

FACULTY HIGHER SECONDARY SCHOOL
HALF YEARLY SAMPLE QUESTION PAPER
SUB: INFORMATICS PRACTICES
CLASS: XII COMMERCE

Time allowed: 3hrs

Total marks : 70

QI: 1) An nd array X contains the following data:

[2 * 7 = 14]

```
[ [ 0 1 2 3]
  [ 4 5 6 7]
  [ 8 9 10 11]
  [ 12 13 14 15] ]
```

What will be returned by the statements ?

- a) `print (X [0 : 2 , 0 : 2])`
- b) `print (X [2 : 0 , 2 : 0])`
- c) `print (X [2 : 0 : -1 , 2 : 0 : -1])`
- d) `print (X [: : -1 , : : -1])`

- 2) Write python codes to concatenate two 1D arrays.
- 3) Explain the concept of finding number of rows and columns of a matrix.
- 4) What are Numpy arrays?
- 5) Write codes to create a 1D ndarray of size 10 with all elements as Zero , but the 5th element is 25.
- 6) Create an array with values ranging from 10 to 49 each spaced with a difference of 3.
- 7) Create a 4 X 4 ndarray having values ranging from 0 to 15 (both inclusive) .

QII: Answer the following questions:

[2 * 5 = 10]

- 1) What do you understand by reshaping of a dataframe? Also, name the methods which are used to do so.
- 2) Consider an Array A containing Numeric values .Write a program replace all odd numbers with -1 and copy this content into another array B without altering the original array A.
- 3) Write Python codes to create a Numpy 1D array with all elements as Boolean true.
- 4) Explain the concept of vsplit () with example.
- 5) **Predict the output:**

```
X = [ 1 , 2 , 3 , 99 , 3 , 2 , 1 ]
X1 , X2 , X3 = np.split ( X , [ 3 , 5 ] )
print ( X1 , X2 , X3 )
```

QIII: Answer in short:

[2 * 8 = 16]

- 1) Differentiate between Covariance and Correlation ?
- 2) What are the values returned by Correlation? Explain .
- 3) Define Linear Regression.
- 4) Mention two basic data structures of Pandas.

- 5) What is var () function of Pandas?
- 6) What is Pivoting? Give example.
- 7) What is sorting in Pandas?
- 8) What is the concept of aggregation in Pandas? Mention some of the aggregate functions supported by Pandas.

QIV: Programming Logic:

[3 * 5 + 4 * 3 = 27]

(Q1 to Q5 is of 3marks each & Q6 ,Q7 and Q9 is of 4marks each)

- 1) How are apply () and applymap () functions of Pandas similar and different?

OR

What is the purpose of pipe () function in Pandas? Explain with an example.

- 2) What is the usage of creating groups in Pandas? Give examples.
- 3) Differentiate between reindex () and rename () functions.
- 4) What is data visualization?
- 5) Mention the three commonly used chart types and explain any one.
- 6) Explain the below given codes after proper analysis.

```
import numpy as np
import matplotlib . pyplot as ppl
x = np . arrange ( 1 , 20 , 1.25 )
Y = np . log ( a )
Z = np . cos ( a )
ppl = plot ( X , Z , linestyle = ' dashdot ' )
ppl . show ( )
```

- 7) **Predict the output:**

```
import numpy as np
import matplotlib . pyplot as ppl
x = np . arange ( 4 )
Y = [ 5. , 25. , 45. , 20. ]
ppl . bar ( X , Y )
ppl . title ( " A simple chart " )
ppl . show ( )
```

- 8) What is a marker ? How can you change the marker type and colour in a plot? **[3]**
- 9) Given an ndarray p as ([1 , 2 , 3 , 4]) . Write code to plot a bar chart having bars for p and p**2 (with red color) and another bar for p vs P*2 (with blue color) .
(Assume that libraries have been imported)
