PB-2019-IP-S2

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BENGALURU REGION
PRE-BOARD EXAMINATION –DEC 2019

SUB: INFORMATICS PRACTICES (NEW) **MM: 70**
CLASS: XII **TIME: 03:00 HRS**

General Instructions:

1. *Please check that this question paper contains 6 printed pages.*
2. *Please check that this question paper contains 7 questions.*
3. *Please write down the serial number of the question before attempting it.*
4. *Use appropriate variable names.*
5. *Indent your program appropriately.*
6. *All questions are compulsory & answer the questions after carefully reading the text.*

Q1

1. What will be the output of the following python code for the given DataFrame 'Commodity'? Justify your answer. 2

	Product	Company	Price
0	Laptop	IBM	100
1	Mobile	Redme	70
2	Laptop	IBM	150
3	PDA	Apple	90

```
df1 = commodity.pivot(index='Product',columns='Company',values='Price')
print(df1)
```

2. For the given DataFrame 'shop' what will be the output of the following agg() function. 2

	Item	Stock	Price
0	Pen	1000	100
1	Pencil	800	50
2	Eraser	1200	150
3	Ink	900	200

```
df.agg({'Stock':['max','sum'],'Price':['mean','min']})
```

[OR]

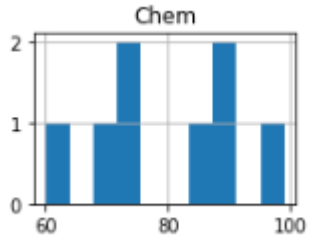
For the given DataFrame 'result' what will be the output of the following agg() function.

	Name	Phy	Chem
0	Jim	70	30
1	Ali	60	70
2	Era	70	40
3	Kat	80	40

```
result.sort_values(['Phy','Chem'],ascending=[True, False])
```

3. While using the describe method on a DataFrame column containing numeric values, mention any two parameters that are computed by the describe() method. 1

4. i) For the given histogram below the number of bins are _____ 2



ii) In statistics the value at .5 quantile in a dataset is also known as _____ :

5. The function used in pandas to acquire a specific group from a group created using groupby() function is _____ 1

6. Write a python statement to fill in the blanks so that the given output with sum of values for each column is obtained: 2

```
import pandas as pd
data= {'M':[20,40,60,80],\
    'N':[70,80,50,90],'Q':[60,50,60,80]}
points = pd.DataFrame(data)
summery = _____
print(summery)
```

```
M    200
N    290
Q    250
dtype: int64
```

[OR]

While using transform() function on a DataFrame we need to often use an anonymous function called lambda whose result is uniformly applied on all the data elements of the DataFrame. What will be the output of the following python code

```
import pandas as pd
data = {'X':[10,20,30,40], 'Y':[70,20,50,90],'Z':[30,50,60,70]}
df = pd.DataFrame(data)
df.applymap(lambda x:x*2)
print(df1)
```

7. What will be the output of the following python code: 2

```
import pandas as pd
df = pd.DataFrame([[10,5,5],[20,10,30],[30,15,20]],\
            index=['A','B','C'], columns=['X','Y','Z'])
f1=df.reindex(['B','A','D'])
print(f1)
```

Q2

1. i) Write a python statement to create a 3x3 2D matrix with all elements as 10 — 2

   ii) What will be the output of the following:

```
import numpy as np
arr = np.array([1,2,3,4])
arr1 = arr+4
print(arr1)
```

2. Fill in the blanks with proper function name and arguments so that the given output is achieved. — 2

```
import numpy as np
arr = _____________________
print(arr)
[0 2 4 6 8]
```

3. i) What will be to output of the following slice on a numpy array — 2

```
import numpy as np
data = np.array([[10,20,30,40],[5,15,25,35],[2,4,6,8]])
s1 = data[0:3:2,2:4]
print(s1)
```

[OR]

ii) What will be the output of the given NumPy codes

```
import numpy as np
a = np.array([[1,2],[3,4]], dtype=np.int32)
b = np.array([[2,1],[8,2]], dtype=np.int32)
c = np.subtract(a,b)
print(c)
```

4. For the given NumPy arrays write a statement to join the two arrays so that the resultant array is formed as shown in the figure: — 2

```
import numpy as np
x = np.array([[5,10,20],[15,30,40]])
y = np.array([[20,60]])
res = _____________________
print(res)
```

```
[[ 5 10 20 20]
 [15 30 40 60]]
```

[OR]

What will be the output of the following DataFrame operation?

```
import numpy as np
arr = np.array([[1,2,3,4],[6,7,8,9],[5,4,3,10]])
x,y = np.hsplit(arr,2)
print(x)
print(y)
```

5. i) The numpy function used to calculate covariance between two variables a and b is _____ 2
ii) The numpy function used to compute correlation coefficient between two variables a and b is _____

6. In _____a single independent variable is used to predict the value of a dependent variable. 1

Q3

1. Draw a labeled diagram of a horizontal boxplot indicating names of all the summery information. 2

[OR]

What is the structure of a histogram if cumulative attribute is set to be True.

2. Write a python program to draw a bar chart with the following information: 4

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

The bachart 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 bars should be 'Green'

Use proper import statements in the program.

[OR]

Write a python program to draw a histogram with following information:

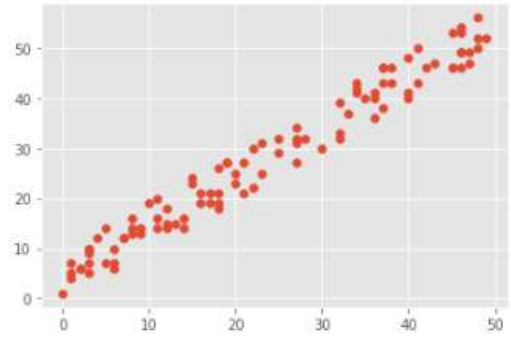
10	15	10	10	10	15	20	20	20	20	20	25	25

The histogram should have following information

a) X-axis label should be score and Y-axis should be Frequency
b) The title should be Frequency of Score
c) The colour of histogram should be blue with 10 bins

Use proper import statements in the program

3. Identify the type of plot from the given figure 1



Q4

1. What are sprints in Scrum? How a sprint ends? 2
2. Draw a Use-case diagram of a Banking system. 3
3. Give one advantage of pair programming. 1
4. Mention one feature of GIT. 1

Q5

1. Draw a labeled diagram of Waterfall model. 3
2. Out of the following who is not a part of the Scrum Team 1
   i) Product Manager
   ii) Scrum Master
   iii)Development Team
   iv) Project Manager
3. What is the difference between Commit and push request on a Version Control System? 2
4. What do you mean by Agile software development. 2

Q6

1. Write the command to run a Django server? 2
2. Mention difference between get() and post() methods? 2
3. Which module you will import in your python program for effectively connecting to MySQL Database. 1
4. The 'Student' table is stored in the database 'School' in MySQL. The database credentials include host as 'localhost', user as 'root' and password as '1234'. The Student Table has following data: 4

RollNo	SName	Class	Marks
1000	Kritika	12	90
1001	Malavika	12	95
1002	Mohan	11	70
1003	Vivek	11	62

Write Python codes to do the following:
a) Import the required library to establish connection between MySQL and Python
b) Establish Connection with the database and instantiate a cursor.
c)Display the details of students who belongs to class 12.
d) Close the connection

5. Name two aggregate functions in MySQL. 2
6. Consider the following Teacher table: Write SQL commands for (i) and output for (ii). 2

Tid	TName	Department	Salary	Noof Periods
100	Joseph	Physics	45000	25
101	Lakshmi	Hindi	55000	25
102	Neelu	Chemistry	66000	
103	John	Physics	40000	25

(i) To display the details of Teacher table in ascending order of Salary.
(ii) SELECT avg(NoofPeriods) from Teacher;

7. Consider the above table Teacher and answer the following questions. 2
(i) Display Department, total Teachers in each Department.
(ii) What will be the output of the following SQL command?
SELECT Department, count(*) from Teacher GROUP BY Department having count(*)>=2;

Q7

1. _____ refers to any information about you or created by you that exists in digital form either online or on an electronic storage device. 1
2. Online _____ is the theft of personal information in order to commit fraud. 1
3. What do you mean by Phishing? Give one example. 2
4. Give one benefit of e-Waste recycling? 1
5. What do you mean by crowdsourcing? 2
6 Mention any two steps to overcome Internet Addicton? 2
7. _____is a cryptocurrency which is in the form of a software code written and controlled by an Open Source Software. 1

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