

## SAMPLE QUESTION PAPER (2019-2020)

GRADE : XII  
SUB: INFORMATICS PRACTICES

DURATION : 3 HRS  
MAX MARKS : 70

### General Instructions:

All questions are compulsory

Question Paper is divided into 4 sections A, B, C and D.

**Section A** comprises of questions from Data Handling-2 (DH-2)

**Section B** comprises of questions from Basic Software Engineering.

**Section C** comprises of questions from Data Management-2 (DM-2)

**Section D** comprises of questions from Society, Law and Ethics-2 (SLE-2)

### ===== SECTION A =====

1. (a) The \_\_\_\_\_ of an array is a tuple of integers giving the size of the array along each dimensions (1)
- (i) Rank
  - (ii) Shape
  - (iii) ItemSize
  - (iv) Axes
- (b) Difference between Row-Major and Column-Major 2D arrays. (2)
- (c) How 1D NumPy array can be created from the following functions: (2)
- (i) fromiter()
  - (ii) linspace()
- (d) Write code to create a 4 x 5 array of random numbers in the range of 0 – 100. (2)
- OR --
- Write code to create an ndarray having six zeros in it. Change 3<sup>rd</sup> & 5<sup>th</sup> elements to 25 and 15 respectively.
- (e) Write the output of the following : [np is an alias to numpy] (2)
- ```
arr1 = np.array([[ 0, 1, 2],  
                [ 3, 4, 5],  
                [ 6, 7, 8]])  
arr2 = np.array([[10,11,12],  
                [13,14,15],  
                [16,17,18]])  
print(np.concatenate((arr1, arr2.T), axis=1))
```
- (f) Write the output of the following : [np is an alias to numpy] (2)
- ```
arr1=np.array([10,12,14,16,18,20,22])  
arr2=np.array([10,12,15,16,12,20,12])  
a=(np.where(arr1==arr2))  
print(arr1[a])
```
- (g) What is **pyplot**? Is it a Python **Library**? (1)

2. (a) What is 5-point summary in Box Plots? Write code to create a horizontal boxplot of the following data: (2)

34, 18, 100, 27, 54, 52, 93, 59, 61, 87, 68, 85, 78, 82, 91

- (b) Write any two major characteristics of a DataFrame data structure. (2)

- (c) Consider the following code to create two DataFrames with similar values. What will be the printed by the code given below? Justify your answer. [pd is an alias to pandas] (2)

```
df1 = pd.DataFrame( [ 1, 2, 3 ] )
df2 = pd.DataFrame( [ [ 1, 2, 3 ] ] )
```

-- OR --

When should pipe() be preferred over sandwiching of function call? Explain by example.

- (d) Suppose list1 = [0.5 \* x for x in range(0, 4)], what will be the contents of list1 out of the given options: (1)

- (i) [0, 1, 2, 3]
- (ii) [0, 1, 2, 3, 4]
- (iii) [0.0, 0.5, 1.0, 1.5]
- (iv) [0.0, 0.5, 1.0, 1.5, 2.0]

- (e) Explain below mentioned functions with reference to Python pandas. (3)

- (i) transform()
- (ii) applymap()
- (iii) sort\_values()

- (f) Given a data frame namely **data** as shown below (**fruit** names are row labels). Write statement to. (2)

	Colour	Count	Price
Apple	Red	3	120
Apple	Green	9	110
Pear	Red	25	125
Pear	Green	26	150
Lime	Green	99	70

- (i) List only rows with labels **Apple** and **Pear** using **loc**
- (ii) List only the columns **Count** and **Price** using **loc**

- (g) What is quantile? Find out the lower and upper quartile of the following code (2)

```
import numpy as np
import pandas as pd
arr = np.arange(1,6)*2
df = pd.DataFrame(arr)
#Display Lower Quartile and Higher Quartile of DataFrame df
```

- (h) What is the use of **bins** argument in **hist()** function. (2)

-- OR --

Name the functions we will use to create the following charts

- (i) Line Chart
- (ii) Bar Chart

- (i) 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 colour) and another bar for **p** and **p\*2** (with blue colour). (2)

-- OR --

Is it possible to draw a scatter chart with the help of plot function? If yes then how?

===== SECTION B =====

- 3 (a) What are advantages and disadvantages of Waterfall model? (2)
- (b) What is Component-based Model? Discuss its various stages. (2)
- (c) Discuss Pair Programming. Write any two advantages and disadvantages. (2)
- (d) How Centralized Version Control System is different Distributed Version Control System (2)
- (e) Draw a use-case diagram depicting an ATM system (2)
- OR --
- Draw a use-case diagram for an online Book store
- (f) What are the qualities of a good software? (2)
- (g) Define the following terms: (3)
- (i) Sprint
  - (ii) Backlog
  - (iii) Scrum Master

===== SECTION C =====

4. (a) Write the difference between GET and POST method. (1)
- (b) Which method is used to retrieve all rows and single row? (1)
- (c) Which command is used to create a new application in Django project? (1)
- (d) What is Django? Explain its MTV architecture? (2)
- (e) Table **COACHING** is shown below. Write commands in SQL for (a) and (b) and output for (c) and (d) (2)

ID	NAME	AGE	CITY	FEE	PHONE
P1	SAMEER	34	DELHI	45000	9811076656
P2	ARYAN	35	MUMBAI	54000	9911343989
P4	RAM	34	CHENNAI	45000	9810593578
P6	PREMLATA	36	BHOPAL	60000	9910139987
P7	SHIKHA	36	INDORE	34000	9912139456
P8	RADHA	33	DELHI	23000	8110668888

- (i) Write a query to display NAME in descending order whose AGE is more than 23.
  - (ii) Write a query to find the average FEE grouped by age.
  - (iii) SELECT SUM(FEE) FROM COACHING WHERE CITY LIKE "%O%"
  - (iv) SELECT NAME, CITY FROM COACHING GROUP BY AGE HAVING COUNT(AGE) > 2
- (f) Write a MySQL-Python connectivity to add a record to the **COACHING** table. Input all the values from the user. (3)

-- OR --

Write a MySQL-Python connectivity to retrieve all the records from **COACHING** table for FEE less than 50000.

- (g) Shelly has created a Django project namely **EasySell**. It contain three apps in it : (2)  
**Register, Sell and Work**  
 (i) List all the subfolders of Django project folder  
 (ii) Name any two files that are found in **app** folder by default
- (h) Write SQL queries for (a) to (c) which are based on the table (3)

**Table:** TRANSACT

TRNO	ANO	AMOUNT	TYPE	DOT
T001	101	2500	Withdraw	2017-12-21
T002	103	3000	Deposit	2017-06-01
T003	102	2000	Withdraw	2017-05-12
T004	103	1000	Deposit	2017-10-22
T005	101	12000	Deposit	2017-11-06

- (i) To display total AMOUNT withdrawn  
 (ii) To increase AMOUNT by 2% for amount deposits  
 (iii) To display the maximum AMOUNT Withdrawn and Deposited for the year 2017.

===== **SECTION D** =====

5. (a) What does the term “Intellectual Property Rights” covers? (1)
- (b) Vinod is preparing financial analysis report of its organisation. Can he copy and paste information from the Internet for reference in his report? Justify (1)
- (c) What are the environmental issues of e-waste? (2)
- (d) List down some points about societal changes introduced by technology. (2)
- OR --**
- An important factor of privacy is consumer consent. Comment.
- (e) Explain the following terms (2)  
 (i) Net Neutrality                      **-- OR --**                      Crowd Sourcing  
 (ii) Computer Forensics                **-- OR --**                      Identity Theft
- (f) What can be the gender and disability issues while teaching and using computers? (2)