INFORMATICS PRACTICES SAMPLE PAPER

General Instructions:

1.This question paper contains two parts A and B. Each part is compulsory.

2. Part-A has 2 sections:

a. Section – I is short answer questions, to be answered in one word or one line.

b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts.

3. Part – B is Descriptive Paper.

4. Part- B has three sections

a. Section-I is short answer questions of 2 marks each.
b. Section-II is long answer questions of 3 marks each.
c. Section-III is very long answer questions of 5 marks each.

	PART-A	
	SECTION-1 **ATTEMPT ALL THE QUESTIONS**	
1.	Which of these following is not a communication channel? (i) Satellite (ii) Microwave (iii) Radio wave (iv) Wi-Fi	**1**
2.	Write the output of the following SQL command. SELECT TRUNCATE (395.796,-2); (i) 400 (ii) 300 (iii) 390 (iv) 395.79	**1**
3.	Given a Pandas series called marks, the command which will display the last 3 rows is _____ (i) print(marks.tail(3)) (ii) print(marks.tails(3)) (iii) print(marks.TAIL(3)) (iv) print(marks.TAILS(3))	**1**
4.	Missing data in Pandas series and dataframes can be filled with a _____ value.	**1**
5.	The max() function in MYSQL is an example of _____ (i) String function (ii) Math function (iii) Date function (iv) Aggregate function	**1**
6.	The person who accesses the personal information of someone only to learn about it or exploring programming knowledge – is known as _____	**1**
7.	Which of the following statements is false? (i) In dataframe- size is mutable. (ii) In Dataframe-values are mutable. (iii) In Series- size is mutable. (iv) In Series- values are mutable.	**1**

8.	A mail or message sent to a large number of people indiscriminately without their consent is called _____	**1**
9.	The _____ command in SQL is used to view the structure of a table.	**1**
10.	Write the SQL command to delete a table 'STUDENT' along with its structure.	**1**
11.	_____ is used to connect dissimilar networks and provide an intelligent connection between Local Network and External Network.	**1**
12.	Which of the following statements is used to create a histogram of 'step' type with 20 bins? (i) plt.hist(x, bins=20,histype="barstacked") (ii) plt.hist(x, bins=20) (iii) plt.hist(x, bins=20, histype="step") (iv) plt.hist(x, bins=20, histype=step())	**1**
13.	_____ is a term referring to a brand, invention, design or other kind of creation which a person or business has legal rights over.	**1**
14.	Which method is used to access horizontal subset of a dataframe? (i) iterrows( ) (ii) sort_values( ) (iii) head( ) (iv) iteritems( )	**1**
15.	Name the term used to describe traces of online activities that an individual performs on social media, online shopping, etc.	**1**
	SECTION-II **Both the case study based questions are compulsory.Each question carry 1 mark.**	
16.	Consider the following DataFrame df and answer the follwing questions: rollno name UT1 UT2 UT3 UT4 1 Prerna Singh 24 24 20 22 2 Manish Arora 18 17 19 22 3 Tanish Goel 20 22 18 24 4 Falguni Jain 22 20 24 20 5 Kanika Bhatnagar 15 20 18 22 6 Ramandeep Kaur 20 15 22 24	
i)	Write a Python Command that will give the following Output: 2 Tanish Goel 3 Falguni Jain Name: name, dtype: object	**1**
ii)	The teacher needs to know the marks scored by "Tanish Goel" in UT1 and UT2. Help her to identify the correct set of statement/s from the given options: a. df[['UT-1','UT-2']][df.name==' Tanish Goel'] b. df['UT-1','UT-2'][df.name==' Tanish Goel'] c. df[column=['UT-1','UT-2'][df.name==' Tanish Goel'] d. df('UT-1','UT-2')(df.name==' Tanish Goel')	**1**
iii)	Write a Python Statement which will give the sum of all marks in UT1.	**1**
iv)	Which of the following command will display the indices of the DataFrame? a. print(df.index()) b. print(df.indices()) c. print(df.index)	**1**

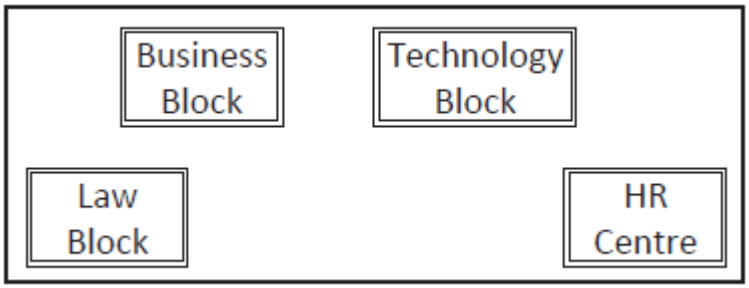
	d. print(df.indices)	
17.	Consider the table STORE in MySQL as given below: **StoreId** | **Name** | **Location** | **City** | **NoOfStore** | **DateOpen** | **Amt** S101 | Planet Fashion | SouthExtn | Delhi | 7 | 2015-10-16 | 40000 S102 | Vogue | Karol Bagh | Delhi | 8 | 2015-07-14 | 120000 S103 | Trends | Howrah | Kolkata | 10 | 2015-06-24 | 30000 S104 | Super Fashion | Thane | Mumbai | 11 | 2015-02-06 | 45000 S105 | Annabelle | South Extn. | Delhi | 8 | 2015-04-09 | 62000 S106 | Rage | Defence Colony | Delhi | 5 | 2015-03-01 | 20000	
i)	Select the correct option to get the following output: **Name** **Trends** **Super Fashion** i. select name from store where storeid='S103' and store id='S104'; ii. select name from store where not storeid='S103' and storeid='S104'; iii. select name from store where city="Kolkata" OR city="Mumbai"; iv. select name from store where storeid='S103' or storeid='S104'; Choose the correct option: a. Both (i) and(ii). b. Both (iii) and(iv). c. Any of the options (i), (iii) and(iv) d. Only(iii)	**1**
ii)	Write SQL Code to display the City and the number of stores located in that City, only if number of Store is more than 8.	**1**
iii)	What will be the output of the following command? SELECT COUNT(STOREID),NOOFSTORE FROM STORE GROUP BY NoofStore HAVING AMT>60000;	**1**

iv)	Select the SQL Command to display the name and location of the store that has opened recently?
	
	a. select name,location,min(Dateopen) from store;
	b. select name,location,max(Dateopen) from store;
	c. select name,location,min(Dateopen) from store group by name;
	d. select name,location,minimum(Dateopen) from store;
		1

	PART-B	
	SECTION-I **ATTEMPT ALL THE QUESTIONS**	
18.	What is the difference between the where and having clause when used along with the select statement? Explain with an example.	**2**
19.	Consider the decimal number x with value 1547.554 . Write commands in SQL to: i. Round it off to a whole number i.e. 1547	**2**

	ii. Round it to 1 place before the decimal i.e. 1540	
20.	Write Python code to create the following DataFrame df1 using Python Pandas. **Name** | **Class** | **Marks** Tanmay | XII | 95 Aditi | X | 84 Mehak | XI | 90 Kriti | XI | 75 Give index as "one", "two", "three", "four" respectively.	**2**
21.	Saloni wants to display the number of records from the "employee" table whose name has the word "raj" within it. She has written the following SQL code: Select Count(*) from Employee where name='raj%'; (i) Why will the above command give an error? (ii) Help Saloni to re-write the correct SQL Code.	**2**
22.	What will be the output of the following program? import pandas as pd s = pd.Series([1,2,3,4,5],index=['a','b','c','d','e']) print(s*3) s['e']=6 print(s[s>=4])	**2**
23.	Consider the following SQL string: "Corporate world" (i) Write SQL command to display "world" by removing any leading or trailing spaces (if any). (ii) Write SQL command to display the position of the substring 'or' in the string "Corporate world".	**2**
24.	Mr. Hitesh wants to draw a line chart using a list of elements named LIST. Complete the code to perform the following operations: (i) To plot a line chart using the given LIST, (ii) To give a y-axis label to the line chart named "Sample Numbers". import matplotlib.pyplot as PLINE LIST=[10,20,30,40,50,60] _____ Statement 1 _____ Statement 2 PLINE.show()	**2**
25.	Nilesh received an email from his bank stating that there is a problem with his account. The email provides instructions and a link, by clicking on which he can log on to his account and fix the problem. (i) What type of link can be the above? (ii) Suggest Nilesh about the precaution that he should take when he receives this type of e-mail.	**2**
26.	Expand the following terms related to Computer Networks: (i) VoIP (ii) URL (iii) TCP (iv) HTTP	**2**
27.	Miss Agarwal has many electronic gadgets which are not usable due to outdated	**2**

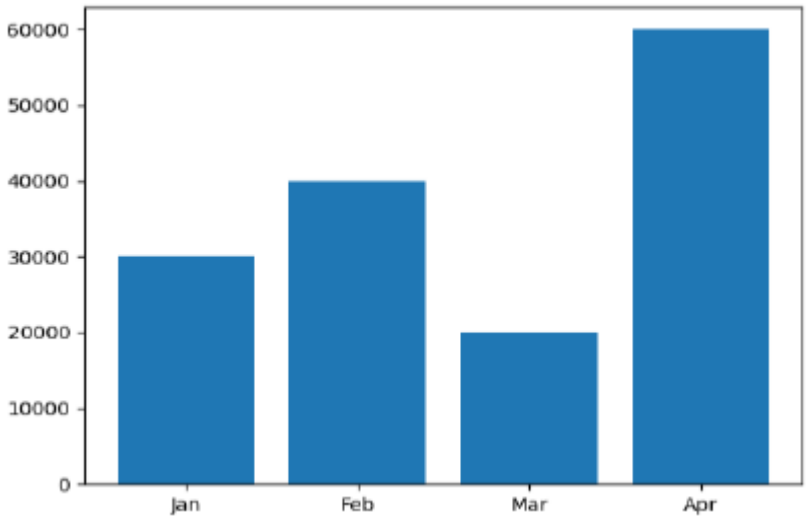
	hardware and software. Help her to find any two best ways to dispose the used electronic gadgets.	
	SECTION-II **ATTEMPT ALL THE QUESTIONS. Q29 HAS INTERNAL CHOICE.**	
28.	Consider the following dataframe df_Student: <table><tr><th>AdmNo</th><th>Name</th><th>Class</th><th>Weight</th><th>Height</th></tr><tr><td>H1001</td><td>Tiana</td><td>IX B</td><td>50</td><td>163</td></tr><tr><td>H1006</td><td>Jiya</td><td>IX A</td><td>55</td><td>167</td></tr><tr><td>H1009</td><td>Shreyas</td><td>IX A</td><td>59</td><td>164</td></tr></table>	
i)	Write a Python Command to display the Height of Jiya.	**1**
ii)	Write a Python Command to permanently delete the record of student having AdmNo H1009	**1**
iii)	Write a Python Command to display the records of the DataFrame in descending order of Weight.	**1**
29.	Explain the difference between a Web Browser and Web Server with suitable examples. OR What is unauthorized access? Write two points to maintain the confidentiality of data.	**3**
30.	A DataFrame "Toys" contains the following data: <table><tr><th>Name</th><th>Price</th></tr><tr><td>Talking Tom</td><td>400</td></tr><tr><td>Blocks</td><td>250</td></tr><tr><td>Number Game</td><td>300</td></tr><tr><td>Ludo</td><td>150</td></tr></table>	
i)	Write a Python Statement to display the sum of Prices of all toys.	**1**
ii)	Write a Python Statement to add a new Column called "Discount" with the following data: [30,40,15,25]	**1**
iii)	Write a Python Statement to add a new record in the dataframe with the values: Chinese Checker,200,12	**1**
31.	A Relation/Table Vehicles in MySQL is given below: <table><tr><th>V_no</th><th>Type</th><th>Company</th><th>Price</th><th>Qty</th></tr><tr><td>TT25</td><td>Wagon</td><td>Maruti</td><td>200000</td><td>20</td></tr><tr><td>J0043</td><td>Jeep</td><td>Mahindra</td><td>3500000</td><td>19</td></tr><tr><td>SV98</td><td>SUV</td><td>Mitsubishi</td><td>5000000</td><td>20</td></tr><tr><td>MV76</td><td>Mini van</td><td>Datsun</td><td>7800000</td><td>25</td></tr><tr><td>SV599</td><td>SUV</td><td>Maruti</td><td>8000000</td><td>26</td></tr><tr><td>MV880</td><td>Mini van</td><td>Mahindra</td><td>5600000</td><td>19</td></tr></table>	
i)	Write SQL Command to display the average price of each type of vehicle having quantity more than 20.	**1**
ii)	Write SQL Command to count the number of vehicles manufactured by "Mahindra"	**1**

<table>
<tr><td>iii)</td><td>Write SQL Command to add a new attribute in the Table called "Mdate" of Date data type.</td><td>1</td></tr>
<tr><td></td><td>SECTION-III
ATTEMPT ALL THE QUESTIONS</td><td></td></tr>
<tr><td>32.</td><td>Chanakya University is setting up its Academic blocks at Dehradun and is planning to set up a network. The University has 3 Academic blocks and one Human Resource Centre as shown in the diagram below:
 

Centre-to-Centre distances between various blocks/centre is as follows:
<table>
<tr><td>Law Block to business Block</td><td>40m</td></tr>
<tr><td>Law Block to Technology Block</td><td>80m</td></tr>
<tr><td>Law Block to HR Centre</td><td>105m</td></tr>
<tr><td>Business Block to technology Block</td><td>30m</td></tr>
<tr><td>Business Block to HR Centre</td><td>35m</td></tr>
<tr><td>Technology block to HR Centre</td><td>15m</td></tr>
</table>
Number of computers in each of the blocks/centres is as follows:
<table>
<tr><td>Law Block</td><td>15</td></tr>
<tr><td>Technology Block</td><td>40</td></tr>
<tr><td>HR Centre</td><td>115</td></tr>
<tr><td>Business Block</td><td>25</td></tr>
</table></td><td></td></tr>
<tr><td>i)</td><td>Suggest the most suitable place (i.e., block/centre) to install the server of this University with a suitable reason.</td><td>1</td></tr>
<tr><td>ii)</td><td>Suggest an ideal layout for connecting these blocks/centres for a wired connectivity and mention the Topology.</td><td>1</td></tr>
<tr><td>iii)</td><td>Which device will you suggest to be placed/installed in each of these blocks/centres to efficiently connect all the computers within these blocks/centres?</td><td>1</td></tr>
<tr><td>iv)</td><td>Suggest the placement of a Repeater in the network with justification.</td><td>1</td></tr>
<tr><td>v)</td><td>The university is planning to connect its admission office in Delhi which is more than 1,250 km from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.</td><td>1</td></tr>
<tr><td>33.</td><td>Consider a table Teacher in MySQL that contains the following data:</td><td></td></tr>
</table>

EmpNo	FName	LName	Subject	Qualification	Salary	Post
1	Sandeep	Verma	S.St.	B.Ed	25409.789	TGT
2	Sonia	Kumari	Computer	BCA	21200.456	TGT
3	Nirmal	Sharma	Hindi	B.Ed	38274.657	PGT
4	Sanjeev	Shastri	Sanskrit	B.Ed.	28782.228	TGT
5	Rakesh	Sharma	English	B.Ed.	32892.487	PGT

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

i)	To display Teacher's first name and Last name if 'ee' occurs in the first name.	**1**
ii)	To join First Name and Last name of the teachers with a space in between.	**1**
iii)	To display the "Qualification" of the PGTs in small letters.	**1**
iv)	To display first 2 characters of the "Subject" field of those teachers whose lastname is Sharma.	**1**
v)	To round off the salary to the nearest integer.	**1**
34.	Consider the following bar graph representing the Sales of each month. 	
i)	Write a Python Program to create the above Bar Chart. Note: 1. The values represented in the Y-Axis should be projected through yticks() 2. The width of each bar will be = 0.35	**3**
ii)	Use the information in the above Bar Graph and create a Series using Python Pandas. Use the Month names as the index values of the Series.	**2**