INFORMATICS PRACTICES (065)
SAMPLE QUESTION PAPER (2020 - 21)

Max Marks: 70 **Class XII** **Time: 3 hrs**

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
   a. Section – I is short answer questions, to be answered in one word or one line.
   b. Section – II has two case studies questions. Each case study has 4 case-based subparts. 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.

PART - A
Section - I
Attempt any 15 questions from questions 1 to 21

1.	State True or False: Virus is the attack upon an individual or group using electronic media such as social networking sites, instant messaging, e-mail, etc.	1
2.	Which of the following is an advantage of 'open source' software? a) You can edit the source to code to customise it. b) You need to be an expert to edit code. c) You have to pay. d) Can sometimes be too generic for specialist purposes.	1
3.	Select correct SQL query from below to find the temperature in increasing order of all cities. a) SELECT city FROM weather ORDER BY temperature; b) SELECT city, temperature FROM weather; c) SELECT city, temperature FROM weather ORDER BY temperature; d) SELECT city, temperature FROM weather ORDER BY city;	1
4.	The axis 1 identifies a dataframe's _____. a) rows b) values c) columns d) None of these	1
5.	To display third element of a Series object S, you will write _____. a) S[:3] b) S[2] c) S[3] d) S[:2]	1
6.	Which of the following function will create a vertical bar chart? a) bar() b) plot() c) plotbar() d) none of the above	1
7.	Which of the following is not a type of cyber cybercrime? a) Data theft b) Forgery c) Damage to data and systems	1

	d) Installing antivirus for protection	
8.	Missing data in Pandas object is represented through: a) Null b) None c) Missing d) NaN	1
9.	A network having a span within a building is called a _____.	1
10.	A digital document hosted on a website is a _____.	1
11.	Which of the following would be a creative work protected by copyright? a) A list of all Indian President names b) A portrait of your family c) A song you wrote d) The name of your pet dog	1
12.	IAD means _____.	1
13.	To get the number of dimensions of a Series object, _____ attribute is displayed. a) index b) size c) itemsize d) ndim	1
14.	Which of these is not a part of URL? a) IP address b) Port Number c) Domain Name d) None of the above	1
15.	The rights of the owner of information to decide how much information is to be shared/exchanged/distributed, are collectively known as _____ (IPR) a) Intelligent Property Rights b) Intellectual Property Rights c) Interactive Property Rights d) Instance Property Rights	1
16.	In an email address, the characters following '@' character represent a) Username b) E-mail recipient c) Domain name d) None of the above	1
17.	The original code written by programmers for a software is known as _____.	1
18.	Which of the following is not a string function? a) MID b) Year c) Substr d) Left	1.
19.	What will be returned by the given query? SELECT INSTR("INDIA","DI"); a) 2 b) 3 c) -2 d) -3	1
20.	The device that can operate in place of a hub is a _____. a) Switch b) Bridge c) Router d) Gateway	1
21.	Full form of bcc in the context of email is _____.	1

Section -II

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

22. Answer the questions based on the following table EMPLgiven below:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-Dec-1980	800	NULL	20
7499	ALLEN	SALESMAN	7698	20-Feb-1981	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-1981	1250	500	30
7566	JONES	MANAGER	7839	2-Apr-1981	2975	NULL	20
7654	MARTIN	SALESMAN	7698	28-Sep-1981	1250	1400	30
7698	BLAKE	MANAGER	7839	1-May-1981	2850	NULL	30
7782	CLARK	MANAGER	7839	9-Jun-1981	2450	NULL	10
7788	SCOTT	ANALYST	7566	9-Dec-1982	3000	NULL	20
7839	KING	PRESIDENT	NULL	17-Nov-1981	5000	NULL	10
7844	TURNER	SALESMAN	7698	8-Sep-1981	1500	0	30
7876	ADAMS	CLERK	7788	12-Jan-1983	1100	NULL	20
7900	JAMES	CLERK	7698	3-Dec-1981	950	NULL	30
7902	FORD	ANALYST	7566	3-Dec-1981	3000	NULL	20
7934	MILLER	CLERK	7782	23-Jan-1982	1300	NULL	10

i) SELECT concat(left(JOB,2), right(Ename,2)) AS 'ID' from EMPL where DEPTNO=20; — 1

A. CRTH
MAES
ANTT
CLMS
ANRD

B. CLTH
MAES
AMTT
CLMS
ASRD

C. CLTH
MAES
ANTT
CLMS
ANRD

D. None of these

ii) SELECT round(SAL-SAL*10/100) As "Discounted Payment" from EMPL where SAL>3000; — 1

A. 4500
B. 4600
C. 4400
D. None of these

iii) Select ucase(concat(Ename,'*',MGR)) from EMPL where JOB like 'ANALYST'; — 1

A. SCOTT*7698
FORD*7566

B. SCOTT*7566
BLAKE*7839

C. SCOTT*7566
FORD*7566

D. None of these

iv) Predict the output: — 1

SELECT AVG(COMM) FROM EMPL;

A. 800
B. 550

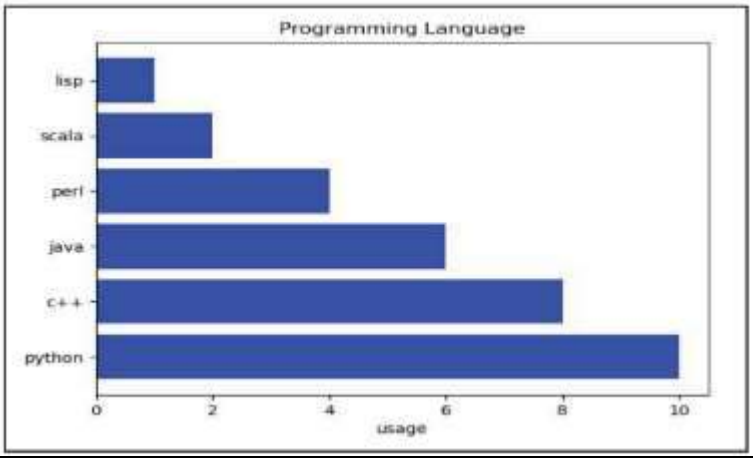
	C. 600 D. None of these	
v)	Predict the output: SELECT SUM(DISTINCT SAL) FROM EMPL; A. 24775 B. 29025 C. 29000 D. None of these	1
23.	Assume a data frame df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indexes shown below and give the output of any four questions from (i) to (v). <table><tr><th></th><th>City</th><th>MaxTemp</th><th>MinTemp</th><th>RainFall</th></tr><tr><td>C1</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>C2</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>C3</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>C4</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr><tr><td>C5</td><td>Kolkata</td><td>39</td><td>23</td><td>41.8</td></tr></table>	
i)	df1.shape	1
ii)	df1[1:2]	1
iii)	df1.loc['C1':'C3','City']	1
iv)	df1.iloc[2]	1
v)	df.city	1
	Part – B **Section - I**	
24.	Write Python code to create the following DataFrame df1 using Python Pandas. Use any method of DataFrame creation. <table><tr><th>Name</th><th>Class</th><th>Marks</th></tr><tr><td>Tanmay</td><td>XII</td><td>95</td></tr><tr><td>Aditi</td><td>X</td><td>84</td></tr><tr><td>Mehak</td><td>XI</td><td>90</td></tr><tr><td>Kriti</td><td>XI</td><td>75</td></tr></table>Give index as “one”, “two”, “three”, “four” respectively.	2
25.	State any two differences between instr() and substr() functions in SQL. **OR** What is the difference between where and having clause when used along with the select statement. Explain with an example.	2
26.	Write the output of the following SQL commands: (i) Select Mod(13,3); (ii) Select Power(5,3);	2
27.	Consider a given Series , M1: index <table><tr><th></th><th>Marks</th></tr><tr><td>Term1</td><td>45</td></tr><tr><td>Term2</td><td>65</td></tr><tr><td>Term3</td><td>24</td></tr><tr><td>Term4</td><td>89</td></tr></table>Write a program in Python Pandas to create the series.	2

28.	Consider the decimal number x with value 2469.21564. Write commands in SQL to: i. round it off to a whole number ii. round it to 3 places before the decimal.	2
29.	Consider the following SQL string: "Corporate world" (2) Write commands to display: (i) "rate" (ii) "world" **OR** Considering the same string "Corporate world" Write SQL commands to display: (i) the position of the substring 'or' in the string "Corporate world" (ii) the last 4 letters of the string	2
30.	What will be the out output of the following code: import pandas as pd s = pd.Series([1,2,3,4,5],index=['a','b','c','d','e']) print(s*3) print(s>2) s['e']=6 print(s)	2
31.	Expand the following terms: (i) IMAP (ii) POP (iii) TCP/IP (iv) HTTPs	2
32	Describe why authentication is important for file protection?	2
33.	Deepanjali received an SMS from her bank querying a recent transaction that she made online and asking for the pin number. Answer the following questions as to what she should do on receiving this SMS. (i) Should she SMS her pin number to the given contact number? (ii) Should she call the bank helpline number to recheck the validity of the SMS received?	2
	Section - II	
34.	A relation Product is given below: P_No | Ptype | P_Manufacturer | Price | Qty P1001 | Pencil | Natraj | 15 | 20 P1002 | Ball Pen | Reynolds | 10 | 50 P1003 | Gel Pen | Flair | 20 | 100 P1004 | Sketch Pen | Doms | 50 | 35 P1005 | Paint Brush | Doms | 30 | 15 P1006 | Pencil | Natraj | 15 | 30 P1007 | Ball Pen | Reynolds | 10 | 10 P1004 | Sketch Pen | Doms | 50 | 60 P1005 | Paint Brush | Doms | 30 | 85 P1006 | Pencil | Natraj | 15 | 45 Write SQL commands to: (i) Display the Average price of each type of Product having quantity more than 30. (ii) Increase the price of the products manufactured by Doms by 2%. (iii) Display the Maximum and Minimum price of all types of Products.	3
35.	What is unauthorized access? How confidentiality of data can be maintained? **OR** Explain the difference between a web browser and web server with suitable examples?	3
36.	Write a Python program to display a bar chart of the number of students in a school. Use different colours for each bar.	3

Sample data:
Class: I,II,III,IV,V,VI,VII,VIII,IX,X
Strength: 38,30,45,49,37,53,48,44,36,46

OR

Write a Python program to plot the given bar graph to depict the popularity of various programming
languages. Label the graph with x-axis, y-axis, y-ticks and title.
Data : Programming languages: Python, C++, Java, Perl, Scala, Lisp
Usage= 10,8,6,4,2,1



37. Consider two objects L1 and ser1. L1 is a list whereas ser1 is a Series. Both have values 90,80,70,60,50. What will be the output of the following two statements considering that the above objects have been created already? (3)
(i) print (list1*2)
(ii) print(ser1+10)
Justify your answer.

Section - III

38. Write a program in Python Pandas to create the following DataFrame 'Order' for an online shopping app: (5)

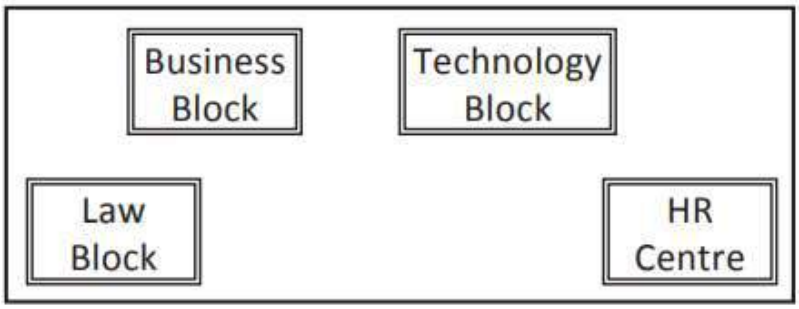
OrderId	Ordername	Price	Delivery Charges	Date of Delivery	Location
FK100	Purse	1800	50	2020-10-09	Delhi
FK101	Shoes	1100	50	2020-11-11	Ghaziabad
FK102	Watch	800	30	2020-04-12	Karol Bagh
FK103	Belt	500	30	2020-09-03	Gurugram
FK104	Shirt	2200	50	2020-11-10	Palam

(i) Display DataFrame 'Order'.
(ii) Calculate the Total price of orders along with delivery charges and assign to a new column Total.
(iii) Display records of those orders which have delivery charges greater than 30.

39. Write a program in Python Pandas to create the following DataFrame TotalAmt from a Dictionary: (5)

OrderId	Name	FoodItem	Quantity	Price
1	Priya	Burger	2	50
2	Brijesh	Pizza	4	200
3	Nikhil	French Fries	2	80
4	Pooja	Chow mein	2	120
5	Vikas	Pizza	6	200

Perform the following operations on the DataFrame TotalAmt:
(i) Calculate the Amount by multiplying quantity and price of the food item.

	(ii) Display highest and lowest price of all food items. (iii) Display the DataFrame. **OR** Write the SQL functions which will perform the following operations: (i) To display the total number of characters in "Informatics Practices". (ii) To display the substring "Intel" from the String "Artificial Intelligence". (iii) To display the month of the current day. (iv) To display the last 6 characters of a string "Annual Salary". (v) To remove all the left spaces of the string " Players".	
40.	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: Law Block to business Block — 40m Law Block to Technology Block — 80m Law Block to HR Centre — 105m Business Block to technology Block — 30m Business Block to HR Centre — 35m Technology block to HR Centre — 15m Number of computers in each of the blocks/centres is as follows: Law Block — 15 Technology Block — 40 HR Centre — 115 Business Block — 25 (a) Suggest the most suitable place (i.e., block/centre) to install the server of this University with a suitable reason. (b) Suggest an ideal layout for connecting these blocks/centres for a wired connectivity. (c) Which device will you suggest to be placed/installed in each of these blocks/centres to efficiently connect all the computers within these blocks/centres? (d) Suggest the placement of a Repeater in the network with justification. (e) The university is planning to connect its admission office in Delhi which is more than 1,250 km from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.	5

INFORMATICS PRACTICES (065)
SAMPLE QUESTION PAPER (2020 - 21)

Max Marks: 70 **Class XII** **Time: 3 hrs**

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
   a. Section – I is short answer questions, to be answered in one word or one line.
   b. Section – II has two case studies questions. Each case study has 4 case-based subparts. 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.

PART - A
Section - I
Attempt any 15 questions from questions 1 to 21

1.	Online textual talk is called _____. a) Video Conferencing b) Telephony c) Text Phone d) Chat	1
2.	A software that can be freely accessed and modified is called _____. a) Synchronous Software b) Package Software c) Open Source Software d) Middleware	1
3.	By default, ORDER BY clause lists the result in _____ order. a) Descending b) Any c) Same d) Ascending	1
4.	The axis 1 identies a dataframe's _____. a) rows b) values c) columns d) None of these	1
5.	To check if the Series objects contains NaN values, ____ attribute is displayed. a) hasnans b) nbytes c) ndim d) dtype	1
6.	A _____ graph is a type of chart which displays information as a series of data points connected by straight line segments. a) boxplot b) line c) bar d) pie	1
7.	Any fraudulent business practice that extracts money from an unsuspecting, ignorant person is called a _____. Ans: Scam	1

8.	_____ is a popular data science library of Python. (Pandas)	1
9.	A computer network that spans a relatively large geographical area is called_____.(WAN)	1
10.	A email can be sent via, a) PC b) Tablet c) Smart phone d) All of the above	1
11.	Stealing someone else's intellectual work and representing it as own, is called _____ a) Intellectual steal b) Pluckism c) Plagiarism d) Pickism	1
12.	IAD means _____. (Internet Addiction Disorder)	1
13.	To create an empty Series object, you can use: a) pd.Series(empty) b) pd.Series(np.NaN) c) pd.Series() d) All of these	1
14.	URL stands for a) Universal Resource Locator b) Uniform Resource Location c) Uniform Resource Locator d) None of the above	1
15.	What is an example of e-waste? a) A ripened banana b) An old computer c) Old clothes d) Empty soda cans	1
16.	URLs are of two types : a) Absolute and Relative b) Static and Dynamic c) Absolute and Dynamic d) None of the above	1
17.	The original code written by programmers for a software is known as _____. (Source Code)	1
18.	Which of the following is not a date function? a) Month b) Year c) NOW d) POW	1.
19.	What will be returned by the given query? SELECT concat("It", "was", "ok"); a) "It was ok" b) "It wasok" c) "Itwasok" d) "Itwas ok"	1
20.	A repeater takes a weak and corrupted signal and _____ it. a) Amplifies b) Regenerates c) Resembles d) Reroutes	1
21.	Full form of VoIP is _____. Ans: (Voice over Internet Protocol)	1

Section -II

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

22.	Answer the questions based on the following table EMPLgiven below: 	

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	800	NULL	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7876	ADAMS	CLERK	7788	1983-01-12	1250	NULL	20

i)	SELECT MAX(DISTINCT SAL) FROM EMPL WHERE COMM IS NOT NULL; a) 5000 b) 3000 c) 2850 d) None of these	1
ii)	SELECT COUNT(DISTINCT JOB) FROM EMPL WHERE COMM IS NULL; a) 2 b) 3 c) 4 d) None of these	1
iii)	SELECT SUM(DISTINCT SAL) FROM EMPL where comm is not null; a) 5850 b) 5900 c) 7100 d) None of these	1
iv)	Select ucase(concat(Ename,'*',MGR)) from EMPL where JOB like 'ANALYST'; a) FORD*7566 b) BLAKE*7839 c) SCOTT*7566 d) None of these	1
v)	SELECT MAX(SAL)-MIN(SAL) FROM EMPL GROUP BY DEPTNO HAVING MAX(SAL)>4000; a) 2550 b) 2700 c) 3500 d) None of these	1
23.	Given a data frame namely data as shown below figure (fruit names are row labels).	

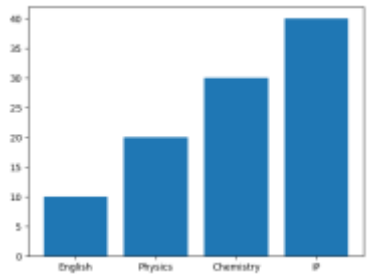
	Color	Count	Price
Apple	Red	3	120
Apple	Green	9	110
Pear	Red	25	125
Pear	Green	26	150
Lime	Green	99	70

i)	Find all rows with the label “Apple”. Extract all columns. a) data.loc['Apple', :] b) data.loc['apple',] c) data.loc[Apple] d) None of these	1
ii)	List fruits with count more than 25. a) data[data['Count'] < 25]) b) data[data['Count'] > 25] c) data.data['Count'] > 25] d) None of these	1

iii)	List only the columns Color and Price using loc. a) Data[loc[:,['Color','Price']] b) (DF1[['Color','Price']]) c) data.loc[:,['Color','Price']] d) None of these	1
iv)	List only rows with labels 'Apple' and 'Pear' using loc. a) data.loc[[Apple,Pear]]) b) data.loc[['Apple','Pear']] c) data(loc[['Apple,Pear']]) d) None of these	1
v)	List only rows 1, 3, 4 using iloc. a) data.iloc[[134]] b) data.iloc[1,3,4] c) data.iloc[[1,3,4]] d) None of these	1
	Part – B **Section - I**	
24.	What will be the output of the following code? import pandas as pd import numpy as np data = np.array(['a1','b1','c1','d1','e1']) S= pd.Series(data, index = [1001, 1002, 1003, 1004, 1005]) print(S[[1002, 1003, 1004]]) **Ans:** 1002 b1 1003 c1 1004 d1 dtype: object	2
25.	What is the significance of GROUP By clause in a SQL query? Ans: The GROUP By clause combines all those records that have identical values in a particular field or a group of fields. This grouping results into one summary record per group if group function are used with it. **OR** What are different types of SQL functions? Ans: Single Row (or Scalar) Function and Multiple Row (Group or Aggregate) functions. Single Row Function work with a single row at a time. A single row function returns a result for every row of a queried table. Multiple Row or Group Function work with data of multiple rows at a time and return aggregate value.	2
26.	Write a query to display name of the month for date 01-05-2020. Ans: SELECT MONTHNAME ('2020-05-01');	2
27.	Write a program to create a DataFrame from a 2D array as shown below: 101 113 124 130 140 200 115 216 217 Ans: import pandas as pd import numpy as np arr2=np.array([[101,113,124], [130,140,200], [115,216,217]]) dtf3=pd.DataFrame(arr2) print(dtf3)	2
28.	Predict the output of the following queries: a) SELECT 9 mod 2; b) SELECT CONCAT ('Catch', 'a', 'falling', 'star');	2

	Ans: a) 1 b) Catchafallingstar	
29.	Write a query to display day of the year for date 13th Feb 2009. Ans: SELECT DAYOFYEAR('2009-02-13'); **OR** Consider the following SQL string: "Preoccupied" Write commands to display: a) the position of the substring 'cup' in the string "Preoccupied" b) the first 4 letters of the string. Ans: a) select instr('Preoccupied' , 'cup'); b) select left 'Preoccupied',4);	2
30.	What will be the out output of the following code: import pandas as pd import numpy as np section=['A', 'B', 'C', 'D', 'E'] contri=np.array([2725,3600, 4250, 1200, np.NaN]) s12=pd.Series(data=contri*2, index=section, dtype=np.float32) print(s12) Ans: A 5450.0 B 7200.0 C 8500.0 D 2400.0 E NaN	2
31.	Expand the following terms: a) OSS b) SDLC c) GNU d) FLOSS Ans: OSS – Open Source Software SDLC – System Development Life Cycle GNU – GNU is Not Unix FLOSS – Free Libre/Livre and Open Source Software	2
32.	Describe why authentication is important for file protection? Ans: Authentication is the process of determining whether someone is a legal user. It is the process of identifying an individual, usually based on a username and password. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual. It is used a primary step for file protection from unauthorized users.	2.
33.	Explain the following terms: a) Web Page b) Home Page Ans: a) Web Page: A document using http and that resides on a website. b) Home Page: It is the top level web page of a web site. This is the page that gets displayed first of all when a website is opened.	2
	Section - II	
34.	Consider the following table CABHUB. Write SQL commands for the following statements. **CABHUB** *VCODE* | *VEHICLENAME* | *MAKE* | *COLOR* | *CAPACITY* | *CHARGES* 100 | Innova | Toyota | White | 7 | 15 102 | SX4 | Suzuki | Blue | 4 | 14 104 | C Class | Mercedes | Red | 4 | 35 105 | A-Star | Suzuki | White | 3 | 14 108 | Indigo | Tata | Silver | 3 | 12 a) To display the names of all the white colored vehicles.	3

	b) To display name of vehicle, make and capacity of vehicles in ascending order of the seating capacity. c) To display the highest charges at which a vehicle can be hired from CABHUB. Ans: a) SELECT VEHICLENAME FROM CABHUB WHERE COLOR=”WHITE”; b)SELECT VEHICLENAME, MAKE, CAPACITY FROM CABHUB ORDER BY CAPACITY; c) SELECT MAX(CHARGES) FROM CABHUB;	
35.	What are the freedoms that a free software must provide? Ans: a) The freedom to run the program, for any purpose. b) The freedom to study how the program works, and adapt it to your needs. Access to the source code is a precondition for this. c) The freedom to redistribute copies. d) The freedom to improve the program and release your improvements to the public , so that the whole country benefits. **OR** What are the environmental issues of e-waste? Ans: E-waste, or electronic waste, is waste from all sorts of electronics ranging from computers and mobile phones, to household electronics such as food processors, pressure cookers, etc. The effects of improper disposal of this e-waste on the environment are little known; however, damage to the atmosphere is one of the biggest environmental impacts of e-waste.	3
36.	Create multiple line charts on common plot where 4 data ranges are plotted on same chart. The data ranges to be plotted are: Data=[[5, 15, 25, 35], [9, 18, 21, 15,], [2, 18, 10, 30], [13, 27, 20, 35.]] Ans: import numpy as np import matplotlib.pyplot as plt Data=[[5, 15, 25, 35], [9, 18, 21, 15,], [2, 18, 10, 30], [13, 27, 20, 35]] x=np.arange(4) plt.plot(x, Data[0], color="b", label="Range1") plt.plot(x, Data[1], color="g", label="Range1") plt.plot(x, Data[2], color="r", label="Range1") plt.plot(x, Data[3], color="y", label="Range1") plt.legend(loc="upper left") plt.title("Multirange Line Chart") plt.xlabel("X") plt.ylabel("Y") plt.show() **OR** Rohan wants to plot a bar graph for the given set of values of subject on X-axis and number of students who opted for that subject on Y-axis.	3

	Complete the code to perform the following: • To plot the bar graph in statement 1. • To display the graph in statement 2. import matplotlib.pyplot as pl x=['English','Physics','Chemistry','IP'] y=[10,20,30,40] _____ Statement 1 _____ Statement 2 Ans: pl.bar(x,y) – Statement 1 pl.show() – Statement 2  	
37.	Consider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40,90,110. What will be the output of the following two statements considering that the above objects have been created already: a) print (x*2) b) print(y*2) Justify your answer. Ans: a) will give the output as: [20,40,90,110,20,40,90,110] b) will give the output as: 0 40 1 80 2 180 3 220 In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times. The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.	3
	Section - III	
38.	Write a Pandas program to select the name of persons whose height is not known i.e NaN 'name':['Asha','Radha','Kamal','Divy','Anjali'], 'height':[5.5,5,np.nan,5.9,np.nan], 'age':[11,23,22,33,22] Ans: import pandas as pd import numpy as np pers_data = {'name':['Asha','Radha','Kamal','Divy','Anjali'], 'height':[5.5, 5, np.nan, 5.9, np.nan], 'age':[11, 23, 22, 33, 22]} labels = ['a', 'b','c','d','e'] df=pd.DataFrame(pers_data,index=labels) print("Persons whose height is not known") print(df[(df['height'].isnull())])	5
39.	Write SQL commands and output for the following queries: Table: SPORTS	5

StudentNo	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sameer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Veena	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

(i) Display the names of the students who have grade "A" in either Game1 or Game2 or both.
(ii) Display the games taken by the students whose name starts with "A".
Give the output of the following SQL Statements
(1) SELECT COUNT(*) FROM SPORTS;
(2) SELECT DISTINCT Class FROM SPORTS;
(3) SELECT MAX(Class) FROM STUDENT;
(4) SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

Ans:
(i) Select name from SPORTS where Grade1="A" OR Grade2="A";
(ii) Select Game1,Game2 from SPORTS where Name LIKE "A%";
the output of the following SQL Statements
(1) 6
(2) 7
8
9
10
(3) 10
(4) 2
2
1
1

OR

Write the SQL functions which will perform the following operations:
a) To display the result of 3^2.
b) To remove spaces from the beginning and end of a string, " Panorama ".
c) Round off value 15.193 to one decimal place.
d) Round off value 15.193 to nearest ten's
e) To display date after 10 days of current date on your system.

Ans:
a) SELECT POWER(3,2);
b) Select trim(" Panaroma ");
c) SELECT ROUND (15.193, 1);
d) SELECT ROUND (15.193, -1);
e) SELECT CURDATE() + 10;

40. Explain the different types of networking/internetworking devices. 5

Ans:
Repeater: With increase in distance, a signal may become weak and distorted. A repeater is used to restore the input signal to its original form, so that it can travel a larger distance.
Hub: Comprises several input/output (I/O) ports, each of which connects to a single cable.

	Bridge: Is a multiport device used for connecting two or more local area networks (LAN), possibly operating at different speeds **Switch**: Are used to connect individual nodes in the network with each other. Each node within network is connected to a unique port in the switch. **Router**: Are used for connecting various networks (LAN or WAN) with each other. A router transmits data from incoming network to another network. **Gateway:** A gateway connects networks based on different protocol technologies to communicate with each other	

INFORMATICS PRACTICES (065)
SAMPLE QUESTION PAPER (2020 - 21)

Max Marks: 70 **Class XII** **Time: 3 hrs**

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
   a. Section – I is short answer questions, to be answered in one word or one line.
   b. Section – II has two case studies questions. Each case study has 4 case-based subparts. 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.

PART - A
Section - I
Attempt any 15 questions from questions 1 to 21

1.	Online textual talk is called _____. a) Video Conferencing b) Telephony c) Text Phone d) Chat	1
2.	A software that can be freely accessed and modified is called _____. a) Synchronous Software b) Package Software c) Open Source Software d) Middleware	1
3.	By default, ORDER BY clause lists the result in _____ order. a) Descending b) Any c) Same d) Ascending	1
4.	The axis 1 identies a dataframe's _____. a) rows b) values c) columns d) None of these	1
5.	To check if the Series objects contains NaN values, ____ attribute is displayed. a) hasnans b) nbytes c) ndim d) dtype	1
6.	A _____ graph is a type of chart which displays information as a series of data points connected by straight line segments. a) boxplot b) line c) bar d) pie	1
7.	Any fraudulent business practice that extracts money from an unsuspecting, ignorant person is called a _____. Ans: Scam	1

8.	_____ is a popular data science library of Python. (Pandas)	1
9.	A computer network that spans a relatively large geographical area is called_____.(WAN)	1
10.	A email can be sent via, a) PC b) Tablet c) Smart phone d) All of the above	1
11.	Stealing someone else's intellectual work and representing it as own, is called _____ a) Intellectual steal b) Pluckism c) Plagiarism d) Pickism	1
12.	IAD means _____. (Internet Addiction Disorder)	1
13.	To create an empty Series object, you can use: a) pd.Series(empty) b) pd.Series(np.NaN) c) pd.Series() d) All of these	1
14.	URL stands for a) Universal Resource Locator b) Uniform Resource Location c) Uniform Resource Locator d) None of the above	1
15.	What is an example of e-waste? a) A ripened banana b) An old computer c) Old clothes d) Empty soda cans	1
16.	URLs are of two types : a) Absolute and Relative b) Static and Dynamic c) Absolute and Dynamic d) None of the above	1
17.	The original code written by programmers for a software is known as _____. (Source Code)	1
18.	Which of the following is not a date function? a) Month b) Year c) NOW d) POW	1.
19.	What will be returned by the given query? SELECT concat("It", "was", "ok"); a) "It was ok" b) "It wasok" c) "Itwasok" d) "Itwas ok"	1
20.	A repeater takes a weak and corrupted signal and _____ it. a) Amplifies b) Regenerates c) Resembles d) Reroutes	1
21.	Full form of VoIP is _____. Ans: (Voice over Internet Protocol)	1

Section -II

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

22.	Answer the questions based on the following table EMPLgiven below: 	

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	800	NULL	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7876	ADAMS	CLERK	7788	1983-01-12	1250	NULL	20

i)	SELECT MAX(DISTINCT SAL) FROM EMPL WHERE COMM IS NOT NULL; a) 5000 b) 3000 c) 2850 d) None of these	1
ii)	SELECT COUNT(DISTINCT JOB) FROM EMPL WHERE COMM IS NULL; a) 2 b) 3 c) 4 d) None of these	1
iii)	SELECT SUM(DISTINCT SAL) FROM EMPL where comm is not null; a) 5850 b) 5900 c) 7100 d) None of these	1
iv)	Select ucase(concat(Ename,'*',MGR)) from EMPL where JOB like 'ANALYST'; a) FORD*7566 b) BLAKE*7839 c) SCOTT*7566 d) None of these	1
v)	SELECT MAX(SAL)-MIN(SAL) FROM EMPL GROUP BY DEPTNO HAVING MAX(SAL)>4000; a) 2550 b) 2700 c) 3500 d) None of these	1
23.	Given a data frame namely data as shown below figure (fruit names are row labels).	

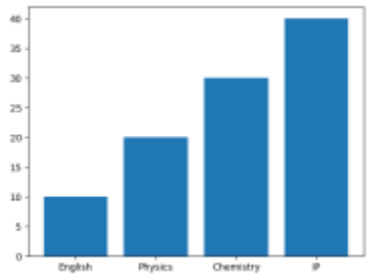
	Color	Count	Price
Apple	Red	3	120
Apple	Green	9	110
Pear	Red	25	125
Pear	Green	26	150
Lime	Green	99	70

i)	Find all rows with the label “Apple”. Extract all columns. a) data.loc['Apple', :] b) data.loc['apple',] c) data.loc[Apple] d) None of these	1
ii)	List fruits with count more than 25. a) data[data['Count'] < 25]) b) data[data['Count'] > 25] c) data.data['Count'] > 25] d) None of these	1

iii)	List only the columns Color and Price using loc. a) Data[loc[:,['Color','Price']] b) (DF1[['Color','Price']]) c) data.loc[:,['Color','Price']] d) None of these	1
iv)	List only rows with labels 'Apple' and 'Pear' using loc. a) data.loc[[Apple,Pear]]) b) data.loc[['Apple','Pear']] c) data(loc[['Apple,Pear']]) d) None of these	1
v)	List only rows 1, 3, 4 using iloc. a) data.iloc[[134]] b) data.iloc[1,3,4] c) data.iloc[[1,3,4]] d) None of these	1
	Part – B **Section - I**	
24.	What will be the output of the following code? import pandas as pd import numpy as np data = np.array(['a1','b1','c1','d1','e1']) S= pd.Series(data, index = [1001, 1002, 1003, 1004, 1005]) print(S[[1002, 1003, 1004]]) **Ans:** 1002 b1 1003 c1 1004 d1 dtype: object	2
25.	What is the significance of GROUP By clause in a SQL query? Ans: The GROUP By clause combines all those records that have identical values in a particular field or a group of fields. This grouping results into one summary record per group if group function are used with it. **OR** What are different types of SQL functions? Ans: Single Row (or Scalar) Function and Multiple Row (Group or Aggregate) functions. Single Row Function work with a single row at a time. A single row function returns a result for every row of a queried table. Multiple Row or Group Function work with data of multiple rows at a time and return aggregate value.	2
26.	Write a query to display name of the month for date 01-05-2020. Ans: SELECT MONTHNAME ('2020-05-01');	2
27.	Write a program to create a DataFrame from a 2D array as shown below: 101 113 124 130 140 200 115 216 217 Ans: import pandas as pd import numpy as np arr2=np.array([[101,113,124], [130,140,200], [115,216,217]]) dtf3=pd.DataFrame(arr2) print(dtf3)	2
28.	Predict the output of the following queries: a) SELECT 9 mod 2; b) SELECT CONCAT ('Catch', 'a', 'falling', 'star');	2

	Ans: a) 1 b) Catchafallingstar	
29.	Write a query to display day of the year for date 13th Feb 2009. Ans: SELECT DAYOFYEAR('2009-02-13'); **OR** Consider the following SQL string: "Preoccupied" Write commands to display: a) the position of the substring 'cup' in the string "Preoccupied" b) the first 4 letters of the string. Ans: a) select instr('Preoccupied' , 'cup'); b) select left 'Preoccupied',4);	2
30.	What will be the out output of the following code: import pandas as pd import numpy as np section=['A', 'B', 'C', 'D', 'E'] contri=np.array([2725,3600, 4250, 1200, np.NaN]) s12=pd.Series(data=contri*2, index=section, dtype=np.float32) print(s12) Ans: A 5450.0 B 7200.0 C 8500.0 D 2400.0 E NaN	2
31.	Expand the following terms: a) OSS b) SDLC c) GNU d) FLOSS Ans: OSS – Open Source Software SDLC – System Development Life Cycle GNU – GNU is Not Unix FLOSS – Free Libre/Livre and Open Source Software	2
32.	Describe why authentication is important for file protection? Ans: Authentication is the process of determining whether someone is a legal user. It is the process of identifying an individual, usually based on a username and password. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual. It is used a primary step for file protection from unauthorized users.	2.
33.	Explain the following terms: a) Web Page b) Home Page Ans: a) Web Page: A document using http and that resides on a website. b) Home Page: It is the top level web page of a web site. This is the page that gets displayed first of all when a website is opened.	2
	Section - II	
34.	Consider the following table CABHUB. Write SQL commands for the following statements. **CABHUB** *VCODE* | *VEHICLENAME* | *MAKE* | *COLOR* | *CAPACITY* | *CHARGES* 100 | Innova | Toyota | White | 7 | 15 102 | SX4 | Suzuki | Blue | 4 | 14 104 | C Class | Mercedes | Red | 4 | 35 105 | A-Star | Suzuki | White | 3 | 14 108 | Indigo | Tata | Silver | 3 | 12 a) To display the names of all the white colored vehicles.	3

	b) To display name of vehicle, make and capacity of vehicles in ascending order of the seating capacity. c) To display the highest charges at which a vehicle can be hired from CABHUB. Ans: a) SELECT VEHICLENAME FROM CABHUB WHERE COLOR=”WHITE”; b)SELECT VEHICLENAME, MAKE, CAPACITY FROM CABHUB ORDER BY CAPACITY; c) SELECT MAX(CHARGES) FROM CABHUB;	
35.	What are the freedoms that a free software must provide? Ans: a) The freedom to run the program, for any purpose. b) The freedom to study how the program works, and adapt it to your needs. Access to the source code is a precondition for this. c) The freedom to redistribute copies. d) The freedom to improve the program and release your improvements to the public , so that the whole country benefits. **OR** What are the environmental issues of e-waste? Ans: E-waste, or electronic waste, is waste from all sorts of electronics ranging from computers and mobile phones, to household electronics such as food processors, pressure cookers, etc. The effects of improper disposal of this e-waste on the environment are little known; however, damage to the atmosphere is one of the biggest environmental impacts of e-waste.	3
36.	Create multiple line charts on common plot where 4 data ranges are plotted on same chart. The data ranges to be plotted are: Data=[[5, 15, 25, 35], [9, 18, 21, 15,], [2, 18, 10, 30], [13, 27, 20, 35.]] Ans: import numpy as np import matplotlib.pyplot as plt Data=[[5, 15, 25, 35], [9, 18, 21, 15,], [2, 18, 10, 30], [13, 27, 20, 35]] x=np.arange(4) plt.plot(x, Data[0], color="b", label="Range1") plt.plot(x, Data[1], color="g", label="Range1") plt.plot(x, Data[2], color="r", label="Range1") plt.plot(x, Data[3], color="y", label="Range1") plt.legend(loc="upper left") plt.title("Multirange Line Chart") plt.xlabel("X") plt.ylabel("Y") plt.show() **OR** Rohan wants to plot a bar graph for the given set of values of subject on X-axis and number of students who opted for that subject on Y-axis.	3

	Complete the code to perform the following: • To plot the bar graph in statement 1. • To display the graph in statement 2. import matplotlib.pyplot as pl x=['English','Physics','Chemistry','IP'] y=[10,20,30,40] _____ Statement 1 _____ Statement 2 Ans: pl.bar(x,y) – Statement 1 pl.show() – Statement 2  	
37.	Consider two objects x and y. x is a list whereas y is a Series. Both have values 20, 40,90,110. What will be the output of the following two statements considering that the above objects have been created already: a) print (x*2) b) print(y*2) Justify your answer. Ans: a) will give the output as: [20,40,90,110,20,40,90,110] b) will give the output as: 0 40 1 80 2 180 3 220 In the first statement x represents a list so when a list is multiplied by a number, it is replicated that many number of times. The second y represents a series. When a series is multiplied by a value, then each element of the series is multiplied by that number.	3
	Section - III	
38.	Write a Pandas program to select the name of persons whose height is not known i.e NaN 'name':['Asha','Radha','Kamal','Divy','Anjali'], 'height':[5.5,5,np.nan,5.9,np.nan], 'age':[11,23,22,33,22] Ans: import pandas as pd import numpy as np pers_data = {'name':['Asha','Radha','Kamal','Divy','Anjali'], 'height':[5.5, 5, np.nan, 5.9, np.nan], 'age':[11, 23, 22, 33, 22]} labels = ['a', 'b','c','d','e'] df=pd.DataFrame(pers_data,index=labels) print("Persons whose height is not known") print(df[(df['height'].isnull())])	5
39.	Write SQL commands and output for the following queries: Table: SPORTS	5

StudentNo	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sameer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Veena	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

(i) Display the names of the students who have grade "A" in either Game1 or Game2 or both.
(ii) Display the games taken by the students whose name starts with "A".
Give the output of the following SQL Statements
(1) SELECT COUNT(*) FROM SPORTS;
(2) SELECT DISTINCT Class FROM SPORTS;
(3) SELECT MAX(Class) FROM STUDENT;
(4) SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

Ans:
(i) Select name from SPORTS where Grade1="A" OR Grade2="A";
(ii) Select Game1,Game2 from SPORTS where Name LIKE "A%";
the output of the following SQL Statements
(1) 6
(2) 7
8
9
10
(3) 10
(4) 2
2
1
1

OR

Write the SQL functions which will perform the following operations:
a) To display the result of 3^2.
b) To remove spaces from the beginning and end of a string, " Panorama ".
c) Round off value 15.193 to one decimal place.
d) Round off value 15.193 to nearest ten's
e) To display date after 10 days of current date on your system.

Ans:
a) SELECT POWER(3,2);
b) Select trim(" Panaroma ");
c) SELECT ROUND (15.193, 1);
d) SELECT ROUND (15.193, -1);
e) SELECT CURDATE() + 10;

40. Explain the different types of networking/internetworking devices. 5

Ans:
Repeater: With increase in distance, a signal may become weak and distorted. A repeater is used to restore the input signal to its original form, so that it can travel a larger distance.
Hub: Comprises several input/output (I/O) ports, each of which connects to a single cable.

	Bridge: Is a multiport device used for connecting two or more local area networks (LAN), possibly operating at different speeds **Switch**: Are used to connect individual nodes in the network with each other. Each node within network is connected to a unique port in the switch. **Router**: Are used for connecting various networks (LAN or WAN) with each other. A router transmits data from incoming network to another network. **Gateway:** A gateway connects networks based on different protocol technologies to communicate with each other	

INFORMATICS PRACTICES (065)
SAMPLE QUESTION PAPER (2020 - 21)

Max Marks: 70 **Class XII** **Time: 3 hrs**

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part B have choices.
3. Part-A has 2 sections:
   a. Section – I is short answer questions, to be answered in one word or one line.
   b. Section – II has two case studies questions. Each case study has 4 case-based subparts. 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.

PART - A
Section - I
Attempt any 15 questions from questions 1 to 21

1.	State True or False: Virus is the attack upon an individual or group using electronic media such as social networking sites, instant messaging, e-mail, etc.	1
2.	Which of the following is an advantage of 'open source' software? a) You can edit the source to code to customise it. b) You need to be an expert to edit code. c) You have to pay. d) Can sometimes be too generic for specialist purposes.	1
3.	Select correct SQL query from below to find the temperature in increasing order of all cities. a) SELECT city FROM weather ORDER BY temperature; b) SELECT city, temperature FROM weather; c) SELECT city, temperature FROM weather ORDER BY temperature; d) SELECT city, temperature FROM weather ORDER BY city;	1
4.	The axis 1 identifies a dataframe's _____. a) rows b) values c) columns d) None of these	1
5.	To display third element of a Series object S, you will write _____. a) S[:3] b) S[2] c) S[3] d) S[:2]	1
6.	Which of the following function will create a vertical bar chart? a) bar() b) plot() c) plotbar() d) none of the above	1
7.	Which of the following is not a type of cyber cybercrime? a) Data theft b) Forgery c) Damage to data and systems	1

	d) Installing antivirus for protection	
8.	Missing data in Pandas object is represented through: a) Null b) None c) Missing d) NaN	1
9.	A network having a span within a building is called a _____.	1
10.	A digital document hosted on a website is a _____.	1
11.	Which of the following would be a creative work protected by copyright? a) A list of all Indian President names b) A portrait of your family c) A song you wrote d) The name of your pet dog	1
12.	IAD means _____.	1
13.	To get the number of dimensions of a Series object, _____ attribute is displayed. a) index b) size c) itemsize d) ndim	1
14.	Which of these is not a part of URL? a) IP address b) Port Number c) Domain Name d) None of the above	1
15.	The rights of the owner of information to decide how much information is to be shared/exchanged/distributed, are collectively known as _____ (IPR) a) Intelligent Property Rights b) Intellectual Property Rights c) Interactive Property Rights d) Instance Property Rights	1
16.	In an email address, the characters following '@' character represent a) Username b) E-mail recipient c) Domain name d) None of the above	1
17.	The original code written by programmers for a software is known as _____.	1
18.	Which of the following is not a string function? a) MID b) Year c) Substr d) Left	1.
19.	What will be returned by the given query? SELECT INSTR("INDIA","DI"); a) 2 b) 3 c) -2 d) -3	1
20.	The device that can operate in place of a hub is a _____. a) Switch b) Bridge c) Router d) Gateway	1
21.	Full form of bcc in the context of email is _____.	1

Section -II

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

22. Answer the questions based on the following table EMPLgiven below:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	17-Dec-1980	800	NULL	20
7499	ALLEN	SALESMAN	7698	20-Feb-1981	1600	300	30
7521	WARD	SALESMAN	7698	22-Feb-1981	1250	500	30
7566	JONES	MANAGER	7839	2-Apr-1981	2975	NULL	20
7654	MARTIN	SALESMAN	7698	28-Sep-1981	1250	1400	30
7698	BLAKE	MANAGER	7839	1-May-1981	2850	NULL	30
7782	CLARK	MANAGER	7839	9-Jun-1981	2450	NULL	10
7788	SCOTT	ANALYST	7566	9-Dec-1982	3000	NULL	20
7839	KING	PRESIDENT	NULL	17-Nov-1981	5000	NULL	10
7844	TURNER	SALESMAN	7698	8-Sep-1981	1500	0	30
7876	ADAMS	CLERK	7788	12-Jan-1983	1100	NULL	20
7900	JAMES	CLERK	7698	3-Dec-1981	950	NULL	30
7902	FORD	ANALYST	7566	3-Dec-1981	3000	NULL	20
7934	MILLER	CLERK	7782	23-Jan-1982	1300	NULL	10

i) SELECT concat(left(JOB,2), right(Ename,2)) AS 'ID' from EMPL where DEPTNO=20; — 1

A. CRTH
MAES
ANTT
CLMS
ANRD

B. CLTH
MAES
AMTT
CLMS
ASRD

C. CLTH
MAES
ANTT
CLMS
ANRD

D. None of these

ii) SELECT round(SAL-SAL*10/100) As "Discounted Payment" from EMPL where SAL>3000; — 1

A. 4500
B. 4600
C. 4400
D. None of these

iii) Select ucase(concat(Ename,'*',MGR)) from EMPL where JOB like 'ANALYST'; — 1

A. SCOTT*7698
FORD*7566

B. SCOTT*7566
BLAKE*7839

C. SCOTT*7566
FORD*7566

D. None of these

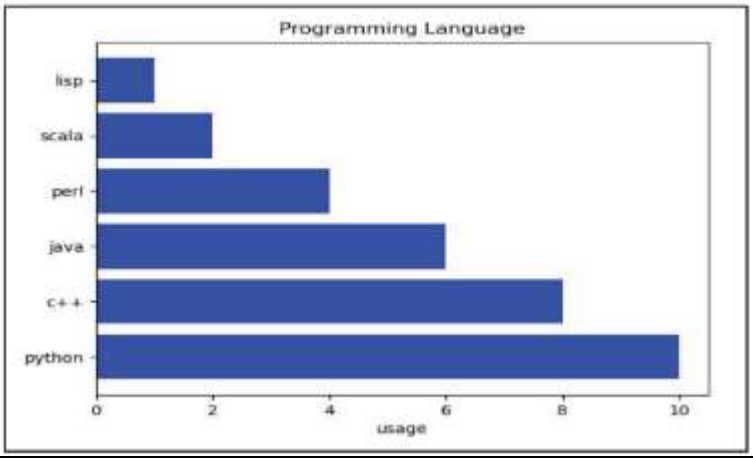
iv) Predict the output: — 1

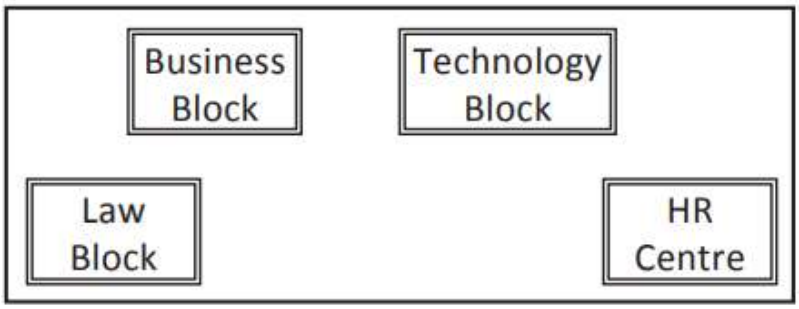
SELECT AVG(COMM) FROM EMPL;

A. 800
B. 550

	C. 600 D. None of these	
v)	Predict the output: SELECT SUM(DISTINCT SAL) FROM EMPL; A. 24775 B. 29025 C. 29000 D. None of these	1
23.	Assume a data frame df1 that contains data about climatic conditions of various cities with C1, C2, C3, C4 and C5 as indexes shown below and give the output of any four questions from (i) to (v). <table><tr><th></th><th>City</th><th>MaxTemp</th><th>MinTemp</th><th>RainFall</th></tr><tr><td>C1</td><td>Delhi</td><td>40</td><td>32</td><td>24.1</td></tr><tr><td>C2</td><td>Bengaluru</td><td>31</td><td>25</td><td>36.2</td></tr><tr><td>C3</td><td>Chennai</td><td>35</td><td>27</td><td>40.8</td></tr><tr><td>C4</td><td>Mumbai</td><td>29</td><td>21</td><td>35.2</td></tr><tr><td>C5</td><td>Kolkata</td><td>39</td><td>23</td><td>41.8</td></tr></table>	
i)	df1.shape	1
ii)	df1[1:2]	1
iii)	df1.loc['C1':'C3','City']	1
iv)	df1.iloc[2]	1
v)	df.city	1
	Part – B **Section - I**	
24.	Write Python code to create the following DataFrame df1 using Python Pandas. Use any method of DataFrame creation. <table><tr><th>Name</th><th>Class</th><th>Marks</th></tr><tr><td>Tanmay</td><td>XII</td><td>95</td></tr><tr><td>Aditi</td><td>X</td><td>84</td></tr><tr><td>Mehak</td><td>XI</td><td>90</td></tr><tr><td>Kriti</td><td>XI</td><td>75</td></tr></table>Give index as “one”, “two”, “three”, “four” respectively.	2
25.	State any two differences between instr() and substr() functions in SQL. **OR** What is the difference between where and having clause when used along with the select statement. Explain with an example.	2
26.	Write the output of the following SQL commands: (i) Select Mod(13,3); (ii) Select Power(5,3);	2
27.	Consider a given Series , M1: index <table><tr><td></td><td>Marks</td></tr><tr><td>Term1</td><td>45</td></tr><tr><td>Term2</td><td>65</td></tr><tr><td>Term3</td><td>24</td></tr><tr><td>Term4</td><td>89</td></tr></table>Write a program in Python Pandas to create the series.	2

28.	Consider the decimal number x with value 2469.21564. Write commands in SQL to: i. round it off to a whole number ii. round it to 3 places before the decimal.	2
29.	Consider the following SQL string: "Corporate world" (2) Write commands to display: (i) "rate" (ii) "world" **OR** Considering the same string "Corporate world" Write SQL commands to display: (i) the position of the substring 'or' in the string "Corporate world" (ii) the last 4 letters of the string	2
30.	What will be the out output of the following code: import pandas as pd s = pd.Series([1,2,3,4,5],index=['a','b','c','d','e']) print(s*3) print(s>2) s['e']=6 print(s)	2
31.	Expand the following terms: (i) IMAP (ii) POP (iii) TCP/IP (iv) HTTPs	2
32	Describe why authentication is important for file protection?	2
33.	Deepanjali received an SMS from her bank querying a recent transaction that she made online and asking for the pin number. Answer the following questions as to what she should do on receiving this SMS. (i) Should she SMS her pin number to the given contact number? (ii) Should she call the bank helpline number to recheck the validity of the SMS received?	2
	Section - II	
34.	A relation Product is given below: P_No | Ptype | P_Manufacturer | Price | Qty P1001 | Pencil | Natraj | 15 | 20 P1002 | Ball Pen | Reynolds | 10 | 50 P1003 | Gel Pen | Flair | 20 | 100 P1004 | Sketch Pen | Doms | 50 | 35 P1005 | Paint Brush | Doms | 30 | 15 P1006 | Pencil | Natraj | 15 | 30 P1007 | Ball Pen | Reynolds | 10 | 10 P1004 | Sketch Pen | Doms | 50 | 60 P1005 | Paint Brush | Doms | 30 | 85 P1006 | Pencil | Natraj | 15 | 45 Write SQL commands to: (i) Display the Average price of each type of Product having quantity more than 30. (ii) Increase the price of the products manufactured by Doms by 2%. (iii) Display the Maximum and Minimum price of all types of Products.	3
35.	What is unauthorized access? How confidentiality of data can be maintained? **OR** Explain the difference between a web browser and web server with suitable examples?	3
36.	Write a Python program to display a bar chart of the number of students in a school. Use different colours for each bar.	3

	Sample data: Class: I,II,III,IV,V,VI,VII,VIII,IX,X Strength: 38,30,45,49,37,53,48,44,36,46 **OR** Write a Python program to plot the given bar graph to depict the popularity of various programming languages. Label the graph with x-axis, y-axis, y-ticks and title. Data : Programming languages: Python, C++, Java, Perl, Scala, Lisp Usage= 10,8,6,4,2,1 	
37.	Consider two objects L1 and ser1. L1 is a list whereas ser1 is a Series. Both have values 90,80,70,60,50. What will be the output of the following two statements considering that the above objects have been created already? (i) print (list1*2) (ii) print(ser1+10) Justify your answer.	3
	Section - III	
38.	Write a program in Python Pandas to create the following DataFrame 'Order' for an online shopping app: **OrderId** | **Ordername** | **Price** | **Delivery Charges** | **Date of Delivery** | **Location** FK100 | Purse | 1800 | 50 | 2020-10-09 | Delhi FK101 | Shoes | 1100 | 50 | 2020-11-11 | Ghaziabad FK102 | Watch | 800 | 30 | 2020-04-12 | Karol Bagh FK103 | Belt | 500 | 30 | 2020-09-03 | Gurugram FK104 | Shirt | 2200 | 50 | 2020-11-10 | Palam (i) Display DataFrame 'Order'. (ii) Calculate the Total price of orders along with delivery charges and assign to a new column Total. (iii) Display records of those orders which have delivery charges greater than 30.	5
39.	Write a program in Python Pandas to create the following DataFrame TotalAmt from a Dictionary: **OrderId** | **Name** | **FoodItem** | **Quantity** | **Price** 1 | Priya | Burger | 2 | 50 2 | Brijesh | Pizza | 4 | 200 3 | Nikhil | French Fries | 2 | 80 4 | Pooja | Chow mein | 2 | 120 5 | Vikas | Pizza | 6 | 200 Perform the following operations on the DataFrame TotalAmt: (i) Calculate the Amount by multiplying quantity and price of the food item.	5

	(ii) Display highest and lowest price of all food items. (iii) Display the DataFrame. **OR** Write the SQL functions which will perform the following operations: (i) To display the total number of characters in "Informatics Practices". (ii) To display the substring "Intel" from the String "Artificial Intelligence". (iii) To display the month of the current day. (iv) To display the last 6 characters of a string "Annual Salary". (v) To remove all the left spaces of the string " Players".	
40.	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: Law Block to business Block — 40m Law Block to Technology Block — 80m Law Block to HR Centre — 105m Business Block to technology Block — 30m Business Block to HR Centre — 35m Technology block to HR Centre — 15m Number of computers in each of the blocks/centres is as follows: Law Block — 15 Technology Block — 40 HR Centre — 115 Business Block — 25 (a) Suggest the most suitable place (i.e., block/centre) to install the server of this University with a suitable reason. (b) Suggest an ideal layout for connecting these blocks/centres for a wired connectivity. (c) Which device will you suggest to be placed/installed in each of these blocks/centres to efficiently connect all the computers within these blocks/centres? (d) Suggest the placement of a Repeater in the network with justification. (e) The university is planning to connect its admission office in Delhi which is more than 1,250 km from the university. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.	5