KENDRIYA VIDYALAYA SANGATHAN
INFORMATICS PRACTICES (065)
FIRST PREBOARD EXAMINATION 2020-21
CLASS: XII

Time Allowed: 2 Hrs   Max.Mark: 70

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 question has internal option.
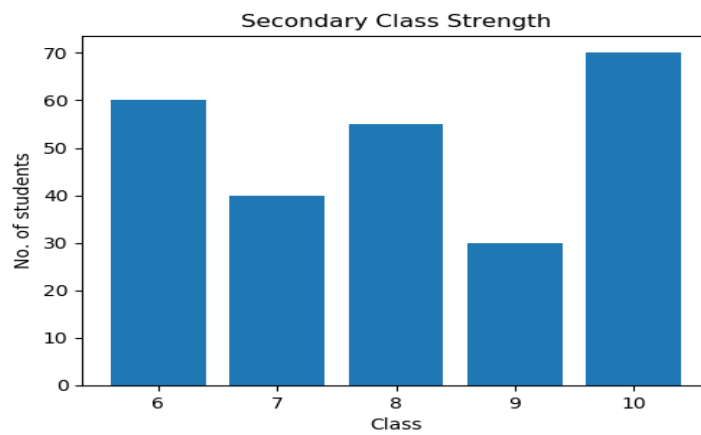
	Part - A	
	Section - I **Attempt any 15 questions from questions 1 to 21**	
1	Find the output of the following program. import numpy as np d=np.array([5,10,15,20,25,30,35,40]) print(d[-2:])	1
2	Write Python code to create an ndarray with 6 values falling in the range 2 to 3.	1
3	In a Numpy Array, the number of axes is called _____.	1
4	Mr. Rajeev wants to draw the boxplot with mean shown using given data. Help him to write correct python code. ary=[5,20,30,45,60,80,100,140,150,200,240]	1
5	What is the significance of mad () function?	1
6	To specify the style of line as dashed, which argument of plot( ) needs to be set ? (a) line (b) width (c) style (d) linestyle	1
7	Which function is used to create line graph?	1
8	Which of the. following keywords will you use in the following query to display all the values of the column dept_name ? SELECT _____ dept_name FROM Company; (a) All (b) From (c) Distinct (d) Name	1
9	Which keyword is used to specify condition with 'Group by' clause in MySQL?	1
10	What will be returned by the given query? SELECT Round(153.669, 2) (a) 153.6 (b) 153.66 (c) 153.67 (d) 153.7	1
11	Network device which connects dissimilar networks (different protocols). (a) Hub (b) Router (c)Bridge (d) Gateway	1
12	A network having a span within a building is called a _____	1
13	A candidate key that is not primary key, is called_____.	1
14	A _____ is a specialised computer which serves the requests made by web browsers.	1
15	To change the 5th column's value at 3rd row as 35 in dataframe DF, you can write:- (a) DF[4, 6]= 35 (b) DF[3, 5] = 35 (c) DF.iat[4, 6] = 35 (d) DF.iat[3, 5]=35	1

16	What is Opera:- a. Search Engine b.Web Browser c.Database Software d.Utility Software	1
17	CSV stands for _____.	1
18	_____ refers to any information about you or created by you that exists in digital form either online or on an electronic storage device.	1
19	An act of stealing others Intellectual Property without their consent of without citing the source is called _____	1
20	Name the cyber law enforced in India to provide legal recognition to electronic commerce and to facilitate filing of electronic records with the Government._____	1
21	Shyam has received an unknown call stating that he won prize money of Rs. 5 lacs, and the caller saying to pay Rs. 5000/- as a processing fee to get this prize money. This is the example of:- (a) Eavesdropping (b) Phishing (c) Worm (d) Cyber Bullying	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	Consider the following dataframe : df1 mark1 mark2 0 10 15 1 40 45 2 15 30 3 40 70	
(i)	Which of the following statement is incorrect to rename column mark1 as Score1 in the dataframes df1. a. df1.rename(columns={"mark1":"Score1"},inplace=True) b. df1.rename({"mark1":"Score1"},inplace=True,axis=1) c. df1.rename(index={"mark1":"Score1"},inplace=True) d. None of the above	1
(ii)	Which of the following command will insert a new row in the dataframe df1 at the last. a. df1.iloc[2]=[50,90] b.df1.iloc[4]=[50,90] c. df1.iloc[0]=[50,90] d.df1.iloc[5]=[50,90]	1
(iii)	Which of the following command will insert a new column named as "mark3" in the dataframe df1 at the last. a. df1["mark3"]=1000 b. df1.mark3=1000 c. df1.iloc[2].mark3=1000 d. None of the Above	1
(iv)	Which of the following command will delete the column "mark3" in the dataframe df1 at the last. a. del df1[fee] b. del df1["fee"] c. del df1 d. None of the Above	1
(v)	Which of the following command will display the column labels of the DataFrame df1? a. print(df.columns()) b. print(df.column()) c. print(df.column) d. print(df.columns)	1

23.	Consider the table Loan given below:	
	Table : Loan	

LoanID	LoanDate	CustomerName	LoanAmount
L101	2016-01-04	Om Prakash	100000
L102	2016-04-17	Aneesh Sharma	75000
L103	2016-05-20	Anil Pathania	90000
L104	2015-12-25	Manju Dixit	50000
L105	2015-10-21	Renu Bala	20000

(i)	State the command that will give the output as :	1

CustomerName
Aneesh Sharma
Anil Pathania

  i.   SELECT CustomerName FROM Loan WHERE CustomerName LIKE '%A%' ;
  ii. SELECT CustomerName FROM Loan WHERE CustomerName LIKE 'A%' ;
  iii. SELECT CustomerName FROM Loan WHERE CustomerName LIKE 'A_%' ;
  iv. SELECT CustomerName FROM Loan WHERE CustomerName IN ['A%'] ;

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

(ii)	What will be the output of the following command?	1

SELECT * FROM Loan WHERE LoanAmount NOT IN(100000 , 50000) ;

a.

LoanID	LoanDate	CustomerName	LoanAmount
L101	2016-01-04	Om Prakash	100000
L102	2016-04-17	Aneesh Sharma	75000
L103	2016-05-20	Anil Pathania	90000

b.

LoanID	CustomerName	LoanAmount
L101	Om Prakash	100000
L102	Aneesh Sharma	75000
L103	Anil Pathania	90000
L104	Manju Dixit	50000
L105	Renu Bala	20000

c.

LoanID	LoanDate	CustomerName	LoanAmount
L102	2016-04-17	Aneesh Sharma	75000
L103	2016-05-20	Anil Pathania	90000
L105	2015-10-21	Renu Bala	20000

d.

LoanID	LoanDate	CustomerName	LoanAmount
L101	2016-01-04	Om Prakash	100000
L104	2015-12-25	Manju Dixit	50000

(iii)	Prachi has given the following command to obtain the highest Loan Amount for each Loan Date:-	1

Select max(LoanAmount) from Loan where group by LoanDate; but she is not getting the desired result. Help her by writing the correct command.

a. Select max(LoanAmount) from Loan where group by LoanDate;
b. Select LoanID, max(LoanAmount) from Loan group by LoanID;
c. Select LoanDate,max(LoanAmount) group by LoanDate from Loan;
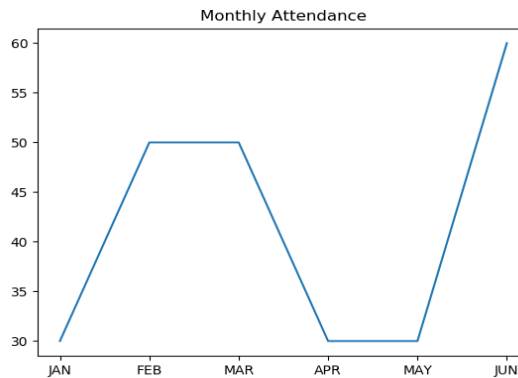d. Select LoanDate,max(LoanAmount) from Loan group by LoanDate;

(iv)	State the command to display the average Loan amount by customers for each LoanDate which have greater than 2 loans in that date.?
	    a. Select LoanDate,avg(LoanAmount) from Loan having count(*)>2 group by LoanDate;
	    b. Select LoanDate,avg(LoanAmount) from Loan where LoanDate and having count(*)>=2;
	    c. Select LoanDate, avg(LoanAmount) from Loan group by LoanDate having count(*)>2;
	    d. Select LoanDate,avg(LoanAmount) from Loan group by LoanDate where count(*)>2;
		1

(v)	Help Ritesh to write the command to display the name of the cutomer having Maximum Loan Amount? a. select CustomerName,min(LoanAmount) from Loan ; b. select CustomerName,max(LoanAmount) from Loan ; c. select CustomerName,max(LoanAmount) from Loan group by LoanDate ; d. select CustomerName,max(LoanID) from Loan;	1
	Part - B	
	Section – I	

24.	Consider a given dataframe ,DF1:
	
	        Product **Quantity** **Cost**
	  0 **Apple** **100** **1000**
	  1 **Pear** **100** **1500**
	  2 **Banana** **200** **1200**
	  3 **Grapes** **250** **900**
	Write a program in Python Pandas to create the dataframe.
		2

25.	i) What do you mean by cardinality and degree of a table?
	ii) "Pay" is a column name for the Pay of staff in a table "Schools". The SQL queries
	
	    SELECT count(*) FROM Schools;
	    and
	    SELECT count(Pay) FROM Schools;
	    The outputs obtained are 40 and 39 in both the queries respectively.
	    What is the reason behind different output?
		2

26.	Consider the decimal number x with value 6545.6895. Write commands in SQL to: i. round it off to a whole number **ii.** ii. round it to 2 places before the decimal.	2
27.	**Fill in the blank with appropriate pyplot methods:** import matplotlib.pyplot as p Year=[2000,2002,2004,2006] Rate=[21.0,20.7,21.2,21.6] _____ **# To draw a line graph** p.xlabel('Year') p.ylabel('Rate') p.title('Fuel Rates in every Two Year') _____("Graph1.pdf") **# To save the graph** p.show()	2
28.	**Given the following Series object:-** **S1** **S2** S1: 0→3, 1→5, 2→6, 4→10, 5→12 S2: 0→12, 2→10, 3→15, 4→20, 6→27	2

	(A) what will be output of S1+S2 ? **(B)** what will be output of S1-S2 ?	

29.	Consider the following python code:-
	     Import pandas as pd
	     Grade = {'Name' : ['Rashmi', 'Harsh', 'Ganesh', 'Priya', 'Vivek', 'Anita', 'Karthik'],
	     'Grade' : ['A1','A2', 'B1', 'A1', 'B2', 'A2', 'A1']}
	     df=pd.DataFrame(Grade,index=['a','b','c','d','e','f','e'])
	     print(df)
	 Answer the Following:
	     (a) Find output of above given code.
	     (b) Write code to print the Top 5 rows from the DataFrame df.
		2

30.	Consider the following SQL string: "Preoccupied"
	 Write commands to display:
	     a. "occupied"
	     b. "cup"
	 OR
	 Considering the same string "Preoccupied"
	 Write SQL commands to display:
	     a. the position of the substring 'cup' in the string "Preoccupied"
	     b. the first 4 letters of the string
		2

31.	Expand the following terms related to Computer Networks: a. TCPIP b. HTTPS c. WWW d. SMTP	2
32.	State one situation of using technology for each of following : i) Way in which technology can harm society ii) Way in which technology can be beneficial for society	2
33.	Amit is using Social Media Site for sharing his personal photograph and video and make it visibility open/public. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?	2
Section -II		
34.	Consider two objects x and y. x is a list whereas y is a Series. Both have values 30,20,10,40,50. What will be the output of the following two statements considering that the above objects have been created already a. print (x*3) b. print(y*3) Justify your answer.	3
35.	What do you understand by plagiarism ? Why is it a punishable offence ? **OR** Describe the Term free software and Open Source Software . Write examples of one proprietary and one OSS Software.	3
36.	Consider the following graph . Write the code to plot it.	
		3

OR

Write a code to plot the Monthly Attendance of students in class as shown in the figure given below:

37.	Consider the table TEACHER given below. Write commands in SQL for (i) to (iii) and output for (iv) to (v) . Note: *Hiredate is in mm/dd/yyyy format*	3

<table>
<tr><th colspan="7">TEACHER</th></tr>
<tr><th>ID</th><th>Name</th><th>Department</th><th>Hiredate</th><th>Category</th><th>Gender</th><th>Salary</th></tr>
<tr><td>1</td><td>Taniya</td><td>Social Studies</td><td>03/17/1994</td><td>TGT</td><td>F</td><td>25000</td></tr>
<tr><td>2</td><td>Abhishek</td><td>Art</td><td>02/12/1990</td><td>PRT</td><td>M</td><td>20000</td></tr>
<tr><td>3</td><td>Sanjana</td><td>English</td><td>05/16/1980</td><td>PGT</td><td>F</td><td>30000</td></tr>
<tr><td>4</td><td>Vishwajeet</td><td>English</td><td>10/16/1989</td><td>TGT</td><td>M</td><td>25000</td></tr>
<tr><td>5</td><td>Aman</td><td>Hindi</td><td>08/1/1990</td><td>PRT</td><td>F</td><td>22000</td></tr>
<tr><td>6</td><td>Pritam</td><td>Math</td><td>03/17/1980</td><td>PRT</td><td>F</td><td>21000</td></tr>
<tr><td>7</td><td>RajKumar</td><td>Science</td><td>09/2/1994</td><td>TGT</td><td>M</td><td>27000</td></tr>
<tr><td>8</td><td>Sital</td><td>Math</td><td>11/17/1980</td><td>TGT</td><td>F</td><td>24500</td></tr>
</table>

i. To display Average Salary for each department having more then 2 employees working in it.

ii. To Display Total number of employees for each category.
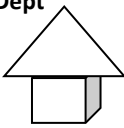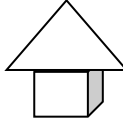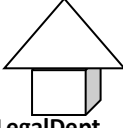
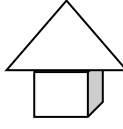iii.To Display Maximum Salary for each Gender Type.

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

```
R_NO   b_Name            Score1    Score2
11     Amit Sharma          90        80
22      Dinesh Goel         65        45
33      M.S.Chauhan         70        90
```

	44 Kartik Singh 80 76 Perform the following operations on the DataFrame : 1)Add both the scores of a batsman and assign to column "Total_Score" 2)Display the highest score in both Score1 and Score2 of the DataFrame. 3)Display the DataFrame	
39.	Write the SQL Command which will perform the following operations: i) To display the date after 10 days of current date of your system. ii) To display 4 characters extracted from 3rd left character onwards from string 'ABCDEFG'. iii) To display the string after removing leading and trailing spaces from the string ' Computer is good '. iv) To display the starting position of your first name(fname) from your whole name (name). v) To display the result of 3^2 **OR** Consider a table EMP with the following data: ``` mysql> select * from emp; +-------+---------------+------------+---------+----------+------------+ | Empno	name	department	salary	job	doj | +-------+---------------+------------+---------+----------+------------+ | 100	Sunita Sharma	Research	45600	Clerk	2020-02-22
101	Ashok Singhal	Sales	43900	Salesman	2019-08-25
102	Sumit Awasthi	Sales	27000	Salesman	2018-12-14
103	amit	Research	45925.5	manager	2020-01-15

104	dinesh	Research	34260	salesman	2019-06-08	
						+-------+---------------+------------+---------+----------+------------+
						``
						
						Write SQL queries using SQL functions to perform the following operations:
						    (i) Write SQL Query to set the date of joining of employee as current date whose empno is 101 from emp table.
						    (ii) display name of employee who have joined current month from emp table.
						    (iii) display last 4 character of employees name from emp table.
						    (iv) display name of employees by removing "a" from any Leading or trailing in their name from emp table.
						    (v) Write SQL Query to display salary of all employees rounds to nearest thousand.
							5

40.	SunRise Pvt. Ltd. is setting up the network in the Ahmedabad. There are four departments named as MrktDept, FunDept, LegalDept, SalesDept.
	
	          MrktDept FunDept
	
	      LegalDept SalesDept
		5

Distance between various buildings is as given:

MrktDept to FunDept	80 m
MrktDept to LegalDept	180m
MrktDept to SalesDept	100 m
LegalDept to SalesDept	150 m
LegalDept to FunDept	100 m
FunDept to SalesDept	50 m

Number of Computers in the buildings:

MrktDept	20
LegalDept	10
FunDept	08
SalesDept	42

a) Suggest a cable layout of connections between the Departments and specify topology.
b) Suggest the most appropriate topology of the connection between all department.
c) Suggest the most suitable building to place the server a suitable reason with a suitable reason.
d) Suggest the placement of Hub / Switch in the network.
e) Name the Department to place the modem so that all the building can share internet connection.