	Rollno	Name	CLASS	Mark	1	Ritika	12	40	2	Angad	12	35	3	Kaveri	11	42	4	Lalitha	12	21	5	Daniel	11	44	6	Rabindra	11	39	7	Rabia	11	28	2
Rollno	Name	CLASS	Mark																															
1	Ritika	12	40																															
2	Angad	12	35																															
3	Kaveri	11	42																															
4	Lalitha	12	21																															
5	Daniel	11	44																															
6	Rabindra	11	39																															
7	Rabia	11	28																															
5	Briefly explain the purpose of the following SQL functions: i. NOW() ii. RTRIM()	2																																
6	Help suman in predicting the output of the following queries: i) select length(mid('NETWORKING',2,3)); ii) select DAYOFYEAR('2012-02-08');	2																																
7	A numeric data field AMOUNT store a value 936.432, Write MySQL query for the following i) to display amount up to one(1) decimal. ii) to display amount as a whole number.	2																																

8	Consider the following SQL string : 'Examination' Write commands to display: a) 'min' b) 'nation' OR Consider the same string 'Examination' Write SQL commands to display: a) The position of the substring 'min' in the string 'Examination' b) The last 5 letters of the string	2																																				
9	Write the names of SQL functions to perform the following operations i) Display name of the weekday from your '2020-02-30'.. ii) Convert email-id to lowercase. iii) Count the number of characters in your name.	3																																				
10	Consider the Table "PHARMADB" given below: <table><tr><th>RxID</th><th>DrugID</th><th>DrugName</th><th>Price</th><th>PharmacyName</th><th>PharmacyLocation</th></tr><tr><td>R1000</td><td>5476</td><td>Amlodipine</td><td>100.00</td><td>Rx Pharmacy</td><td>Pitampura, Delhi</td></tr><tr><td>R1001</td><td>2345</td><td>Paracetamol</td><td>15.00</td><td>Raj Medicos</td><td>Bahadurgarh, Haryana</td></tr><tr><td>R1002</td><td>1236</td><td>Nebistar</td><td>60.00</td><td>MyChemist</td><td>Rajouri Garden, Delhi</td></tr><tr><td>R1003</td><td>6512</td><td>VitaPlus</td><td>150.00</td><td>MyChemist</td><td>Gurgaon, Haryana</td></tr><tr><td>R1004</td><td>5631</td><td>Levocitrezine</td><td>110.00</td><td>RxPharmacy</td><td>South Extension, Delhi</td></tr></table> Write SQL Commands for the following: I. Display the maximum and minimum price of drugs offered by all pharmacies. II. Display sum of price for each PharmacyName having more than one drug. III. To display total no of drug of each pharmacy name. IV. Display details of PHARMADB in descending order of price.	RxID	DrugID	DrugName	Price	PharmacyName	PharmacyLocation	R1000	5476	Amlodipine	100.00	Rx Pharmacy	Pitampura, Delhi	R1001	2345	Paracetamol	15.00	Raj Medicos	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	South Extension, Delhi	4
RxID	DrugID	DrugName	Price	PharmacyName	PharmacyLocation																																	
R1000	5476	Amlodipine	100.00	Rx Pharmacy	Pitampura, Delhi																																	
R1001	2345	Paracetamol	15.00	Raj Medicos	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	South Extension, Delhi																																	
11	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	5																																				
	TOTAL	25																																				

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION**CLASS XII – IP****NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL****WORKSHEET NO.:6 (Answers)**

QN	Answers	Marks
1	d.460	1
2	b. Text function	1
3	a.Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A).	1
4	To filter more condition with group by clause HAVING clause is used in place of WHERE clause. Correct query is SELECT MAX(MARKS) FROM STUDENT GROUP BY CLASS HAVING COUNT(*)>3;	2
5	i) Now() – it generates system date and time at the time of execution of command ii) RTRIM()- function removes the trailing spaces.	2
6	i) 3 II) 39	2
7	i) Select Round(Amount,1); ii) Select Round(Amount,0);	2
8	a) select substr("Examination",4,3); OR select substring("Examination",4,3); OR select mid("Examination",4,3); b) select substr("Examination",6,6); OR select substring("Examination",6,6); OR select mid("Examination",6,6); OR a) select instr("Examination","min"); OR select position("min" in "Examination"); b) select right("Examination",5);	2
9	i. Select dayname('2020-02-30'); ii. Select lower(email); iii. Select length(name);	3
10	i) Select PharmacyName,max(Price),min(Price) from PHARMADB; ii) Select PharmacyName, sum(Price) from PHARMADB group by PharmacyName having count(*)>1; iii) Select SUM(PRICE) from PHARMADB group by PharmacyName; iv) Select * from PHARMADB order by price desc;	4
11	i) dayname(date(curdate())) ii) ltrim(" Python") iii) monthname(date(dob)) iv) instr("Information Technology","information") v) pow(a,b)	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION

CLASS XII – IP

NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:7 (Questions)

QN	Question	M																																																	
1	Write the output of the following SQL command: SELECT SUBSTR('COMPUTER',3,4); a. MPUT b. PU c. PUTE d. MP	1																																																	
2	The string function that returns the index of first occurrence of substring is a. INSERT() b. INSTR() c. INSTRING() d. INFSTR()	1																																																	
3	Assertion (A) : HAVING clause is often used with the GROUP BY clause. Reason (R) : HAVING clause is used to check specified condition. a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A). b. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason(R) is false. d. Assertion (A) is false but reason(R) is true.	1																																																	
4	Give any two differences between POW () and SUM ().	2																																																	
5	Ms. Mohini is working in a school and stores the details of all students in a table school data. Table : SCHOOLDATA TABLE : SCHOOLDATA <table><tr><th>Admno</th><th>Name</th><th>Class</th><th>House</th><th>Percent</th><th>Gender</th><th>Dob</th></tr><tr><td>20150001</td><td>Aditya Das</td><td>10</td><td>Green</td><td>86</td><td>Male</td><td>2006-02-20</td></tr><tr><td>20140212</td><td>Harsh Sharma</td><td>11</td><td>Red</td><td>75</td><td>Male</td><td>2004-10-05</td></tr><tr><td>20090234</td><td>Swapnil Pant</td><td>10</td><td>Yellow</td><td>84</td><td>Female</td><td>2005-11-21</td></tr><tr><td>20130216</td><td>Soumen Rao</td><td>9</td><td>Red</td><td>91</td><td>Male</td><td>2006-04-10</td></tr><tr><td>20190227</td><td>Rahil Arora</td><td>10</td><td>Blue</td><td>70</td><td>Male</td><td>2005-05-14</td></tr><tr><td>20120200</td><td>Akasha Singh</td><td>11</td><td>Red</td><td>64</td><td>Female</td><td>2004-12-16</td></tr></table> Write the SQL statements from the above given table to: i) To remove leading spaces from the column name ii) Display the names of the students who were born on Sunday	Admno	Name	Class	House	Percent	Gender	Dob	20150001	Aditya Das	10	Green	86	Male	2006-02-20	20140212	Harsh Sharma	11	Red	75	Male	2004-10-05	20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21	20130216	Soumen Rao	9	Red	91	Male	2006-04-10	20190227	Rahil Arora	10	Blue	70	Male	2005-05-14	20120200	Akasha Singh	11	Red	64	Female	2004-12-16	2
Admno	Name	Class	House	Percent	Gender	Dob																																													
20150001	Aditya Das	10	Green	86	Male	2006-02-20																																													
20140212	Harsh Sharma	11	Red	75	Male	2004-10-05																																													
20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21																																													
20130216	Soumen Rao	9	Red	91	Male	2006-04-10																																													
20190227	Rahil Arora	10	Blue	70	Male	2005-05-14																																													
20120200	Akasha Singh	11	Red	64	Female	2004-12-16																																													
6	Predict the output of the following queries: i. Select round(6.5675,2); ii. Select mid('PRE_BOARD_EXAM',4,6);	2																																																	
7	Write the output of the following SQL queries: i. SELECT DAYOFMONTH('2015-01-16'); ii. SELECT DAYOFYEAR('2014-01-30');	2																																																	
8	Consider the table HOTEL given below: <table><tr><th>Empno</th><th>Category</th><th>Salary</th></tr><tr><td>E101</td><td>Manager</td><td>60000</td></tr></table>	Empno	Category	Salary	E101	Manager	60000	2																																											
Empno	Category	Salary																																																	
E101	Manager	60000																																																	

	<table><tr><td>E102</td><td>Executive</td><td>65000</td></tr><tr><td>E103</td><td>Clerk</td><td>40000</td></tr><tr><td>E104</td><td>Manager</td><td>62000</td></tr><tr><td>E105</td><td>Executive</td><td>50000</td></tr></table> Mr. Vinay wanted to display average salary of each category. He entered the following SQL statement. Identify the error and rewrite the correct SQL statement. SELECT CATEGORY, SALARY FROM HOTEL GROUP BY CATEGORY;	E102	Executive	65000	E103	Clerk	40000	E104	Manager	62000	E105	Executive	50000																								
E102	Executive	65000																																			
E103	Clerk	40000																																			
E104	Manager	62000																																			
E105	Executive	50000																																			
9	Predict the output of the following queries: i. SELECT INSTR ('Very good', 'good'); ii. SELECT MID('Quadratically',5,6); iii. SELECT RIGHT ('Command', 3);	3																																			
10	Carefully observe the following table named 'stock'. <table><tr><th>PID</th><th>PName</th><th>Category</th><th>Qty</th><th>Price</th></tr><tr><td>1</td><td>Keyboard</td><td>IO</td><td>15</td><td>450</td></tr><tr><td>2</td><td>Mouse</td><td>IO</td><td>10</td><td>350</td></tr><tr><td>3</td><td>Wifi-router</td><td>NW</td><td>5</td><td>2600</td></tr><tr><td>4</td><td>Switch</td><td>NW</td><td>3</td><td>3000</td></tr><tr><td>5</td><td>Monitor</td><td>O</td><td>10</td><td>4500</td></tr><tr><td>6</td><td>Printer</td><td>O</td><td>4</td><td>17000</td></tr></table> i. To display the records in decreasing order of price. ii. To display category and category wise total quantities of products. iii. To display the category and its average price. iv. To display category and category wise highest price of the products.	PID	PName	Category	Qty	Price	1	Keyboard	IO	15	450	2	Mouse	IO	10	350	3	Wifi-router	NW	5	2600	4	Switch	NW	3	3000	5	Monitor	O	10	4500	6	Printer	O	4	17000	4
PID	PName	Category	Qty	Price																																	
1	Keyboard	IO	15	450																																	
2	Mouse	IO	10	350																																	
3	Wifi-router	NW	5	2600																																	
4	Switch	NW	3	3000																																	
5	Monitor	O	10	4500																																	
6	Printer	O	4	17000																																	
11	Write the SQL functions which will perform the following operations: i) To display the day of the current date. ii) To display the first four letter of the text "EDUCATION". iii) To display the text "EDUCTAION" in lower case. iv) To remove spaces from the beginning and end of a string, " CBSE ". v) To compute the sum between two numbers, n1 and n2	5																																			
	TOTAL	25																																			

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:7 (Answers)

QN	Answers	M
1	a. MPUT	1
2	b. INSTR ()	1
3	a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A).	1
4	POW() – return the value m raise to power n, Type of mathematical function SUM() – return the sum of all the values of a given column, aggregate function	2
5	i) SELECT LTRIM(NAME) FROM SCHOOLDATA; ii) SELECT NAME FROM SCHOOLDATA WHERE DAYNAME(DOB) = 'SUNDAY';	2
6	i. 6.57 ii. _BOARD	2
7	i. 16 ii. 30	2
8	Correct statement : SELECT CATEGORY, AVG(SALARY) FROM HOTEL GROUP BY CATEGORY;	2
9	i. 6 ii. ratica iii. and	3
10	i. SELECT * FROM STOCK ORDER BY PRICE DESC; ii. SELECT CATEGORY, SUM(QTY) FROM STOCK GROUP BY CATEGORY; iii. SELECT CATEGORY, AVG(PRICE) FROM STOCK GROUP BY CATEGORY; iv. SELECT CATEGORY, MAX(PRICE) FROM STOCK GROUP BY CATEGORY;	4
11	I. SELECT year(NOW()); II. SELECT LEFT('EDUCATION',4); III. SELECT LOWER('EDUCATION'); IV. SELECT LTRIM(" CBSE "); V. SELECT SUM(N1,N2);	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:8 (Questions)

Q N	Question	M																																																	
1	Which of the following is not a built-in function? a. SUM b. AVG c. MAX d. TOTAL	1																																																	
2	What is returned by INSTR('JAVA POINT','P'); ? a. 6 b. 7 c. Point d. JAVA	1																																																	
3	Assertion (A): SELECT RIGHT('Program',4) ; Output will be 'ram' Reason (R) : It is used to return a specified number of characters from the right of the string. The number of characters returned is determined by the second argument. a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A). b. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason(R) is false. d. Assertion (A) is false but reason(R) is true.	1																																																	
4	Predict the output of the following queries based on the given table: TABLE : SCHOOLDATA <table><tr><th>Admno</th><th>Name</th><th>Class</th><th>House</th><th>Percent</th><th>Gender</th><th>Dob</th></tr><tr><td>20150001</td><td>Aditya Das</td><td>10</td><td>Green</td><td>86</td><td>Male</td><td>2006-02-20</td></tr><tr><td>20140212</td><td>Harsh Sharma</td><td>11</td><td>Red</td><td>75</td><td>Male</td><td>2004-10-05</td></tr><tr><td>20090234</td><td>Swapnil Pant</td><td>10</td><td>Yellow</td><td>84</td><td>Female</td><td>2005-11-21</td></tr><tr><td>20130216</td><td>Soumen Rao</td><td>9</td><td>Red</td><td>91</td><td>Male</td><td>2006-04-10</td></tr><tr><td>20190227</td><td>Rahil Arora</td><td>10</td><td>Blue</td><td>70</td><td>Male</td><td>2005-05-14</td></tr><tr><td>20120200</td><td>Akasha Singh</td><td>11</td><td>Red</td><td>64</td><td>Female</td><td>2004-12-16</td></tr></table> i) SELECT MAX(PERCENT) FROM SCHOOLDATA; ii) SELECT LEFT(Gender,1) , Name FROM SCHOOLDATA WHERE YEAR(DOB) = 2005;	Admno	Name	Class	House	Percent	Gender	Dob	20150001	Aditya Das	10	Green	86	Male	2006-02-20	20140212	Harsh Sharma	11	Red	75	Male	2004-10-05	20090234	Swapnil Pant	10	Yellow	84	Female	2005-11-21	20130216	Soumen Rao	9	Red	91	Male	2006-04-10	20190227	Rahil Arora	10	Blue	70	Male	2005-05-14	20120200	Akasha Singh	11	Red	64	Female	2004-12-16	2
Admno	Name	Class	House	Percent	Gender	Dob																																													
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20190227	Rahil Arora	10	Blue	70	Male	2005-05-14																																													
20120200	Akasha Singh	11	Red	64	Female	2004-12-16																																													
5	Predict the output of the following queries: i) SELECT SUBSTR('INDIA IS BEST', -4 ,3) ii) SELECT CONCAT('WELCOME' , RIGHT("NEHA SINGH", 5));	2																																																	
6	Based on the table given above, write queries for the following task: <table><tr><th>CID</th><th>CNAME</th><th>FEES</th><th>STARTDATE</th><th>TID</th></tr><tr><td>C201</td><td>AGDCA</td><td>12000</td><td>2018-07-02</td><td>101</td></tr><tr><td>C202</td><td>ADCA</td><td>15000</td><td>2018-07-15</td><td>103</td></tr><tr><td>C203</td><td>DCA</td><td>10000</td><td>2018-10-01</td><td>102</td></tr><tr><td>C204</td><td>DDTP</td><td>9000</td><td>2018-09-15</td><td>104</td></tr><tr><td>C205</td><td>DHN</td><td>20000</td><td>2018-08-01</td><td>101</td></tr><tr><td>C206</td><td>O LEVEL</td><td>18000</td><td>2018-07-25</td><td>105</td></tr></table> i) Display TID and lowest course fee for each TID. ii) Display course details of courses starting in July month.	CID	CNAME	FEES	STARTDATE	TID	C201	AGDCA	12000	2018-07-02	101	C202	ADCA	15000	2018-07-15	103	C203	DCA	10000	2018-10-01	102	C204	DDTP	9000	2018-09-15	104	C205	DHN	20000	2018-08-01	101	C206	O LEVEL	18000	2018-07-25	105	2														
CID	CNAME	FEES	STARTDATE	TID																																															
C201	AGDCA	12000	2018-07-02	101																																															
C202	ADCA	15000	2018-07-15	103																																															
C203	DCA	10000	2018-10-01	102																																															
C204	DDTP	9000	2018-09-15	104																																															
C205	DHN	20000	2018-08-01	101																																															
C206	O LEVEL	18000	2018-07-25	105																																															

7	What will be the output of : i. SELECT ROUND(124.44) + MOD(1201,3); ii. SELECT MOD(30.500,5) + ROUND(100.50,1);	2																																																																		
8	Differentiate between SUBSTR() and INSTR().	2																																																																		
9	A school "ABC" maintains the following MySQL table named 'student' having following structure to store the details of their students: <table><tr><th>Field</th><th>Type</th><th>Null</th><th>Key</th><th>Default</th><th>Extra</th></tr><tr><td>rollno</td><td>int(11)</td><td>NO</td><td>PRI</td><td>NULL</td><td></td></tr><tr><td>name</td><td>varchar(20)</td><td>YES</td><td></td><td>NULL</td><td></td></tr><tr><td>dob</td><td>date</td><td>YES</td><td></td><td>NULL</td><td></td></tr><tr><td>stream</td><td>varchar(20)</td><td>YES</td><td></td><td>NULL</td><td></td></tr><tr><td>gender</td><td>char(1)</td><td>YES</td><td></td><td>NULL</td><td></td></tr><tr><td>marks</td><td>float</td><td>YES</td><td></td><td>NULL</td><td></td></tr></table> Write the SQL query to achieve the following tasks. i. To display the first three characters of the column stream in UPPER case. ii. To display the year of birth from dob column of table student. iii. To locate the position of the sub-string "sci" in the column stream.	Field	Type	Null	Key	Default	Extra	rollno	int(11)	NO	PRI	NULL		name	varchar(20)	YES		NULL		dob	date	YES		NULL		stream	varchar(20)	YES		NULL		gender	char(1)	YES		NULL		marks	float	YES		NULL		3																								
Field	Type	Null	Key	Default	Extra																																																															
rollno	int(11)	NO	PRI	NULL																																																																
name	varchar(20)	YES		NULL																																																																
dob	date	YES		NULL																																																																
stream	varchar(20)	YES		NULL																																																																
gender	char(1)	YES		NULL																																																																
marks	float	YES		NULL																																																																
10	Based on table STUDENT given here, write suitable SQL queries for the following: <table><tr><th>ROLLNO</th><th>NAME</th><th>CLASS</th><th>GENDER</th><th>CITY</th><th>MARKS</th></tr><tr><td>1</td><td>Abhishek</td><td>XI</td><td>M</td><td>Agra</td><td>430</td></tr><tr><td>2</td><td>Prateek</td><td>XII</td><td>M</td><td>Mumbai</td><td>440</td></tr><tr><td>3</td><td>Sneha</td><td>XI</td><td>F</td><td>Agra</td><td>470</td></tr><tr><td>4</td><td>Nancy</td><td>XII</td><td>F</td><td>Mumbai</td><td>492</td></tr><tr><td>5</td><td>Himanshu</td><td>XII</td><td>M</td><td>Delhi</td><td>360</td></tr><tr><td>6</td><td>Anchal</td><td>XI</td><td>F</td><td>Dubai</td><td>256</td></tr><tr><td>7</td><td>Mehar</td><td>X</td><td>F</td><td>Moscow</td><td>324</td></tr><tr><td>8</td><td>Nishant</td><td>X</td><td>M</td><td>Moscow</td><td>429</td></tr></table> i. Display gender wise highest marks. ii. Display city wise lowest marks. iii. Display total number of male and female students. iv. Display total marks of each CLASS.	ROLLNO	NAME	CLASS	GENDER	CITY	MARKS	1	Abhishek	XI	M	Agra	430	2	Prateek	XII	M	Mumbai	440	3	Sneha	XI	F	Agra	470	4	Nancy	XII	F	Mumbai	492	5	Himanshu	XII	M	Delhi	360	6	Anchal	XI	F	Dubai	256	7	Mehar	X	F	Moscow	324	8	Nishant	X	M	Moscow	429	4												
ROLLNO	NAME	CLASS	GENDER	CITY	MARKS																																																															
1	Abhishek	XI	M	Agra	430																																																															
2	Prateek	XII	M	Mumbai	440																																																															
3	Sneha	XI	F	Agra	470																																																															
4	Nancy	XII	F	Mumbai	492																																																															
5	Himanshu	XII	M	Delhi	360																																																															
6	Anchal	XI	F	Dubai	256																																																															
7	Mehar	X	F	Moscow	324																																																															
8	Nishant	X	M	Moscow	429																																																															
11	Give the output of the following SQL statements based on table GRADUATE. <table><tr><th>SNO</th><th>NAME</th><th>STIPEND</th><th>SUBJECT</th><th>AVERAGE</th><th>DIVISION</th></tr><tr><td>1</td><td>Karan</td><td>400</td><td>Physics</td><td>68</td><td>I</td></tr><tr><td>2</td><td>Diwakar</td><td>450</td><td>Comp.Sci</td><td>68</td><td>I</td></tr><tr><td>3</td><td>Divya</td><td>300</td><td>Chemistry</td><td>62</td><td>I</td></tr><tr><td>4</td><td>Rekha</td><td>350</td><td>Physics</td><td>63</td><td>I</td></tr><tr><td>5</td><td>Arjun</td><td>500</td><td>Maths</td><td>70</td><td>I</td></tr><tr><td>6</td><td>Sabina</td><td>400</td><td>Chemistry</td><td>55</td><td>II</td></tr><tr><td>7</td><td>John</td><td>250</td><td>Physics</td><td>64</td><td>I</td></tr><tr><td>8</td><td>Robert</td><td>450</td><td>Maths</td><td>68</td><td>I</td></tr><tr><td>9</td><td>Rubina</td><td>500</td><td>Comp. Sci</td><td>62</td><td>I</td></tr><tr><td>10</td><td>Vikas</td><td>400</td><td>Maths</td><td>57</td><td>II</td></tr></table> i. Select MIN(AVERAGE) from GRADUATE where SUBJECT = 'PHYSICS'; ii. Select SUM(STIPEND) from GRADUATE where DIVISION = 'II'; iii. Select AVG(STIPEND) from GRADUATE where AVERAGE >=65; iv. Select COUNT(DISTINCT SUBJECT) from GRADUATE; v. Select LENGTH(NAME) from GRADUATE where AVERAGE < 60;	SNO	NAME	STIPEND	SUBJECT	AVERAGE	DIVISION	1	Karan	400	Physics	68	I	2	Diwakar	450	Comp.Sci	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. Sci	62	I	10	Vikas	400	Maths	57	II	5
SNO	NAME	STIPEND	SUBJECT	AVERAGE	DIVISION																																																															
1	Karan	400	Physics	68	I																																																															
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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. Sci	62	I																																																															
10	Vikas	400	Maths	57	II																																																															
	TOTAL	25																																																																		

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:8 (Answers)

QN.	Answers	M
1	d. TOTAL	1
2	a.6	1
3	a.Assertion (A) is false but reason(R) is true.	1
4	i) 91 ii) F Swapnil Pant M Rahil Arora	2
5	i) BES ii) WELCOME SINGH	2
6	i) SELECT TID, MIN(FEES) FROM COURSE GROUP BY TID; ii) SELECT * FROM COURSE WHERE MONTH(STARTDATE)=7;	2
7	i. 125 ii. 101.000	2
8	SUBSTR(): It is used to extract a set of character from a string by specifying the character starting position and end position and length of characters to be fetched. Eg: SELECT SUBSTR('Hello',2,3); Output : → 'ell' INSTR(): It is used to find the position of any particular character in a word which returns numeric value. Eg: SELECT INSTR('Hello','e'); Output :→ 2	2
9	i. SELECT UPPER(LEFT(STREAM,3)) FROM STUDENT; ii. SELECT YEAR(DOB) FROM STUDENT; iii. SELECT INSTR(STREAM , 'SCI') FROM STUDENT;	3
10	i. Select max(marks) from student group by gender; ii. Select min(marks) from student group by city; iii. Select gender, count(gender) from student group by gender; iv. Select CLASS, sum(marks) from student group by CLASS;	4
11	I. 63 II. 800 III. 450 IV. 4 V. 6 5	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION

CLASS XII – IP

NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:9 (Questions)

QN	Question	M																																								
1	Which of the following is correct answer of given query? SELECT MOD(26,5); a. 2 b. 3 c.4 d.1	1																																								
2	Assertion (A) : The ORDER BY clause sorts the result set in descending order by default. Reason (R) : To sort a result set in ascending order we can use ASC keyword with ORDER BY clause. a. Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of assertion (A). b. Both Assertion(A) and Reason(R) are true but Reason(R) is not the correct explanation of assertion (A). c. Assertion (A) is true but reason(R) is false. d. Assertion (A) is false ut reason(R) is true.	1																																								
3	Which keyword is used to arrange the result of order by clause in descending order? a. DSEC b.DES c.DESC d.DESNO	1																																								
4	Briefly explain the purpose of the following SQL functions: i. SUBSTR() ii. LEFT()	2																																								
5	Help Reshma in predicting the output of the following queries: i) select round(783.34,-2); ii) select round(456.335,2);	2																																								
6	Given Table Course: <table><tr><th>CID</th><th>CNAME</th><th>FEES</th><th>STARTDATE</th><th>TID</th></tr><tr><td>C201</td><td>AGDCA</td><td>12000</td><td>2018-07-02</td><td>101</td></tr><tr><td>C202</td><td>ADCA</td><td>15000</td><td>2018-07-15</td><td>103</td></tr><tr><td>C203</td><td>DCA</td><td>10000</td><td>2018-10-01</td><td>102</td></tr><tr><td>C204</td><td>DDTP</td><td>9000</td><td>2018-09-15</td><td>104</td></tr><tr><td>C205</td><td>DHN</td><td>20000</td><td>2018-08-01</td><td>101</td></tr><tr><td>C206</td><td>O LEVEL</td><td>18000</td><td>2018-07-25</td><td>105</td></tr></table> Find out the output for given SQL command: i) SELECT TID, COUNT (*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT (*) > 1; ii) SELECT FEES, DAY(STARTDATE) FROM COURSE;	CID	CNAME	FEES	STARTDATE	TID	C201	AGDCA	12000	2018-07-02	101	C202	ADCA	15000	2018-07-15	103	C203	DCA	10000	2018-10-01	102	C204	DDTP	9000	2018-09-15	104	C205	DHN	20000	2018-08-01	101	C206	O LEVEL	18000	2018-07-25	105	2					
CID	CNAME	FEES	STARTDATE	TID																																						
C201	AGDCA	12000	2018-07-02	101																																						
C202	ADCA	15000	2018-07-15	103																																						
C203	DCA	10000	2018-10-01	102																																						
C204	DDTP	9000	2018-09-15	104																																						
C205	DHN	20000	2018-08-01	101																																						
C206	O LEVEL	18000	2018-07-25	105																																						
7	Given the table player with the following columns: <table><tr><th>PCODE</th><th>POINTS</th></tr><tr><td>1</td><td>50</td></tr><tr><td>2</td><td>NULL</td></tr><tr><td>3</td><td>40</td></tr></table> Write the output of the following statements: i. SELECT AVG(POINTS) FROM PLAYER; ii. SELECT COUNT(POINTS) FROM PLAYER;	PCODE	POINTS	1	50	2	NULL	3	40	2																																
PCODE	POINTS																																									
1	50																																									
2	NULL																																									
3	40																																									
8	Mr. Suresh, Administrator in a multinational company 'ABC' has created the following table to store the records of employee. <table><tr><th>ENO</th><th>ENAME</th><th>DEPT</th><th>DOB</th><th>DOJ</th></tr><tr><td>E101</td><td>ASHISH</td><td>SALES</td><td>1994-08-28</td><td>2020-02-14</td></tr><tr><td>E102</td><td>ANUJ</td><td>IT</td><td>1997-10-15</td><td>2021-11-19</td></tr><tr><td>E103</td><td>BINOY</td><td>ACCOUNT</td><td>1998-10-02</td><td>2019-04-02</td></tr><tr><td>E104</td><td>PRASHANT</td><td>SALES</td><td>2000-12-05</td><td>2020-05-01</td></tr><tr><td>E105</td><td>RENU</td><td>IT</td><td>2001-12-05</td><td>2018-06-13</td></tr><tr><td>E106</td><td>NITA</td><td>ACCOUNTS</td><td>1995-01-03</td><td>2019-07-15</td></tr><tr><td>E107</td><td>JOHN</td><td>SALES</td><td>1985-11-13</td><td>2020-08-19</td></tr></table>	ENO	ENAME	DEPT	DOB	DOJ	E101	ASHISH	SALES	1994-08-28	2020-02-14	E102	ANUJ	IT	1997-10-15	2021-11-19	E103	BINOY	ACCOUNT	1998-10-02	2019-04-02	E104	PRASHANT	SALES	2000-12-05	2020-05-01	E105	RENU	IT	2001-12-05	2018-06-13	E106	NITA	ACCOUNTS	1995-01-03	2019-07-15	E107	JOHN	SALES	1985-11-13	2020-08-19	2
ENO	ENAME	DEPT	DOB	DOJ																																						
E101	ASHISH	SALES	1994-08-28	2020-02-14																																						
E102	ANUJ	IT	1997-10-15	2021-11-19																																						
E103	BINOY	ACCOUNT	1998-10-02	2019-04-02																																						
E104	PRASHANT	SALES	2000-12-05	2020-05-01																																						
E105	RENU	IT	2001-12-05	2018-06-13																																						
E106	NITA	ACCOUNTS	1995-01-03	2019-07-15																																						
E107	JOHN	SALES	1985-11-13	2020-08-19																																						

	He has written following queries : i) Select MAX(DOB) from emp; ii) Select ENAME from EMP where YEAR(DOJ)=2020;																																									
9	Consider the table Garment and write the query: Table: GARMENT <table><tr><th>G CODE</th><th>G NAME</th><th>SIZE</th><th>COLOUR</th><th>PRICE</th></tr><tr><td>111</td><td>T Shirt</td><td>XL</td><td>Red</td><td>1400.00</td></tr><tr><td>112</td><td>Jeans</td><td>L</td><td>Blue</td><td>1600.00</td></tr><tr><td>113</td><td>Skirt</td><td>M</td><td>Black</td><td>1100.00</td></tr><tr><td>114</td><td>Ladies Jacket</td><td>XL</td><td>Blue</td><td>4000.00</td></tr><tr><td>115</td><td>Trousers</td><td>L</td><td>Brown</td><td>1500.00</td></tr><tr><td>116</td><td>Ladies Toop</td><td>L</td><td>Pink</td><td>1200.00</td></tr></table> i. Display the Minimum price of the Garment. ii. Count and display the number of GARMENT from each SIZE where number of GARMENTS are more than 1. iii. Display the sum of price of each colour garment.	G CODE	G NAME	SIZE	COLOUR	PRICE	111	T Shirt	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 Toop	L	Pink	1200.00	3					
G CODE	G NAME	SIZE	COLOUR	PRICE																																						
111	T Shirt	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 Toop	L	Pink	1200.00																																						
10	Neha a database administrator has created the following table student. ind the output of the following. <table><tr><th>ADMNO</th><th>NAME</th><th>STREAM</th><th>OPTIONAL</th><th>MARKS</th></tr><tr><td>S1001</td><td>RAJ</td><td>COMMERCE</td><td>IP</td><td>95</td></tr><tr><td>S1002</td><td>VIRAT</td><td>SCIENECE</td><td>CS</td><td>99</td></tr><tr><td>S1003</td><td>DIKSHA</td><td>COMMERCE</td><td>IP</td><td>98</td></tr><tr><td>S1004</td><td>SONI YA</td><td>HUMANITIES</td><td>IP</td><td>91</td></tr><tr><td>S1005</td><td>NILESH</td><td>SCIENCE</td><td>CS</td><td>95</td></tr><tr><td>S1006</td><td>PRERAK</td><td>SCIENCE</td><td>CS</td><td>96</td></tr><tr><td>S1007</td><td>VEENA</td><td>COMMERCE</td><td>IP</td><td>NULL</td></tr></table> i. SELECT SUM(MARKS) FROM STUDENT WHERE OPTIONAL = 'IP' AND STREAM='HUMANITIES'; ii. SELECT MAX(MARKS) +MIN(MARKS) FROM STUDENT WHERE OPTIONAL = 'CS'; iii. SELECT AVG(MARKS) FROM STUDENT WHERE OPTIONAL = 'IP'; iv. SELECT LENGTH(NAME) FROM STUDENT WHERE MARKS IS NULL;	ADMNO	NAME	STREAM	OPTIONAL	MARKS	S1001	RAJ	COMMERCE	IP	95	S1002	VIRAT	SCIENECE	CS	99	S1003	DIKSHA	COMMERCE	IP	98	S1004	SONI YA	HUMANITIES	IP	91	S1005	NILESH	SCIENCE	CS	95	S1006	PRERAK	SCIENCE	CS	96	S1007	VEENA	COMMERCE	IP	NULL	4
ADMNO	NAME	STREAM	OPTIONAL	MARKS																																						
S1001	RAJ	COMMERCE	IP	95																																						
S1002	VIRAT	SCIENECE	CS	99																																						
S1003	DIKSHA	COMMERCE	IP	98																																						
S1004	SONI YA	HUMANITIES	IP	91																																						
S1005	NILESH	SCIENCE	CS	95																																						
S1006	PRERAK	SCIENCE	CS	96																																						
S1007	VEENA	COMMERCE	IP	NULL																																						
11	Write the SQL commands which will perform the following operations on Faculty Table: i. To display total characters in a string field "FacultyName". ii. To round the argument x that contains number 234.6789 to 3 decimal places. iii. To return the last 5 characters from a string field "Lastname". iv. To display day of year from your date of birth v. To display 2 characters starting from the 3 rd position from the string filed "Address".	5																																								
	TOTAL	25																																								

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:9 (Answers)

Q.No.	Answers	Marks
1	d. 1	1
2	d. Assertion (A) is false but reason(R) is true	1
3	c. DESC	1
4	i. SUBSTR (str, m, n) – extracts the substring from m position onwards and n number of characters. ii. LEFT () – extracts n characters from the left side of the given string	2
5	i) 800 ii) 456.34	2
6	i) 101, 2, 12000 ii) 12000 02 15000 15 10000 01 9000 15 20000 01 18000 25	2
7	I. <u>AVG(POINTS)</u> 45 II. <u>COUNT(POINTS)</u> 2	2
8	i. 2001 ii. ANUJ	2
9	i. SELECT MIN(PRICE) FROM GARMENT; ii. SELECT SIZE, COUNT (*) FROM GARMENT GROUP BY SIZE HAVING COUNT (*)>1; iii. SELECT SUM(PRICE) FROM GARMENT GROUP BY COLOUR;	3
10	i. 91 ii. 194 iii. 94.6 iv. 5	4
11	i. SELECT LENGTH(FacultyName) from faculty; ii. SELECT ROUND (234.6789,3); iii. SELECT RIGHT (LASTNAME,5) from faculty; iv. SELECT DAYOFYEAR (DOB) from faculty; v. SELECT SUBSTR(ADDRESS,3,2) from faculty;	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:10 (Questions)

QN	Question	M																																			
1	Find the Output of SQL command : select concat (concat ('Inform', 'atics'),'Practices'); a. Informatics Practices b. Informatic Practices c. Inform practices d. Inform atics practices	1																																			
2	The outputs of the given two commands are 20 and 17 respectively. Select COUNT(*) From Student; Select COUNT(Age) From Student; How many NULL values are there in Age column of the Student table? a. 17 b. 20 c. 3 d. None of these	1																																			
3	If column "Fees" contains the data set (5000,8000,7500,5000,8000), what will be the output after the execution of the given query? SELECT SUM (DISTINCT Fees) FROM student; i. 20500 ii. 10000 iii. 20000 iv. 33500	1																																			
4	State any two differences between single row functions and multiple row functions.	2																																			
5	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																																			
6	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																																			
7	Consider the following SQL string: "Preoccupied" Write commands to display: a. "occupied" b. "cup"	2																																			
8	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																																			
9	<table><tr><th>V_no</th><th>Type</th><th>Company</th><th>Price</th><th>Qty</th></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><tr><td>M0892</td><td>Mini van</td><td>Datsun</td><td>1500000</td><td>26</td></tr><tr><td>W9760</td><td>SUV</td><td>Maruti</td><td>2500000</td><td>18</td></tr><tr><td>R2409</td><td>Mini van</td><td>Mahindra</td><td>350000</td><td>15</td></tr></table>	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	
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																																	
	A relation Vehicles is given ABOVE	3																																			

	Write SQL commands 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.																													
10	<table><tr><th>I_ID</th><th>ItemName</th><th>Manufacturer</th><th>Price</th></tr><tr><td>PC01</td><td>Personal Computer</td><td>AB Corp</td><td>35000</td></tr><tr><td>LC05</td><td>Laptop</td><td>AB Corp</td><td>55000</td></tr><tr><td>PC03</td><td>Personal Computer</td><td>AZee</td><td>32000</td></tr><tr><td>PC06</td><td>Personal Computer</td><td>COMPAQ</td><td>37000</td></tr><tr><td>LC03</td><td>Laptop</td><td>Pacific</td><td>57000</td></tr><tr><td>PT04</td><td>Tablet</td><td>AZee</td><td>28000</td></tr></table>	I_ID	ItemName	Manufacturer	Price	PC01	Personal Computer	AB Corp	35000	LC05	Laptop	AB Corp	55000	PC03	Personal Computer	AZee	32000	PC06	Personal Computer	COMPAQ	37000	LC03	Laptop	Pacific	57000	PT04	Tablet	AZee	28000	
I_ID	ItemName	Manufacturer	Price																											
PC01	Personal Computer	AB Corp	35000																											
LC05	Laptop	AB Corp	55000																											
PC03	Personal Computer	AZee	32000																											
PC06	Personal Computer	COMPAQ	37000																											
LC03	Laptop	Pacific	57000																											
PT04	Tablet	AZee	28000																											
	Observe the above Table ITEM Write the SQL queries for the following – (i) To display the details of all the items in descending order of price. (ii) To display the no of item of each manufacturer. (iii) To show the average price of items from AB Corp and Pacific. (iv) To show number of items and maximum price manufacturer-wise.	4																												
11	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 day name of the current date. 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	5																												
	TOTAL	25																												

KENDRIYA VIDYALAYA SANGATHAN – AHMEDABAD REGION
CLASS XII – IP
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL
WORKSHEET NO.:10 (Answers)

QN	Answers	M
1	a. Informatics Practices	1
2	c. 3	1
3	I.20500	1
4	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
5	i. select round(8459.2654); ii. select round(8459.2654,-2);	2
6	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.	2
7	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
8	a. select instr 'Preoccupied' , ` 'cup')); b. select left 'Preoccupied',4);	2
9	a. select Type, avg(Price) from Vehicle group by 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
10	i. SELECT * FROM ITEM ORDER BY PRICE DESC; ii. SELECT manufacturer, count(*) from item group by manufacturer; iii. Select avg(price) from item where manufacturer in ('AB Corp', 'Pacific'); iv. SELECT MANUFACTURER, MAX(PRICE), count (*) FROM ITEM GROUP BY MANUFACTURER;	4
11	i.monthname(date(now())) ii.trim(" Panaroma ") iii.dayname(NOW()) iv.instr(name, fname) v.mod(n1,n2)	5
	TOTAL	25

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

CBSE 2023 (Board Questions)

WORKSHEET NO.:11 (Questions) ::CLASS XII – IP

Q.No.	Question	Marks																																				
1	Which of the following is the correct output of the following SQL command? SELECT ROUND(7876.4568,2); (i) 7876.46 (iii) 7876.45 (ii) 7900 (iv) 7900.4568	1																																				
2	Aggregate functions are also known as : (i) Scalar functions (iii)Single Row Functions (ii) Multiple Row functions (iv)Hybrid Functions	1																																				
3	Primary law in India for matters related to e-commerce and cyber crime is : (i) IT Act 1995 (iii) IT Act 2000 (ii) IT Act 1998 (iv) IT Act 2010	1																																				
4	Ravisha as stored the records of all students of her class in a MYSQL table. Suggest a suitable SQL clause that she should use to display the names of students in alphabetical order. (i) SORT BY (iii) ALIGN BY (ii) GROUP BY (iv) ORDER BY	1																																				
5	To remove the leading and trailing space from data values in a column of MySql table, we use (i) Left() (iii) Right() (ii) Trim() (iv) Ltrim	1																																				
6	If the substring is not present in a string, the INSERT() returns: (i) -1 (iii) 1 (ii) NULL (iv) 0	1																																				
7	Differentiate between COUNT() and COUNT(*) functions in MYSQL. Give suitable examples to support your answer.	2																																				
8	Keshav has written the following query to find out the sum of bonus earned by the employees of WEST zone. SELECT zone, TOTAL(bonus) FROM employee HAVING zone = 'WEST'; But he got an error. Identify the errors and rewrite the query by underlining the correction(s) done.	2																																				
9	Consider the table Patient given below and write SQL Commands. Table : Patiend <table><tr><th>Patientid</th><th>Name</th><th>City</th><th>Phone</th><th>Dateofadm</th><th>Department</th></tr><tr><td>1000001</td><td>Ritvik Garg</td><td>Delhi</td><td>68476213</td><td>2021-12-10</td><td>Surgery</td></tr><tr><td>1000002</td><td>Rahil Arora</td><td>Mumbai</td><td>36546321</td><td>2022-01-08</td><td>Medicine</td></tr><tr><td>1000003</td><td>Mehak Bhatt</td><td>Delhi</td><td>68421879</td><td>2022-02-02</td><td>Cardiology</td></tr><tr><td>1000004</td><td>Soumik Rao</td><td>Delhi</td><td>26543266</td><td>2022-01-11</td><td>Medicine</td></tr><tr><td>1000005</td><td>Suresh Sood</td><td>Bangalore</td><td>65432442</td><td>2021-03-09</td><td>Surgery</td></tr></table> (i) Display the details of all patients who were admitted in January. (ii) Count the total number of patients from Delhi. (iii) Display the last 2 digits of the Patientid of all patients from Surgery Department.	Patientid	Name	City	Phone	Dateofadm	Department	1000001	Ritvik Garg	Delhi	68476213	2021-12-10	Surgery	1000002	Rahil Arora	Mumbai	36546321	2022-01-08	Medicine	1000003	Mehak Bhatt	Delhi	68421879	2022-02-02	Cardiology	1000004	Soumik Rao	Delhi	26543266	2022-01-11	Medicine	1000005	Suresh Sood	Bangalore	65432442	2021-03-09	Surgery	3
Patientid	Name	City	Phone	Dateofadm	Department																																	
1000001	Ritvik Garg	Delhi	68476213	2021-12-10	Surgery																																	
1000002	Rahil Arora	Mumbai	36546321	2022-01-08	Medicine																																	
1000003	Mehak Bhatt	Delhi	68421879	2022-02-02	Cardiology																																	
1000004	Soumik Rao	Delhi	26543266	2022-01-11	Medicine																																	
1000005	Suresh Sood	Bangalore	65432442	2021-03-09	Surgery																																	

10	Write an output (i-iii) for the following SQL commands. Table : FASHION <table><tr><th>ID</th><th>Product</th><th>Price</th><th>Qty</th></tr><tr><td>F01</td><td>Kajal</td><td>970</td><td>10</td></tr><tr><td>F02</td><td>Foundation</td><td>2100</td><td>15</td></tr><tr><td>F03</td><td>Night Cream</td><td>1700</td><td>20</td></tr><tr><td>F04</td><td>Day Cream</td><td>1400</td><td>10</td></tr><tr><td>F05</td><td>Shampoo</td><td>1200</td><td>25</td></tr><tr><td>F06</td><td>Lipstick</td><td>850</td><td>32</td></tr></table> (i) SELECT COUNT(PRODUCT) FROM FASHION; (ii) SELECT SUM(PRICE*QTY) FROM FASHION WHERE PRODUCT = 'Night Cream'; (iii) SELECT LEFT(Product, 4) FROM FASHION WHERE Price > 1500;	ID	Product	Price	Qty	F01	Kajal	970	10	F02	Foundation	2100	15	F03	Night Cream	1700	20	F04	Day Cream	1400	10	F05	Shampoo	1200	25	F06	Lipstick	850	32	3														
ID	Product	Price	Qty																																									
F01	Kajal	970	10																																									
F02	Foundation	2100	15																																									
F03	Night Cream	1700	20																																									
F04	Day Cream	1400	10																																									
F05	Shampoo	1200	25																																									
F06	Lipstick	850	32																																									
11	Write SQL queries which will perform the following operations : (i) To display the year from your Date of Admission which is '2023-05-15'; (ii) To convert your email id 'ABC@XYZ.com' to lowercase. (iii) To remove leading spaces from a string 'my country'. (iv) To display current date. (v) To display the value of 10⁶.	5																																										
12	Consider the following table Schooldata: Table : Schooldata <table><tr><th>Admno</th><th>Name</th><th>Grade</th><th>Club</th><th>Marks</th><th>Gender</th></tr><tr><td>20150001</td><td>Sargam Singh</td><td>12</td><td>STEM</td><td>86</td><td>Male</td></tr><tr><td>20140212</td><td>Alok Kumar</td><td>0</td><td>SPACE</td><td>75</td><td>Male</td></tr><tr><td>20090234</td><td>Mohit Gaur</td><td>11</td><td>SPACE</td><td>84</td><td>Male</td></tr><tr><td>20130216</td><td>Romil Malik</td><td>10</td><td>READER</td><td>91</td><td>Male</td></tr><tr><td>20190227</td><td>Tanvi Batra</td><td>11</td><td>STEM</td><td>70</td><td>Female</td></tr><tr><td>20120200</td><td>Nomita Ranjan</td><td>12</td><td>STEM</td><td>64</td><td>Female</td></tr></table> Write SQL queries for the following : (i) Display the average Marks secured by each Gender (ii) Display the minimum Marks secured by the students of Grade 10. (iii) Display the total number of students in each club where number of students are more than 1. OR Display the maximum and minimum marks secured by each gender.	Admno	Name	Grade	Club	Marks	Gender	20150001	Sargam Singh	12	STEM	86	Male	20140212	Alok Kumar	0	SPACE	75	Male	20090234	Mohit Gaur	11	SPACE	84	Male	20130216	Romil Malik	10	READER	91	Male	20190227	Tanvi Batra	11	STEM	70	Female	20120200	Nomita Ranjan	12	STEM	64	Female	4 (1+ 1+2)
Admno	Name	Grade	Club	Marks	Gender																																							
20150001	Sargam Singh	12	STEM	86	Male																																							
20140212	Alok Kumar	0	SPACE	75	Male																																							
20090234	Mohit Gaur	11	SPACE	84	Male																																							
20130216	Romil Malik	10	READER	91	Male																																							
20190227	Tanvi Batra	11	STEM	70	Female																																							
20120200	Nomita Ranjan	12	STEM	64	Female																																							
	TOTAL	25																																										

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

CBSE 2024 (Sample Paper Questions)

WORKSHEET NO.:12 (Questions) ::CLASS XII – IP

Q.No.	Question	Marks					
1	Predict the output of the following query: SELECT MOD(9,0); (i) 0 (iii) NULL (ii) NaN (iv) 9	1					
2	Which of the following SQL functions does not belong to the Math functions category? (i) Power() (iii) ROUND() (ii) LENGTH() (iv) MOD()	1					
3	Raj a Database Administrator, needs to display the average pay of workers fro those departments which have more than five employees. He is experiencing a problem while running the following query: SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*)>5 GROUP BY DEPT; Which of the following is a correct query to perform the given task? i. SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*)>5 GROUP BY DEPT; ii. SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*)>5 GROUP BY DEPT; iii. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*)>5; iv. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*)>5;	1					
4	Predict the output of the following query: SELECT LCASE(MONTHNAME('2023-03-05')); (i) May (iii) March (ii) may (iv) march	1					
5	With reference to SQL, identify the invalid datatype. (i) Date (iii) Integer (ii) Year (iv) Month	1					
6	In SQL, the equivalent of UCASE() is: (i) UPPERCASE() (iii) CAPITALCASE() (ii) UPPER() (iv) TITLE()	1					
7	Consider the given SQL string: "12#All the Best!" Write suitable SQL queries for the following : i. Returns the position of the first occurrence of the substring 'the' in the given string. ii. To extract last five characters from the string.	2					
8	What are aggregate functions in SQL? Name any two.	2					
9	Based on the SQL table CAR_SALES, write suitable queries for the following : Table : CAR_SALES <table><tr><td>NUMBER</td><td>SEGMENT</td><td>FUEL</td><td>OT1</td><td>OT2</td></tr></table>	NUMBER	SEGMENT	FUEL	OT1	OT2	3
NUMBER	SEGMENT	FUEL	OT1	OT2			

	1	Compact HatchBack	Petrol	56000	70000	i. Display fuel wise average sales in the first quarter ii. Display segment wise highest sales in the second quarter iii. Display the records in the descending order of sales in the second quarter.																																								
	2	Compact HatchBack	Diesel	34000	40000																																									
	3	MUV	Petrol	33000	35000																																									
	4	MUV	Diesel	14000	15000																																									
	5	SUV	Petrol	27000	54000																																									
	6	SUV	Diesel	18000	30000																																									
	7	Sedan	Petrol	8000	10000																																									
	8	Sedan	Diesel	1000	5000																																									
10	Write MySQL statements for the following : i. To create a database named FOOD. ii. To create a table named Nutrients based on the following specification: <table><tr><td>Column Name</td><td>DataType</td><td>Constraints</td></tr><tr><td>Food_Item</td><td>Varchar(20)</td><td>Primary key</td></tr><tr><td>Calorie</td><td>Integer</td><td></td></tr></table>					Column Name	DataType	Constraints	Food_Item	Varchar(20)	Primary key	Calorie	Integer		3																															
Column Name	DataType	Constraints																																												
Food_Item	Varchar(20)	Primary key																																												
Calorie	Integer																																													
11	Preeti manages database in a blockchain start-up. For business purposes, she created a table named BLOCKCHAIN. Assist her by writing the following queries: Table : BLOCKCHAIN <table><tr><td>Id</td><td>User</td><td>Value</td><td>Hash</td><td>Transaction_date</td></tr><tr><td>1</td><td>Steve</td><td>900</td><td>ERTYU</td><td>2020-09-19</td></tr><tr><td>2</td><td>Meesha</td><td>145</td><td>@345r</td><td>2021-03-23</td></tr><tr><td>3</td><td>Nimisha</td><td>567</td><td>#wert5</td><td>2020-05-06</td></tr><tr><td>4</td><td>Pihu</td><td>678</td><td>%rtyu</td><td>2022-07-13</td></tr><tr><td>5</td><td>Kopal</td><td>768</td><td>rtr4%</td><td>2021-05-15</td></tr><tr><td>7</td><td>Palakshi</td><td>534</td><td>wer@3</td><td>2022-11-29</td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table> i. Write a query to display the year of oldest transaction ii. Write a query to display the month of most recent transaction. iii. Write a query to display all the transactions done in the month of May. iv. Write a query to count total number of transactions in the year 2022.					Id	User	Value	Hash	Transaction_date	1	Steve	900	ERTYU	2020-09-19	2	Meesha	145	@345r	2021-03-23	3	Nimisha	567	#wert5	2020-05-06	4	Pihu	678	%rtyu	2022-07-13	5	Kopal	768	rtr4%	2021-05-15	7	Palakshi	534	wer@3	2022-11-29						4
Id	User	Value	Hash	Transaction_date																																										
1	Steve	900	ERTYU	2020-09-19																																										
2	Meesha	145	@345r	2021-03-23																																										
3	Nimisha	567	#wert5	2020-05-06																																										
4	Pihu	678	%rtyu	2022-07-13																																										
5	Kopal	768	rtr4%	2021-05-15																																										
7	Palakshi	534	wer@3	2022-11-29																																										
12	Write suitable SQL queries for the following : i. To calculate the exponent for 3 raised to the power of 4. ii. To display current date and time. iii. To round off the value -34.4567 to 2 decimal place. iv. To remove all the probable leading and trailing spaces from the column userid of the table named user. v. To display the length of the string 'FIFA World Cup'.					5																																								
	TOTAL					25																																								

KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION
NAME OF CHAPTER/ TOPIC: DATABASE QUERY USING SQL

WORKSHEET NO.:13 (Questions from Revision of Class XI) ::CLASS XII – IP

Q.No.	Questions	Marks																		
1	Fill in the blank is a number of tuples in a relation. (a) Attribute (b) Degree (c) Domain (d) Cardinality	1																		
2	 Clause is used with SELECT statement to display data in a sorted form with respect to a specified column. (a) WHERE (b) ORDER BY (c) HAVING (d) DISTINCT	1																		
3	Consider the following tables – LOAN and BORROWER: Table : LOAN <table><tr><td>LOAN_NO</td><td>B_NAME</td><td>AMOUNT</td></tr><tr><td>L-170</td><td>DELHI</td><td>3000</td></tr><tr><td>L-230</td><td>KANPUR</td><td>4000</td></tr></table> Table – BORROWER <table><tr><td>CUST_NAME</td><td>LOAN_NO</td></tr><tr><td>JOHN</td><td>L-171</td></tr><tr><td>KRISH</td><td>L-230</td></tr><tr><td>RAVYA</td><td>L-170</td></tr></table> Write a query to display customer name with their loan amount from above two tables.	LOAN_NO	B_NAME	AMOUNT	L-170	DELHI	3000	L-230	KANPUR	4000	CUST_NAME	LOAN_NO	JOHN	L-171	KRISH	L-230	RAVYA	L-170	1	
LOAN_NO	B_NAME	AMOUNT																		
L-170	DELHI	3000																		
L-230	KANPUR	4000																		
CUST_NAME	LOAN_NO																			
JOHN	L-171																			
KRISH	L-230																			
RAVYA	L-170																			
4	Write a command to create a database – SCHOOL.	1																		
5	Write any two DDL and DML Commands.	1																		
6	Differentiate between ALTER and UPDATE command.	1																		
7	Write a command to create a table : EMP <table><tr><td>Column Name</td><td>DataType</td><td>Constraint</td></tr><tr><td>EMPNO</td><td>INT</td><td>PRIMARY KEY</td></tr><tr><td>ENAME</td><td>VARCHAR</td><td></td></tr><tr><td>JOB</td><td>VARCHAR</td><td></td></tr><tr><td>SALARY</td><td>INT</td><td></td></tr><tr><td>DEPTNO</td><td>INT</td><td></td></tr></table>	Column Name	DataType	Constraint	EMPNO	INT	PRIMARY KEY	ENAME	VARCHAR		JOB	VARCHAR		SALARY	INT		DEPTNO	INT		2
Column Name	DataType	Constraint																		
EMPNO	INT	PRIMARY KEY																		
ENAME	VARCHAR																			
JOB	VARCHAR																			
SALARY	INT																			
DEPTNO	INT																			
8	Write a query to create the table 'PRODUCT' with appropriate data types and constraints: <table><tr><td>Column name</td><td>Data type</td><td>Constraint</td></tr><tr><td>PCode</td><td>Int</td><td>Primary key</td></tr><tr><td>PName</td><td>Varchar</td><td></td></tr><tr><td>UPrice</td><td>Int</td><td></td></tr><tr><td>Manufacturer</td><td>varchar</td><td></td></tr></table>	Column name	Data type	Constraint	PCode	Int	Primary key	PName	Varchar		UPrice	Int		Manufacturer	varchar		2			
Column name	Data type	Constraint																		
PCode	Int	Primary key																		
PName	Varchar																			
UPrice	Int																			
Manufacturer	varchar																			
9	Based on the above product table perform the following task: (i) Write a command to add a new column Discount to the above table product. (j) Write a command to calculate the value fo the discount in the table producat as 10 % of the UPrice for all those products where the UPrice is more than 100. (k) To delete all the rows whose manufacturer is LUX.	3																		

10	Write an SQL query to join two tables on the basis of common field Code and display the subject in ascending order. Detail of the table are given below: Table :BOOK <table><tr><td>Code</td><td>Subject</td></tr><tr><td>B1</td><td>ENGLISH</td></tr><tr><td>B2</td><td>PHYSICS</td></tr><tr><td>B3</td><td>HISTORY</td></tr><tr><td>B4</td><td>SCIENCE</td></tr></table> Table : STOCK <table><tr><td>S_CODE</td><td>PUB</td><td>QTY</td><td>CODE</td></tr><tr><td>P12</td><td>GYAN CHAND</td><td>250</td><td>B1</td></tr><tr><td>P14</td><td>PUSTAK HOUSE</td><td>340</td><td>B2</td></tr><tr><td>P16</td><td>SONKA BOOKS</td><td>245</td><td>B3</td></tr></table>	Code	Subject	B1	ENGLISH	B2	PHYSICS	B3	HISTORY	B4	SCIENCE	S_CODE	PUB	QTY	CODE	P12	GYAN CHAND	250	B1	P14	PUSTAK HOUSE	340	B2	P16	SONKA BOOKS	245	B3	3									
Code	Subject																																				
B1	ENGLISH																																				
B2	PHYSICS																																				
B3	HISTORY																																				
B4	SCIENCE																																				
S_CODE	PUB	QTY	CODE																																		
P12	GYAN CHAND	250	B1																																		
P14	PUSTAK HOUSE	340	B2																																		
P16	SONKA BOOKS	245	B3																																		
11	The table Professional is created in a database. The details of the different professional courses are given below: <table><tr><td>Ref_ID</td><td>Course</td><td>Duration</td><td>Eligibility</td><td>Fee</td></tr><tr><td>M/001</td><td>MBA</td><td>2</td><td>Graduate</td><td>600000</td></tr><tr><td>B/--2</td><td>B.Tech</td><td>4</td><td>UG Graduate</td><td>750000</td></tr><tr><td>B/003</td><td>B.Pharm</td><td>4</td><td>UG Graduate</td><td>780000</td></tr><tr><td>B/004</td><td>BBA</td><td>3</td><td>UG Graduate</td><td>530000</td></tr><tr><td>M/002</td><td>MSc</td><td>2</td><td>Graduate</td><td>480000</td></tr><tr><td>M/003</td><td>MCA</td><td>2</td><td>Graduate</td><td>500000</td></tr></table> i) To display ref_id, courses and fee whose duration is 3 years or more. j) To display all such courses with the fee whose eligibility is 'Graduate' k) To reduce the fee for all the courses by 50000 l) To display the courses, their duration and eligibility whose fee is in the range to 500000 to 750000.	Ref_ID	Course	Duration	Eligibility	Fee	M/001	MBA	2	Graduate	600000	B/--2	B.Tech	4	UG Graduate	750000	B/003	B.Pharm	4	UG Graduate	780000	B/004	BBA	3	UG Graduate	530000	M/002	MSc	2	Graduate	480000	M/003	MCA	2	Graduate	500000	4
Ref_ID	Course	Duration	Eligibility	Fee																																	
M/001	MBA	2	Graduate	600000																																	
B/--2	B.Tech	4	UG Graduate	750000																																	
B/003	B.Pharm	4	UG Graduate	780000																																	
B/004	BBA	3	UG Graduate	530000																																	
M/002	MSc	2	Graduate	480000																																	
M/003	MCA	2	Graduate	500000																																	
12	Monika has created following table named WORKER: <table><tr><td>W_ID</td><td>F_NAME</td><td>L_NAME</td><td>CITY</td><td>STATE</td></tr><tr><td>102</td><td>SAHIL</td><td>KHAN</td><td>KANPUR</td><td>UTTAR PRADESH</td></tr><tr><td>104</td><td>SAMEER</td><td>PARIKH</td><td>ROOP NAGAR</td><td>PUNJAB</td></tr><tr><td>105</td><td>MARY</td><td>JONES</td><td>DELHI</td><td>DELHI</td></tr><tr><td>106</td><td>MAHIR</td><td>SHARMA</td><td>SONIPAT</td><td>HARYANA</td></tr><tr><td>107</td><td>ATHARVA</td><td>BHARDWAJ</td><td>DELHI</td><td>DELHI</td></tr><tr><td>108</td><td>VEDA</td><td>SHARMA</td><td>KANPUR</td><td>UTTAR PRADESH</td></tr></table> (i) Insert a new record in the table having following values: [109,'SONA', 'GEORGE', 'SURAT','GUJARAT'] (ii) To change the value of state from 'PUNJAB' to 'HARYANA'. (iii) To remove the records of those students whose L_Name is 'SHARMA'. (iv) To add a new column 'WAGE' of suitable datatype. (v) To display records of city as 'DELHI'.	W_ID	F_NAME	L_NAME	CITY	STATE	102	SAHIL	KHAN	KANPUR	UTTAR PRADESH	104	SAMEER	PARIKH	ROOP NAGAR	PUNJAB	105	MARY	JONES	DELHI	DELHI	106	MAHIR	SHARMA	SONIPAT	HARYANA	107	ATHARVA	BHARDWAJ	DELHI	DELHI	108	VEDA	SHARMA	KANPUR	UTTAR PRADESH	5
W_ID	F_NAME	L_NAME	CITY	STATE																																	
102	SAHIL	KHAN	KANPUR	UTTAR PRADESH																																	
104	SAMEER	PARIKH	ROOP NAGAR	PUNJAB																																	
105	MARY	JONES	DELHI	DELHI																																	
106	MAHIR	SHARMA	SONIPAT	HARYANA																																	
107	ATHARVA	BHARDWAJ	DELHI	DELHI																																	
108	VEDA	SHARMA	KANPUR	UTTAR PRADESH																																	
		25																																			

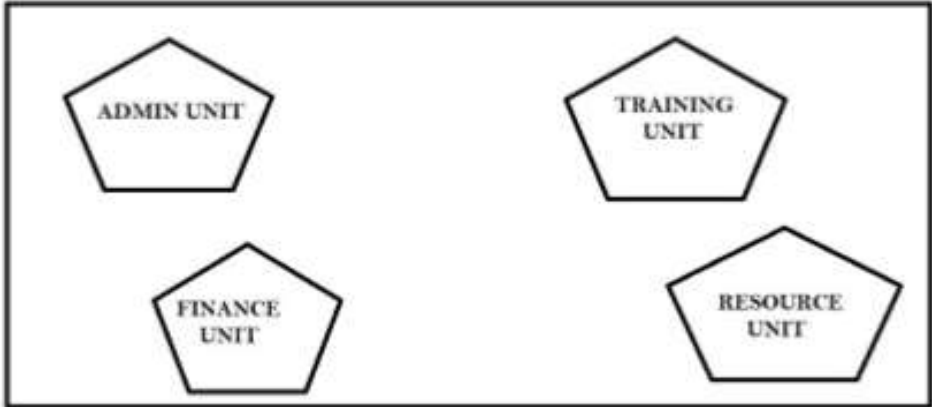
KENDRIYA VIDYALAYA SANGATHAN (AHMEDABAD REGION)**2023-24****CLASS XII – IP****NAME OF THE CHAPTER: Introduction to Computer Network
WORKSHEET : 1**

Q.No	Question	Marks
1	Which of the following devices can connect different sub networks? i)Hub ii)Switch iii)Repeater iv)Router	1
2	Which of the following factors are considered while choosing the topology of the network? i)Cost, Distance, and Infrastructure ii)Cost, Flexibility, and Reliability iii)Cost, Technology, and Devices iv)Cost, employee strength, company size	1
3	Which of the following settings allows for history, browsing data, cookies and other site data, security and site settings? i)autofill ii)safety check iii)cookies iv)privacy and security	1
4	ASSERTIONS AND REASONS : Assertion : A website is a group of related web pages hosted on a web server. Reason : A website is a collection of some hyperlinks.	1
5	The _____ type of network covers longest geographical areas	1
6	A _____ is used to connect dissimilar networks.	1
7	Expand : VoIP, URL	2
8	What are the advantages and disadvantages of a star topology?	2
9	Identify the type of topology: a) Each node is connected with the help of a single cable. b) Each node is connected with central switching through independent cables.	2
10	Name any two mail service providers.	2
11	How switch is different than hub? Why it is called intelligent hub?	2
12	Differentiate between static and dynamic web page	2
13	What are cookies ? What is their utility?	2
14	What do you mean by a web browser?	2
15	Name three protocols used in Email.	3

NAME OF THE CHAPTER: Introduction to Computer Network**WORKSHEET : 1 (Answers)**

Q.No	Question	Marks
1	ii)Switch	1
2	ii)Cost, Flexibility, and Reliability	1
3	iv)privacy and security	1
4	(c) A is true but R is false	1
5	Gateway	1
6	WAN	1
7	Voice over Internet Protocol , Uniform Resource Locator	2
8	Advantages of star topology : • Ease of access • One device per connection • Centralized control-faults are easily detected • Simple access protocols Disadvantages of star topology : • Long cable length • Difficult to expand • Central node dependency	2
9	a) Bus topology b) Star topology	2
10	Gmail, Yahoo Mail	2
11	A switch is more intelligent than a hub. As a hub, a switch is the connection point for the computers (and other devices) in a network. However, a switch is more efficient at passing along traffic. It records the addresses of the computers connected to it in a table.	2
12	Static web page: • Content on the server is served upto any visitor the same(every time) • Contains simple HTML code • No additional software is required Dynamic web page: • Content on the server is the same, but displays different data depending on information searched • Contains dynamic code along with simple HTML code • Additional software must be installed on the server to create the web page.	2
13	Cookies are small text files stored on a user's computer and created and used by websites to remember basic information or to record the user's browsing activity.	2
14	A web browser is a program that renders a webpage from a website through a URL. Web browsers are also responsible for collecting data from the web server as well as capable to retrieve hyper documents, links and media. For example, Google Chrome, Internet Explorer, Mozilla Firefox.	2
15	IMAP, POP3, SMTP	3

KENDRIYA VIDYALAYA SANGATHAN (AHMEDABAD REGION)**2023-24****CLASS XII – IP****NAME OF THE CHAPTER: Introduction to Computer Network****WORKSHEET : 2**

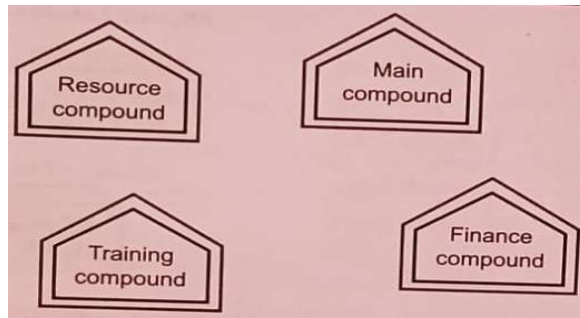
Q.No	Question	Marks																															
1	"VidyaDaan" an NGO is planning to setup its new campus at Raipur for its web-based activities. The campus has four (04) UNITS as shown below:  → Distances between above UNITs are given here s under: <table><tr><th>UNIT-1</th><th>UNIT-2</th><th>DISTANCE(In mtrs.)</th></tr><tr><td>ADMIN</td><td>TRAINING</td><td>65</td></tr><tr><td>ADMIN</td><td>RESOURCE</td><td>120</td></tr><tr><td>ADMIN</td><td>FINANCE</td><td>100</td></tr><tr><td>FINANCE</td><td>TRAINING</td><td>60</td></tr><tr><td>FINANCE</td><td>RESOURCE</td><td>40</td></tr><tr><td>TRAINING</td><td>RESOURCE</td><td>50</td></tr></table> → No. of Computers in various UNITs are: <table><tr><th>UNIT</th><th>NO. OF COMPUTERS</th></tr><tr><td>ADMIN</td><td>150</td></tr><tr><td>FINANCE</td><td>25</td></tr><tr><td>TRAINING</td><td>90</td></tr><tr><td>RESOURCE</td><td>75</td></tr></table> (i) Suggest an ideal cable layout for connecting the above UNITs. (ii) Suggest the most suitable place i.e. UNIT to install the server for the above NGO. (iii) Which network device is used to connect the computers in all UNITs? (iv) Suggest the placement of Repeater in the UNITs of above network. (v) NGO is planning to connect its head office in Delhi, which is more than 1500 km from NGO. Which type of network out of LAN, WAN or MAN will be formed?	UNIT-1	UNIT-2	DISTANCE(In mtrs.)	ADMIN	TRAINING	65	ADMIN	RESOURCE	120	ADMIN	FINANCE	100	FINANCE	TRAINING	60	FINANCE	RESOURCE	40	TRAINING	RESOURCE	50	UNIT	NO. OF COMPUTERS	ADMIN	150	FINANCE	25	TRAINING	90	RESOURCE	75	5
UNIT-1	UNIT-2	DISTANCE(In mtrs.)																															
ADMIN	TRAINING	65																															
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UNIT	NO. OF COMPUTERS																																
ADMIN	150																																
FINANCE	25																																
TRAINING	90																																
RESOURCE	75																																
2	Vidyadevi was inspired by her granddaughter who uses technology for hr day to day activities. Being a learner and teacher all her life, he wanted to open an email account and interact with her friends and family. Her granddaughter created an email account for her and he started sending mails to her friends. This was a big achievement for her. Her granddaughter explained her how to	5																															

send mails, how to create email address, what protocols are used. There are few doubts in her mind which you can help her with.

- i) Unsolicited email advertising is known as_____
- (a)newsgroup (b)junk ads (c)spam (d)none of these
- ii) Which of the following is the correct form of email address?
- (a)name@website@info (b) name@website.info
- (c)www.nameofwebsite.com (d) name.website.info
- iii) Mail access starts with client when user needs to download email from the _____.
- (a)mailbox (b)mail server (c)IP server (d)Internet
- iv) To use email service, one needs to register with _____.
- (a)Internet Service Provider (b)Email Service Provider
- (c)A company (d)no need to register
- v)bcc stands for_____ to send the copy of the mail.
- (a)black carbon copy (b) blue carbon copy
- (c) blind carbon copy (d) block chain copy

3

Learn together classes, is setting up its new campus at Jabalpur for its web-based activities. The campus has 4 compounds:



Center to center distance is as follows:

Main Compound to Resource Compound	110 m
Main Compound to Training Compound	115 m
Main Compound to Finance Compound	35 m
Resource Compound to Training Compound	25 m
Resource Compound to Finance Compound	135 m
Training Compound to Finance Compound	100 m

Number of computers :

Main Compound	5
Resource Compound	15
Training Compound	150
Accounts Compound	20

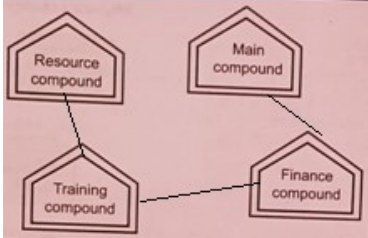
- i) Suggest the cable layout of connections between the compounds

5

	within the AGRA Office for a wired connectivity. iii) Which networking device will you suggest to be procured by the company to interconnect all the computers of various buildings of AGRA Office? iv) Company is planning to get its website designed which will allow shopkeepers to see their products, shipping details themselves on its server. Out of the static or dynamic, which type of website will you suggest?	
	v) Which of the following will you suggest to establish the online face to face communication between the people in the ADMIN office of AGRA and Delhi head office? i)Cable TV ii) Email iii) Video conferencing iv)Text chat	
5	Samarth is the hardware engineer of IT company. He has been given the task of installing a network in the school lab which has around 40 computers. i)Suggest the most suitable type of network topology he should use in order to maximize speed and make each computer independent of network breakdowns. a)bus topology b)star topology c)ring topology d)mesh topology ii)In order to allow data transfer from server to only the intended computers which network device is required in the lab to connect the computers? a) switch b)hub c)router d)gateway iii) After setting up the lab and internet in the lab, Samarth is now required to enable videos and animations to be played on the web browser for students of multimedia class. Which browser tool/service can be used ? a) plug ins b)add ons c) control panel d)download settings iv)During an international exchange programme the students need to connect to a classroom in Russia using Skype. Samarth helps the students to connect. Which type of network service is being used? a) Instant messaging b) email messaging c) VoIP d) WWW v) Samarth has asked students of class to identify different parts of URL. Help the students to choose the correct option for label1 and 2. 1 2  https://www.cbse.gov.in/newsite/index.html a)1-domain name 2-protocol b)1- protocol 2- domain name c) 1- domain name 2- subdomain d)1- protocol 2- subdomain	5

NAME OF THE CHAPTER: Introduction to Computer Network

WORKSHEET : 2 (Answers)

Q.No	Question	Marks
1	ii)admin iii)switch iv)repeater may be placed when the distance is more than 70m. v)WAN	5
2	i)c ii)b iii)a iv)a v)c	5
3	 i) ii) Training compound iii) Repeater – not required as distance is less then 100m Hub – training compound iv) Optical Fiber v) WAN	5
4	i) Server should be installed at ADMIN as it has maximum numbers of computers ii) Star Topology iii) Hub/ Switch iv) Dynamic v) Video conferencing	5
5	i)b ii)a iii)b iv)c v)b	5

KENDRIYA VIDYALAYA SANGATHAN (AHMEDABAD REGION)
2023-24

CLASS XII – IP
NAME OF THE CHAPTER: Societal Impacts

WORKSHEET : 1

Q.No	Question	Marks
1	_____ are the records and traces that we left behind as we use internet. i) Digital Footprints ii)Data Protection iii)Plagiarism iv)Digital Data	1
2	Our digital footprint can be created by i) visiting any website ii)sending email iii)Posting online iv)All of the above	1
3	Digital footprints are stored in local web browser in the form of _____ i) browsing history ii)cookies iii)passwords iv)All of the above	1
4	Online posting of rumour's, giving threats online, posting the victims personal information, comments aimed to publicly ridicule a victim is termed as _____ i)cyber bullying ii)hacking iii)cyber crime iv)All of the above	1
5	IPR stands for _____ i)Indian Property Right ii)Intellectual Property Right iii)Intelligent Property Right iv)Intellectual Property Resource	1
6	_____ is an activity where fake websites or emails that look original or authentic are presented to the user. i)Phishing ii)Hacking iii)Spamming iv)Identity theft	1
7	Define Digital property.	2
8	What are the communication etiquettes?	2
9	What do you mean by the Indian IT Act?	2
10	What is identity theft? Give example.	2
11	Mr. John is confused between the terms shareware and open source software. Help him to understand the concept.	2
12	Explain the following terms: 1. Phishing 2. Hacking	2
13	What do you mean by "Digital Footprints"? Explain the different types of digital footprints with example?	3
14	What do you mean by Intellectual Property Right? Give some names of common type of IPR which are protected by the law.	3

NAME OF THE CHAPTER: Societal Impacts
WORKSHEET : 1 (Answers)

Q.No	Question	Marks
1	i) Digital Footprints	1
2	iv)All of the above	1
3	iv)All of the above	1
4	i)cyber bullying	1
5	ii)Intellectual Property Right	1
6	i)Phishing	1
7	Digital property refers to any information about you or created by you in digital form. Eg: personal blog or website	2
8	• Always use the proper language according to the receiver. • Be polite while giving a reply. • Write short and simple messages. It should be to the point and concise. • Before typing comments go through the previous comments and judge the credibility.	2
9	• The Indian IT Act refers to providing guidelines and rules to the user on the processing, storage and transmission of sensitive information. • The states of our country have their own cyber cells in the police station to report cybercrime. • The IT act provides legal provisions and implications against cybercrime. • If the cybercrime is proved then the accused may get the penalties also.	2
10	Stealing someone's personal identifying information and pretends to be that person in order to gain some financial benefits. Eg.:- using stolen credit card information.	2
11	Explaining shareware and open source software	2
12	1. Phishing: Phishing refers to an activity carried out by email or SMS or phone call with the demand of sensitive data like credit card details, banking passwords or OTP and can be resulted in identity theft or financial loss. 2. Hacking : gaining unauthorized access to acquire sensitive information from individuals over the internet.	2
13	• When we are using the internet we are leaving some data like filling up forms, replies to emails, social media status updates etc known as digital footprints. • The data and personal records leftover on the internet while using the internet are called digital footprints. There are two types of digital footprints: • Active Digital Footprints: Active footprint refers to footprints created with the user's consent. For example, filling up online forms, various responses on emails, comments on forum or community etc.	3

	Passive Digital Footprints: Passive digital footprints are created without the user's consent. It is created by a server, or app or the platform used by the user.	
14	- IPR : rights of the owner of the information to decide how much information is to be exchanged, shred or distributed. - common type of IPR which are protected by the law : 1 Rights upon discovery and invention 2 Rights upon musical, literary and art works 3 Copyrights, trademarks, patents, etc	3

KENDRIYA VIDYALAYA SANGATHAN (AHMEDABAD REGION)**2023-24****CLASS XII – IP****NAME OF THE CHAPTER: Societal Impacts****WORKSHEET : 2**

Q.No	Question	Marks
1	_____ refers to the process of conversion of electronic devices into something else which can be used again and again. i)Reduce ii)Reuse iii)Recycle iv)All of the above	1
2	What is an example of e-waste? i) A ripened banana ii) An old computer iii) Old clothes iv) Empty soda cans	1
3	An organization purchase new computers every year and dumps the old one into the local dumping yard. Write the name of the most appropriate category of waste that the organization is creating every year, out of the following options: i) Business waste ii) Commercial waste iii) E-waste iv) Green waste	1
4	ASSERTION AND REASONING based questions .Mark the correct choice as i. Both A and R are true and R is the correct explanation for A ii. Both A and R are true and R is not the correct explanation for A iii. A is True but R is False iv. A is false but R is True Assertion (A): - E-waste cause of Damage to the immune system, Skin disease, Multi ailments and Skin problems. Reasoning (R):- Mostly all electronic waste comprises of toxic chemicals such as lead, beryllium, mercury etc.	1
5	Define e-waste. What are the various methods for effective e- waste management?	2
6	What do you mean by Digital property rights? Explain.	2
7	Give any 2 benefits of ICT on today's society?	2
8	State 2 benefits of e-waste recycling?	2
9	What do you understand by Net Etiquettes? Explain any two such etiquettes.	2
10	What are some side effects of spending too much time on computers?	3
11	What are the impacts of E-waste on the environment?	3

NAME OF THE CHAPTER: Societal Impacts
WORKSHEET : 2 (Answers)

Q.No	Question	Marks
1	iii)Recycle	1
2	ii) An old computer	1
3	iii) E-waste	1
4	i)	1
5	The garbage of electronic gadgets such as computers peripherals, laptop accessories, mobiles is known as e- waste. methods for effective e- waste management : reduce, reuse, recycle	2
6	Digital property rights	2
7	Benefits of ICT : • increased access to services, and information • ICT provides quick access and is affordable. • better means of communication in the form of Instant Messaging, and VoIP • other relevant point	2
8	Two benefits of e-waste recycling: i. Saves the environment and natural resources ii. Allows for recovery of precious metals iii. Protects public health and water quality iv. Saves landfill space	2
9	There are some rules that you must obey when you are online and using the Web/internet. These rules are called net etiquette (Netiquettes), Internet etiquettes or Online etiquettes. 1. Be respectful. 2. Be aware of what you are commenting on social media. 3. Be careful with humor and sarcasm 4. Take care of how you are sharing your data and who can see this. 5. Friend requests and group invites should be checked before accepting 6. Take time to have a read of the rules of conduct/ community standards 7. Be forgiving do not take fight online	2
10	• The Internet can be addictive • Can have a negative impact on our physical and psychological well being • Muscle and joint problems • Overuse injuries like swelling, pain, joint stiffness, weakness and numbness • Eyestrain	3
11	• It pollutes air through the emission of gases and flumes in the atmosphere • It pollutes soil when dumped into the landfills by seeping harmful chemicals into the soil • It pollutes the water by releasing the particles into the water of sea, rivers, ponds or lakes	3

Case Based Questions:

QUES: XYZ Company developed software, related to face recognition with a team of 15 software developers. XYZ company Registered the software with a face symbol to easily recognize their software. Before approval of software by the registering firm, Rohit one of the team member of the software published the same software in internet under different name as it is his own development. XYZ firm recognized this activity and informed to the police. The police people arrested the Rohitas and removed the software from the internet. Police advice the XYZ firm to apply for patent as the software is a new invention.

1. XYZ firm registered the software with face symbol to easily recognize their software .in this context face symbol is called

(1) Copyright (2) IPR (3) Trademark (4) None of the above

Answer is: (3)

2 .The activities done by the Rohitas is called as

(1) Plagiarism (2) copyright Infringement (3) Trademark Infringement (4) None of the above

Answer is: (1)

3. among the following options which is automatically granted to XYZ Company

(1) Trade mark (2) patent (3) Copyright (4) None of the above

Answer is 3:

4. Rohit activity comes under

(1) Hate Crime (2) Cyber crime (3) Fraud (4) none of the above

Answer is 2.

5. Patents are valid for how many years.

(1) 10 (2) 12 (3) 15 (4) 20

Answer is: 4

QUES: Mr. Vinod is the administrator of a school computer network. Help him to take appropriate decision to achieve computer security and safe online access.

(i) Suggest a device to be used to filter network traffic to/from school network to provide network security.

(ii) Which software he can use to get protection from Viruses and Spyware

(iii) Tell him what he has to disable if possible in browser so that online patterns are not tracked

(iv) Suggest an active protection mechanism so that he can find a solution to spam

(v) Suggest one active protection solution to PC Intrusion

Ans)

(i) Firewall

(ii) Anti-Virus and Anti-Spyware software

(iii) Cookies

(iv) Anti-Spam software

(v) Authorization/Authentication/Firewall

QUES: Mr. Seth who is a business man by profession faced following situations. Identify the type of crime for each situation/incident happened to him?

(i) He was constantly receiving abusive emails

- (ii) He clicked on an unknown link received as a result his personal sensitive information was acquired by someone
- (iii) Derogatory messages were posted on him online
- (iv) His identity was used by someone to steal money
- (v) His laptop was controlled by somebody in an unauthorized way

Ans)

- (i) Cyber Bullying
- (ii) Phishing
- (iii) Cyber Trolls
- (iv) Identity Theft
- (v) Hacking