General Instructions:
1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
a. Section – I is short answer questions, to be answered in one word or one line.
b. Section – II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
4. Part - B is Descriptive Paper.
5. Part- B has three sections
a. Section-I is short answer questions of 2 marks each in which two questions have internal options.
b. Section-II is long answer questions of 3 marks each in which two questions have internal options.
c. Section-III is very long answer questions of 5 marks each in which one question has internal option.

INFORMATICS PRACTICES

Time : 3 hours   *Max. Marks: 70*

	Part – A	
	Section – I Attempt any **15 questions** from questions 1 to 21	
1	State whether True or False : i. Copying and pasting data from internet or other digital resources is ethical _____ ii. Source code of proprietary software is normally not available. _____	1
2	Fill in the blanks : The command used to plot a line graph is _____ a. plt.line() b. plt.plot() c. plt.bar() d. plt.hist()	1
3	Write the output of the following SQL command. select round(2584.836,-2); a. 2584.83 b. 2600 c. 2500 d. 2584.84	1

4	Given a pandas series s1 , the command to display the values which is greater than 50 is a. print(s1>50) b. print(s1[s1>50]) c. print(s1(s1>50)) d. print([s1>50])	1
5	Give the output of the following code: import pandas as pd D={ 'name': "Ram", 'age ': 25 , "sal": 3456} S=pd.Series(D) print(S)	1
6	The part of the chart which identifies different sets of data plotted on graph by using different colours is called: a. title b. axes c. legend d. label	1
7	_____ is used by software developers and proprietary software companies to prevent the unauthorized copying of their software	1
8	Missing data in pandas series and dataframe can be filled with a _____ value .	1
9	Name the device that allows a computer to send and receive information over telephone lines.	1
10	Small files which are stored on a user's computer and are used to keep track of the users are a) add-ons b) cookies c) plug-ins	1
11	Identify the multiple row and single row functions of SQL in the following avg() , mid( ) , count() , round( )	1
12	The practice of attempting to acquire sensitive information from individuals over the internet by means of deception is called _____	1
13	Function in SQL to remove the leading and trailing spaces of a string is _____	1
14	Either a hardware unit that can be added to a computer to increase the capabilities or a program unit that enhances primary program is called _____	1
15	From the following identify web browsers and web servers Microsoft edge , IIS, Apple Safari, Apache Tomcat	1
16	I can allow you for audio calls I can allow you for video calls I should be connected to with some internet connected device with microphone and speaker Who am I ?	1

17	Write the benefits of E-waste recycling.	1
18	What is the command to delete a column to a table in SQL ?	1
19	_____ describes the number of data points that fall within a specified range of values in a histogram.	1
20	Dr. Theekkar Singh is a very experienced orthopaedician in the Ilaj Nagar City. He is planning to connect 5 of his clinics of the city with a personalised application for his appointment organization without using mobile/web application. Which out of the following networks would be suitable ? (i) PAN (ii) LAN (iii) MAN (iv) WAN	1
21	Explain hacking.	1

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Section -II

Both the case study-based questions (22 & 23) are compulsory. Attempt any **four** sub parts from each question. Each sub question carries 1 mark .

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

	sid	name	QTR1	QTR2	QTR3	QTR4
1	101	Priya	2403	8224	2980	2922
2	102	Manoj	1845	1743	1998	4322
3	103	Taniya	2230	3422	1865	2476
4	104	Jisha	2229	2053	2418	2040
5	105	Sam	1526	2031	1861	2299
6	106	Ram	2011	1534	2272	2450

i.	Write down the command that will give the following output. sid 103 name Taniya QTR1 2230 QTR2 3422 QTR3 1865 QTR4 2476 a. print(df.loc[3 , :]) b. print(df.loc[2 ,:]) c. print(df.iloc[: , 2]) d. print(df.iloc[3 , :])	1
ii.	The manager of the company needs to know the sales of salesman id 105. Help him to identify the correct set of statement/s from the given options : a. print(df[df['sid'] = =105]) b. print(df[sid = =105])	1

	c. print(df[df.sid = 105] d. print(df[df.sid = =105])	
iii.	Write command to display the QTR3 sales of all salesmen .	1
iv.	What will be the command to set the names of the salesmen as index of the dataframe ?	1
v.	The Manager wants to add a new column . Total_sales by finding the sum of sales done in QTR1,QTR2,QTR3 and QTR4. Help him choose the correct command a. df['Total_sales']=df.QTR1+df.QTR2+ df.QTR3 + df.QTR4 b. df ['Total_sales']=df['QTR1'] + df['QTR2'] + df['QTR3'] + df['QTR4'] c. df['Total_sales']= Qtr1 + QTR2 + QTR3 + QTR4 d. Both (a) and (b) are correct	1
23	Consider the table TEACHER	

ID	NAME	DEPARTMENT	HIREDATE	CATEGORY	GENDER	SALARY
1	Tanya	Physics	1994-03-17	TGT	F	25000
2	Saurabh	Accounts	1990-02-12	PRT	M	20000
3	Nandita	Computer	1980-05-16	PGT	F	30000
4	James	English	1989-10-16	TGT	M	27000
5	Jaspret	Physics	1990-08-01	PGT	F	32000
6	Disha	Computer	1980-03-17	PRT	F	24000
7	Sonali	Accounts	1980-11-17	TGT	F	26500

i.	State the command that will display the following output	1

NAME
Tanya
Saurabh
Disha

i.   select name from teacher where salary>=20000 and <=25000;
ii. select name from teacher where salary is between 20000 to 25000;
iii. select name from teacher where salary between 20000 and 25000;
iv. select name from teacher where salary>=20000 and salary <=25000;

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

ii.	State the command that will display the following output | **CATEGORY** | |---| | TGT | | PRT | | PGT | a. select category from teacher; b. select category from teacher where category in ("TGT", "PRT", "PGT"); c. select distinct category from teacher; d. select category from teacher where category = "TGT"or category = "PRT" or category = "PGT";		1
iii.	Which statement given below will display the following output | NAME | |---| | Saurabh | | Nandita | | Jaspret | | Disha | i. select name from teacher where category = "PRT" or category = "PGT"; ii. select name form teacher where detartment= "physics "or department = "compuiter"; iii. select name from teacher where category = "PRT" and category = "PGT"; iv. select name from teacher where caegory in ("PGT", "PRT"); a. Option i. & iv b. Option ii c. Option iii & iv d. Option iv		1
iv.	When the command Select max(salary) from teacher where group by department; is given , it is not giving the desired result. Choose the correct command from the following. a. Select max(salary) from teacher where group by category; b. Select department, max(salary) from teacher group by salary; c. Select department, max(salary) group by department from teacher; d. Select department , max(salary) from teacher group by department ;		1

v.	State the command to display the departmentname and total salary of computer and accounts department seperately. a. select department,sum(salary) from teacher where department ="computer" or department = "accounts" group by department; b. select department , sum(salary) from teacher group by department where department in ("computer", "Accounts"); c. select department,sum(salary) from teacher group by department having department in ("computer", "Accounts"); d. select department,sum(salary) from teacher where department = "computer" or department = "Accounts"; i. Option (a) ii. Option (a) and (c) iii. Option (b) and (c) iv. Option (d)	1
	Part – B	
	Section – I	
24	Consider the dictionary exam ={ "UT1": 98 , "UT2": 65, "UT3": 78, "UT4": 97} Write a program to create a series named score with the above dictionary and display it. Also display the output of the program .	2
25	What is the difference between where and having clause in SQL? Explain with example . <div align=center>OR</div> What is difference between order by and group by ? Explain with example .	2
26	Give the output of the following : 1. select round(34.659, 1) + truncate(34.659,1) ; 2. select substr("Technology is fun ", 9, pow(2,2)); 3. select length(trim(" CBSE BOARD ")) ; 4. select day("2020-09-23") ;	2
27	Consider the dataframe stud Rollno name mark 1 Ajay 65 2 Binu 43 3 Charles 87 4 Deepak 56 i. Write command to sort the dataframe in descending order of mark . ii. Write command to change the index of the dataframe as 'S01', 'S02', 'S03', 'S04'	2

28	Akash created a table student with mark as one of the columns. When he gave the command Select count(*) from student; he got the result 15 The query Select count(*) from student where mark>=60; gave the result 9. For the query Select count(*) from student where mark<60 ; Akash predicted the output as 6. Do you agree with him ? Justify your answer.	2

29	Consider the number 5678.567
	   i. Write command in SQL to get the output as 5600.
	   ii. Write command to get display the output as 5680.
		2

30	Consider the dataframe emp
	
	Empno name basic comm
	111 Sam 3450 435
	222 Geetha 6567 657
	333 Tom 3456 543
	444 Kiran 8765 685
	
	   i. Write command to add a column allowance and populate it with values .
	   ii. Write command to delete the comm column .
		2

31	What will be the output of the following python code ? import pandas as pd df = pd.DataFrame([[10,5,5],[20,10,30],[30,15,20]],index=['A','B','C'], columns=['X','Y','Z']) print(df)	2
32	List any two health hazards related to excessive use of Technology.	2
33	Reena has recently shifted to a new city and new college. She does not know many people in her new city and college. But all of a sudden, someone starts posting negative, demeaning comments on her social networking profile, college site's forum, etc. She is also getting repeated mails from unknown people. Every time she goes online, she finds someone chasing her online. (i) What is happening to Reena? (ii) What action should she take to stop them?	2
	Section II	
34	Consider two objects L1 and S1 where L1 is a list and S1 is a series , both having values 12, 4 , 15, 9, 13 What will be the output of the following two statements considering that the above objects have been created already ? a. print(L1+L1) b. print(S1 + S1) Justify your answer.	3

35	What is plagiarism? How can you avoid plagiarims ? OR What do you know about Net Ettiquetes? Explain .	3
36	Write a program to create a dataframe with the help of a dictionary that represents name , mark in english and mark in maths of 5 students. Plot a barchart with name and marks of english and maths. Give appropriate title and labels. OR Write a python program to draw a line chart with the following information:	3

Birds	Population
Peacock	2600
Parrot	3000
Monal	1000
Flycatcher	5000
Crow	1200

The linechart should have the following features:
a) X-axis label should be 'Birds' and Y-axis label should be 'Population' .
b) The title of the chart should be 'Bird Population' .
c) The colour of the line should be 'Green' .

37	Table: Books	3

Bk_id	Book_Name	Author_Name	Publishers	Price	Type	Qty
C0001	FastCook	LataKapoor	EPB	350	Cookery	5
F0001	TheTears	WilliamH.	FirstPub.	650	fiction	20
T0001	Myfirstc++	Brain&broke	EPB	350	text	10
T0002	Letusc++	Yashwantk.	BPB	250	text	40
F0002	thunderbolts	AnnaRoberts	FirstPub.	750	Fiction	50

Write SQL command to :
i.   Find the total price of each publiser .
ii. Count the number of different publishers .
iii. Display the maximum price and minimum quantity of EPB and BPB publishers seperately .

	Section -III	
38	Write a program in Python Pandas to create the following DataFrame item from a Dictionary:	5

NO	itemname	price	qty
1	book	90	8
2	folder	65	4
3	pen	70	9
4	pencil	80	7

Perform the following operations on the DataFrame :
1. Add a column amount to the dataframe which stores the amount (price * qty) of each item .
2. Display the details of the last two items .
3. Display the details in the index 2 .

39.	Table : STOCK						5

I_Code	P_Name	Brand	Made	Price	CPU	M_date
P101	Desktop	Dell	Malaysia	250.87	i5	2019-09-23
L101	Laptop	Lenovo	China	275.45	i5	2018-03-12
P102	Desktop	HP	Thailand	325.34	i7	2020-04-15
P103	Desktop	Fujitsu	Germany	285.98	i5	2018-06-22
L102	Laptop	Toshiba	Malaysia	300.67	i5	2017-07-01
P104	Desktop	Lenovo	China	185.56	i3	2015-12-25
P105	Desktop	Expeditor	China	210.90	i5	2019-10-09

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

a. Display name and price after rounding off to whole number.
b. Display the position of occurrence of the string "p" in stock names.
c. Display the four characters from name starting from second character.
d. Display the month name for the date of manufacturing and the last 3 letters of I_Code .
e. Display the number of characters in name and the year of manufacture of all items .
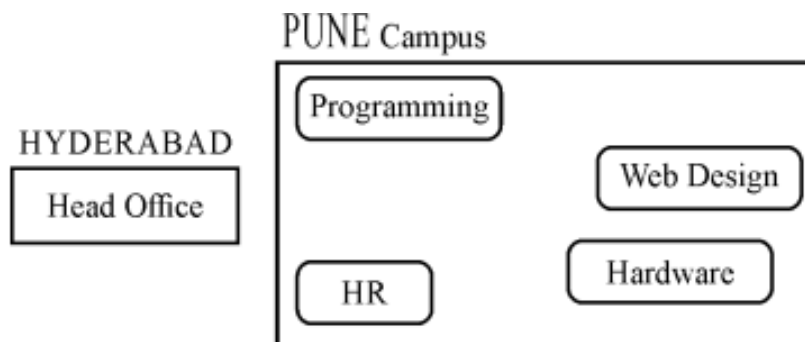
<div align="center">OR</div>

Write the SQL functions which will perform the following operations:
i)   To display the year of todays date.
ii)   To combine the first two letters and the last three letters of the word " Intelligence".
iii)   To display the position of the string "tell" in the string "Intelligence"
iv)   To display 4 letters from the 3rd position of the string "performance".
v)   To display n1 to the power of n2.

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40 Go-Fast corporation is a Hyderabad based company, which is planning to set up training campuses in various cities in next 3 years. Their first campus is coming up in Pune. At Pune campus, they are planning to have 4 different blocks for HR, Web Design Training, Programming Training and Hardware Training. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. As a network consultant of this company, you have to suggest the best network related solutions for them for issues/problems raised in (i) to (iv), keeping in mind the distances between various blocks/locations and other given parameters.   **5**

PUNE Campus

HYDERABAD

Head Office

Programming

Web Design

Hardware

HR

Shortest distances between various blocks/locations :
Programming Block to HR Block   60 metres
Programming Block to Web Design Block   50 metres
Programming Block to Hardware Block   70 metres
HR Block to Web Design Block   120 metres

HR Block to Hardware Block   85 metres
HYDERABAD Head Office to PUNE Campus   504 Km

Number of Computers installed at various blocks are as follows :
HR Block   10
Programming Block   100
Web Design Block   60
Hardware   40

(i) Suggest the most appropriate block/location to house the SERVER in the PUNE
    Campus (out of the 4 blocks) to get the best and effective connectivity.
    Justify your answer.

(ii) Suggest a device/software to be installed in the PUNE Campus to take care of data
     security.

(iii) Suggest and draw the cable layout (Block to Block) to efficiently connect various
      Blocks within the PUNE campus.

(iv) What is the type of network betweem Pune campus and Hyderabad head office. Justify
     your answer

(v) Which device will you suggest to be placed/installed to efficiently connect all the
     computers within each building .

ALL THE BEST