



Roll No.

--	--	--	--	--	--	--	--	--	--

Candidates must write the Code on the title page of the answer-book.

- Please check that this question paper contains **12** printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **5** questions.
- Please write down the Serial Number of the question in the answer-book before attempting it.
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

INFORMATICS PRACTICES (NEW)

Time allowed : 3 hours

Maximum Marks : 70

Instructions :

- *All questions are compulsory (within questions there may be choices).*
- *The question paper is divided into **four** sections — A, B, C and D.*
- *Section A comprises of questions 1 and 2.*
 - (i) *Question 1 comprises Data Handling-2 (Series, Numpy).*
 - (ii) *Question 2 comprises of questions from Data Handling-2 (Data Frames and its operations).*
- *Section B comprises of questions from Basic Software Engineering.*
- *Section C comprises of questions from Data Management-2.*
- *Section D comprises of questions from Society, Law and Ethics-2.*



(f) Write single line Pandas statements for each of the following. (Assuming necessary modules have been imported) : 2

(i) Declare a Pandas series named **Packets** having dataset as :

[125, 92, 104, 92, 85, 116, 87, 90]

(ii) Display the median of the elements present in the dataset of **Packets** using the Pandas method for it.

(g) Write Numpy single line statement for each of the following from (i) to (iii). 3

(i) To create a 3×2 array named **ARR2D** with the following values. (Assuming necessary modules have been imported as **np**) :

ARR2D

10	20
30	40
50	60

(ii) Assign the contents of the above array **ARR2D** to a new 1D array named **ARR1D**.

(iii) Display content of array **ARR1D** as follows :

[10, 20, 30, 40, 50, 60]

OR

Write Numpy single line statement for each of the following from (i) to (iii). 3

(i) To create a 4×3 array named **ARR** with the following values. (Assuming necessary modules have been imported as **np**) :

ARR

10	20	30
40	50	60
70	80	90
100	110	120



- (ii) Topple the contents of the array **ARR** upside down so that its contents become :

ARR

100	110	120
70	80	90
40	50	60
10	20	30

- (iii) Display the changed content of the array **ARR** in the following format :

```
[[100 110 120]
 [70 80 90]
 [40 50 60]
 [10 20 30]]
```

2. (a) Write the correct option from (i) to (iv) for the method used in Pandas to calculate the correlation of values stored in a dataframe. 1
- (i) `cor()`
 - (ii) `correlate()`
 - (iii) `corr()`
 - (iv) `correlation()`
- (b) Write the correct output on execution of the following Pandas code : 1
- ```
import pandas as pd
df=pd.DataFrame([("Om",93),("Jay",91)],columns=['Name',
 'Mark'])
print(df.sort_values('Name', ascending=True))
```
- (c) Write the correct output on execution of the following Pandas code : 1
- ```
import pandas as pd
df1= pd.DataFrame(["First","Second"],columns=['Col'])
df2= pd.DataFrame(["Third","Fourth"],columns=['Col'])
df = pd.concat([df2, df1], ignore_index=True)
print(df)
```



(d) Write the correct output on execution of the following Pandas code : 1

```
import pandas as pd
df = pd.DataFrame({"A": [1,3,2], "B": [5,1,4], "C": [3,4,7],
                  "D": [4,6,5], "E": [2,5,3]})
print(df.quantile([0.5], axis = 1) )
```

(e) Write the correct output on execution of the following Pandas code : 2

```
import pandas as pd
df = pd.DataFrame({'Name': ['Raj', 'Rita', 'Priya'],
                  'Type': ['Teacher', 'Student', 'Student'],
                  'Code': ['T01', 'S101', 'S102']})
print(df.pivot('Code', 'Type', 'Name'))
```

(f) Write the correct output on execution of the following Pandas code : 2

```
import pandas as pd
df = pd.DataFrame({"A": ["P01", "P02", "P03"],
                  "B": ["Pen", "Pencil", "Eraser"]})
df=df.rename(columns={"A": "PID", "B": "PNAME"})
df=df.rename(index={0: 'A', 1: 'B', 2: 'C'})
print(df)
```

OR

Write the use of the `rename(mapper=<dict-like>, axis=1)` method for a Pandas Dataframe. Can the `mapper` and `columns` parameter be used together in a `rename()` method ? 2

(g) Consider a dataframe **STOCK** created with the following information. Write single line Pandas statements for each of (i), (ii) and (iii). (Assuming necessary modules have been imported as `df`) : 3

	ITEMS	ID	QUANTITY
0	PEN	1001	500
1	PENCIL	1004	300
2	ERASER	1007	280



- (h) Write SQL queries for (i) to (iii) and the outputs for (iv) and (v), which are based on the following table PARTICIPANTS

4

Table : PARTICIPANTS				
PNO	EVENT	SNAME	CLASS	DOB
P1	DEBATE	SANYAM	12	2001-12-25
P2	DEBATE	SHRUTI	10	2003-11-10
P3	DEBATE	MEHER	12	2001-11-10
P4	QUIZ	SAKSHI	11	2002-10-12
P5	QUIZ	RITESH	12	2001-10-12
P6	QUIZ	RAHUL	10	2003-10-12
P7	CROSSWORD	AMEER	11	2002-05-09
P8	CROSSWORD	MINAKSHI	12	2001-05-09

- (i) To display details of all PARTICIPANTS of CLASS 10 and 12
- (ii) To display the SNAME and CLASS of all PARTICIPANTS in ascending order of their SNAME.
- (iii) To display the number of PARTICIPANTS along with their respective CLASS, of every CLASS.
- (iv) **SELECT DISTINCT EVENT FROM PARTICIPANTS;**
- (v) **SELECT MAX (DOB) , PNO FROM PARTICIPANTS GROUP BY PNO HAVING COUNT (*) > 1;**

OR

Write Python code for the following :

4

- (a) To create a MySQL connection named db for localhost, with **username = "teacher"** and **password = "myclass"**
- (b) To create a database cursor named as **dbcrsr**.
- (c) To open a database named "CLASS" using the above declared database cursor **dbcrsr**.
- (d) To add a new record into the table "STUDENT" in the above connected database, "CLASS" with details for the attributes (SNo, SName, Marks) as ("S102", "Tanya", 92.5)

