KENDRIYA VIDYALAYA SANGATHAN LUCKNOW REGION

2ND Pre- Board Examination (2020-2021)

Class– XII (SET–2)

Subject- Informatics Practices (Code-065)

Time Allowed: 3 Hours   **Maximum Marks: 70**

General Instructions:

1. This question paper contains two parts A and B. Each part is compulsory.
2. Both Part A and Part N 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-C has 3 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.	In a dataframe, axis-0 is for (i) columns (ii) rows (iii) rows and columns both (iv) None of these	1
2.	What type of information a web page can contain? (i) Text (ii) Images (iii) video (iv) All of these	1
3.	Which of the following is not a type of cybercrime? (i) Data theft (ii) Forgery (iii) Damage to data (iv) Installing antivirus	1
4.	A device used to connect dissimilar network is called _____	1
5.	Write the output of the following SQL command. SELECT TRUNCATE(745.38,1) (i) 745.3 (ii) 745.0 (iii) 746 (iv) 745.4	1
6.	Creative creations of mind such as patents, trademark and copyright are called	1
7.	DataFrame is .... mutable as well as .... mutable.	1
8.	Write a command to delete the column "SportsFee" from a DataFrame "FeeRecord".	1
9.	Unsolicited commercial email is known as .... (i) Malware (ii) Virus (iii) Spyware (iv) Spam	1
10.	.... is the process of storing your website on the web server to be accessed by everyone on the web.	1
11.	Given a Pandas series called Sequences, the command which will display the first 9 rows is _____. a. print(Sequences.head(4)) b. print(Sequences.Head(4)) c. print(Sequences.heads(4) d. print(Sequences.Heads(4))	1

12.	Given the following Series S1 and S2: S1 S2 <table><tr><td>A</td><td>30</td></tr><tr><td>B</td><td>25</td></tr><tr><td>C</td><td>78</td></tr><tr><td>D</td><td>40</td></tr></table> <table><tr><td>A</td><td>78</td></tr><tr><td>B</td><td>56</td></tr><tr><td>C</td><td>53</td></tr><tr><td>D</td><td>49</td></tr></table> Write the command to find the difference of series S1 and S2	1
13.	To prevent unauthorized access to and / or from the network, a system known as _____, can be implemented by hardware and / or software.	1
14.	The avg() function in MySql is an example of _____. a. Math function b. Text function c. Date Function d. Aggregate Function	1
15.	Which of these is not a communication channel? (i) Satellite (ii) Microwave (iii) Radio wave (iv) Wi-Fi	1
16.	Which function is used to rename the existing column or index? (i) std() (ii) hist() (iii) groupby() (iv) rename()	1
17.	The max() function in MYSQL is an example of _____ (i) String function (ii) Math function (iii) Date function (iv) Aggregate function	1
18.	Define the term 'Cyber Crime'	1
19.	Ms. Sharma, the class teacher wants to add a new column, the scores of Grade with the values, ' A', 'B', 'A', 'A', 'B', 'A' ,to the DataFrame. Help her choose the command to do so: a. df.column=['A','B','A','A','B','A'] b. df ['Grade']=['A','B','A','A','B','A'] c. df.loc['Grade']= ['A','B','A','A','B','A'] d. Both (b) and (c) are correct	1

20.	Prachi has given the following command to obtain the highest marks Select max(marks) from student where group by class;
	but she is not getting the desired result. Help her by writing the correct command.
	`a. Select max(marks) from student where group by class;`
	`b. Select class, max(marks) from student group by marks;`
	`c. Select class, max(marks) group by class from student;`
	`d. Select class, max(marks) from student group by class;`
		1

21.	A mail or message sent to a large number of people indiscriminately without their consent is called _____	1

Section -II

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

22.	Consider the following DataFrame df and answer any four questions from (i) to (v) 	Rollno	Name	Eng	Hindi	Maths	Science
1	Harish Kumar	50	47	45	40
2	Guneet Arora	49	46	47	48
3	Naysha Singh	40	45	50	49
4	Vasu Kaur	43	46	48	44
5	Divya Nagar	43	38	42	41		
---	---	---

	(i) Write down the command that will give the following output: Rollno 1 Name Divya Nagar Eng 40 Hindi 38 Maths 42 Science 40 Dtype: Object (a) print(df.min) (b) print(df.min()) (c) print(df.min(axis=1)) (d) print(df.min, axis=1)	1

	(ii) The teacher needs to know the marks scored by the student with roll number 3. Help her to identify the correct set of statement/s from the given options:-
	(a) df1=df[df['Rollno']==3]
	        print(df1)
	(b) df1=df[Rollno==3]
	      print(df1)
	(c) df1=df[df.Rollno=3]
	      print(df1)
	(d) df1=df[df.Rollno==3]
	      print(df1)
		1

	(iii) Which of the following statement/s will give the exact number of values in each column of the dataframe?
	       i. print(df.count())
	       ii. print(df.count(0))
	       iii. print(df.count)
	       iv. print(df.count(axis='index'))
	
	     Choose the correct option:
	     (a) both (i) and (ii)
	     (b) only (ii)
	     (c) (i), (ii) and (iii)
	     (d) (i), (ii) and (iv)
		1

	(iv) Which of the following command will display the column labels of the DataFrame?
	     (a) print(df.columns())
	     (b) print(df.column())
	     (c) print(df.column)
	     (d) print(df.columns)
		1

	(v) Ms. Pathak, the class teacher wants to add a new column, the total of 4 subject marks, named as 'Total' to the DataFrame. Help her to write the command to do so.	1

23. Consider the table STUDENT given below:

RollNo	Name	Class	DOB	Gender	City	Marks
1	Anand	XI	06/06/1997	M	Agra	430
2	Chetan	XII	07/05/1994	M	Mumbai	460
3	Geet	XI	06/05/1997	F	Agra	470
4	Preeti	XII	08/08/1995	F	Mumbai	492
5	Saniyal	XII	08/10/1995	M	Delhi	360
6	Maakhiy	XI	12/12/1994	F	Dubai	256
7	Neha	X	08/12/1995	F	Moscow	324
8	Nishant	X	12/06/1995	M	Moscow	429

(i)	**State the command that will give the output as :**

Name
Anand
Chetan
Geet
Preeti

```
i. select name from student where class='XI' and class='XII';
ii. select name from student where not class='XI' and
class='XII';
iii. select name from student where city="Agra" OR
city="Mumbai";
iv. select name from student where city IN("Agra",
"Mumbai");
```

Choose the correct option:
a. Both (i) and (ii).
b. Both (iii) and (iv).
c. Any of the options (i), (ii) and (iv)
d. Only (iii) | **1** |
| **(ii)** | **What will be the output of the following command?**
```
Select * from student where gender ="F" order by marks;
```

(a)

Rollno	Name	Class	DOB	Gender	City	Marks
4	Preeti	XII	08/08/1995	F	Mumbai	492
3	Geet	XI	06/05/1997	F	Agra	470
7	Neha	X	08/12/1995	F	Moscow	324
6	Maakhiy	XI	12/12/1994	F	Dubai	256

(b)

Rollno	Name	Class	DOB	Gender	City	Marks
6	Maakhiy	XI	12/12/1994	F	Dubai	256
7	Neha	X	08/12/1995	F	Moscow	324
3	Geet	XI	06/05/1997	F	Agra	470
4	Preeti	XII	08/08/1995	F	Mumbai	492

(c)

Gender	Marks
F	256
F	324
F	470
F	492		**1**

(d)

Gender	Marks
F	492
F	470
F	324
F	256

(iii) **Prachi has given the following command to obtain the highest marks**   **1**

```
Select max(marks) from student where group by class;
```

but she is not getting the desired result. Help her by writing the correct command.

```
a. Select max(marks) from student where group by class;
b. Select class, max(marks) from student group by marks;
c. Select class, max(marks) group by class from student;
d. Select class, max(marks) from student group by class;
```

(iv) **State the command to display the average marks scored by students of each gender who are in class XI?**   **1**

```
i. Select gender, avg(marks) from student where class= "XI"
group by gender;
ii Select gender, avg(marks) from student group by gender
where class="XI";
iii. Select gender, avg(marks) group by gender from student
having class="XI";
iv. Select gender, avg(marks) from student group by gender
having class = "XI";
```

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

(v) **Help Ritesh to write the command to display the name of the youngest student?**   **1**
```
a. select name,min(DOB) from student ;
b. select name,max(DOB) from student ;
c. select name,min(DOB) from student group by name ;
d. select name,maximum(DOB) from student;
```

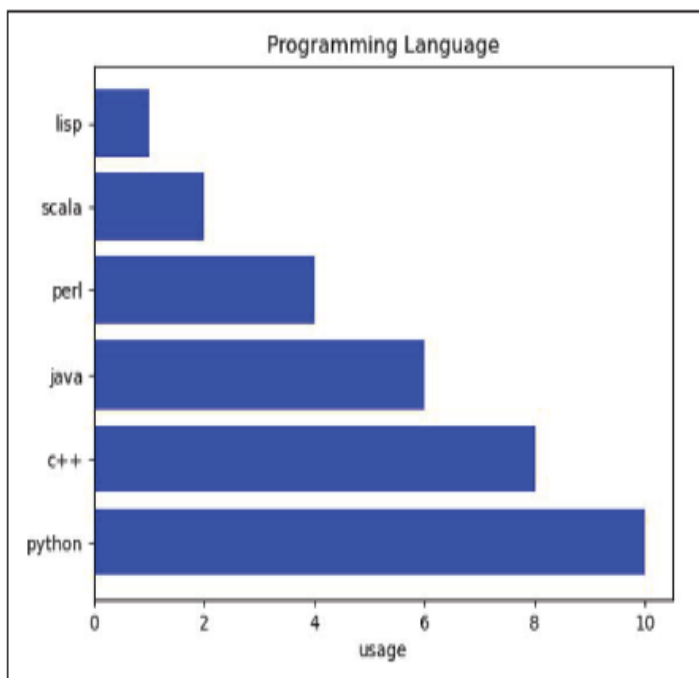|	PART-B	
	Section-I	

| 24. | Create a Series that depicts Month as index and Sales as values from two different lists:
Month=['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun']
Sales=[1000,1200,1100,800,1600,600] | **2** |
| 25. | 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.
OR | **2** |

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

26.	What will be the output of the following code:
	<pre>import pandas as pd
	import numpy as np
	Data = np.array(['a1','b1','c1','d1','e1', 'f1'])
	S=pd.Series(Data)
	print("I.")
	print(S[:3])
	print("II.")
	print(S[-3:])</pre>
		2

27.	Anjali writes the following commands with respect to a table employee having fields, empno, name, department, commission. **Command1 :** `Select count(*) from employee;` **Command2:** `Select count(commission) from employee;` **She gets the output as 4 for the first command but gets an output 3 for the second command. Explain the output with justification.**	2
28.	How is Series data structure different from a Data Frame data structure? Explain with the help of example.	2
29.	Shuchi created a table Product having fields, P_No, Pname, Qty, Price, commission, DeliveryDate. Help her to: (i) Delete row(s) that contain commission greater than or equal to 18. (ii) Delete the column DeliveryDate.	2
30.	List any two health hazards related to excessive use of Technology.	1+1
31.	Nafisa uses her smartphone for online shopping payments and other transactions such as paying electricity bills, broadband connection charges, phone recharge, etc. What kind of protection should she take while doing online transactions? Websites that she visited collect what type of information about her?	2
	Section -II	
32.	Differentiate between accidental and deliberate plagiarism. How can we avoid plagiarism?	3
33.	Consider the two objects s1 and s2. s1 is a list whereas s2 is a Series. Both have values 10, 20, 30, 40, 50. What will be the output of the following two statements considering that the above objects have been created already a. print(s1 * 2) b. print(s2 * 2) Justify your answer.	1+1+1
34.	What do you mean by Identity theft? Explain with the help of an example. OR What do you understand by Net Etiquettes? Explain any two such etiquettes.	2+1

35.	Write a Python program to display a bar chart of the number of students in a school. Use different colours for each bar.
	   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
		3

Programming Language

36.	Consider the table "Loan" given below:	1+1+1

Acc_No	Acc_Name	Amount	Loantype	Interest
HD101	Sanjeev	55000	Auto	7.65
HD102	Abhishek	3000000	Home	7.1
HD103	Shagun	120000	Personal	9.85
HD105	Gunjan	300000	Auto	6.9
HD106	Jyoti	1000000	Business	8.5
HD107	Aarush	1500000	Home	9.1
HD108	Lalit	20000	Auto	6.66
HD109	Smriti	250000	Auto	11.09

Write SQL commands for the following statements:
(i) Count the different types of loan the bank is offering.
(ii) Display the Maximum and Minimum amount of each category of loan type.
(iii) Display average interest rate of Auto loan.

37.	Differentiate between Degree and Cardinality of a table. Write suitable example of Degree and Cardinality.	2+1

Section -III

38.	Write a program in Python Pandas to create the following DataFrame DEPT from a dictionary:	5

DeptId	DeptName	Income	Location
10	Sales	85660	New Delhi
20	Purchase	86780	Kolkata
30	Personnel	87600	Haryana
40	Research	89990	Bengaluru

Perform the following operations of the DataFrame:
i. Display the highest income from the DEPT.
ii. Add a new Column "Commission" that will have the values as 15% of the Income.
iii. Display the DataFrame.

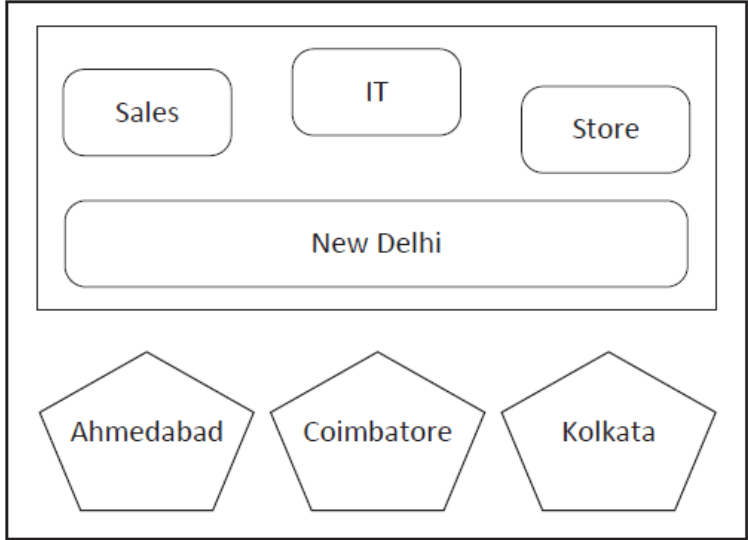| 39.	Write the SQL functions which will perform the following operations: i) To display the name of the month of the current date . ii) To remove spaces from the beginning and end of a string, " Panorama ". iii) To display the name of the day eg, Friday or Sunday from your date of birth, dob. iv) To display the starting position of your first name(fname) from your whole name (name). v) To compute the remainder of division between two numbers, n1 and n2 OR Consider a table SALESMAN with the following data:	5

SNO	SNAME	SALARY	BONUS	DATE OF JOIN
A01	Beena Mehta	30000	45.23	29/10/2019
A02	K. L. Sahay	50000	25.34	13/03/2018
B03	Nisha Thakkar	30000	35	18/03/2017
B04	Leela Yadav	80000	NULL	31/12/2018
C05	Gautam Gola	20000	NULL	23/01/1989
C06	Trapti Garg	70000	12.37	15/06/1987
D07	Neena Sharma	50000	27.89	18/03/1999

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

40.	KV Courier Company is planning to start their regional offices in four major cities in India—"Coimbatore", "Kolkata" and "Ahmedabad"—to provide easy and fast courier services in different cities. The company has their head office in New Delhi with three different branches—"Sales Office", "Store Office" and "IT office". A rough layout of the same is as follows:	5

Approximate distance between these offices is as follows:

Head Office – Sales Office	10KM
Head Office – IT Office	50KM
Head Office – Store House	25KM
Head Office – Kolkata Office	1536KM
Head Office – Ahmedabad Office	947KM
Head Office – Coimbatore Office	2508KM

The company experts have planned to install the following number of computers in each of their offices:

Head Office	100
IT Office	25
Store House	60
Kolkata Office	80
Ahmedabad Office	120
Coimbatore Office	150

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following sets of their offices:
 (a) Head Office and IT Office
 (b) Head Office and Coimbatore Office

(ii) Which device you will suggest the company to procure for connecting all the computers with each of their offices out of the following devices?
 (a) Modem
 (b) Telephone
 (c) Switch/Hub

(iii) Which of the following communication medium will you suggest for connecting their local offices in New Delhi for very effective and fast communication?
 (a) Ethernet Cable
 (b) Optical Fibre
 (c) Telephone Cable

(iv) Suggest a cable layout for connecting the company's local offices located in New Delhi.

(v) Suggest an effective and fast method/technology for connecting the company's regional offices— "Kolkata", Coimbatore", "Ahmedabad".

X-------------------------X