

HS/XI/A.Sc.Com./IP/20

2020

INFORMATICS PRACTICES

(Theory)

Full Marks : 70

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

- (i) Write all the answers in the Answer Script.
- (ii) Attempt all the Questions.

1. Choose the correct answer from the following $1 \times 6 = 6$

- (i) A _____ is a special type of a computer software that can translate the source code into an object code or machine code.
 - (a) Utilities
 - (b) Language processor
 - (c) Application software
 - (d) Packages.

- (ii) What will be the output of the following expression?

 $a = 10$ $b = 4$ $c = a \% b$

(a) 2.5

(b) 2.0

(c) 2

(d) 3.0

- (iii) The **head** () function is used to fetch first _____ rows from Pandas Series object.

(a) 2

(b) 3

(c) 4

(d) 5

- (iv) A _____ is a pandas data structure which stores data in two-dimensional way.

(a) List

(b) Series

(c) Dictionary

(d) DataFrame.

(3)

(v) Which of the following key is used to represent the relationship between two tables?

- (a) Primary Key
- (b) Foreign Key
- (c) Alternate Key
- (d) Candidate Key

(vi) _____ is a small piece of data sent from a website and stored in a user's web browser while a user is browsing a Website.

- (a) spam
- (b) viruses
- (c) cookies
- (d) Digital Footprint

2. Answer the following questions in not more than two sentences:

$1 \times 6 = 6$

- (i) What is GPU?
- (ii) What are literals in Python?
- (iii) What are Python Lists?
- (iv) Write the statement to create a series for the given list :
L=[3, 4, 5,]

(4)

(v) What is a database system?

(vi) What is the significance of Pandas Library?

3. Answer the following questions in brief: $2 \times 4 = 8$

(i) What are operators in Python script? What are their function?

(ii) What is system software? What role does it play in the functioning of the computer?

(iii) What will be the output of the following expression?

(a) "MYSTRY" [:4]

(b) "pine" in "Pineapple"

(iv) How are individual elements of Dictionaries accessed?

4. Answer the following: $3 \times 3 = 9$

(i) What are language processors? Differentiate between Interpreter and Compiler.

(ii) What are the built-in core data types of Python? What are Numeric types? How many numeric data types does Python provide?

(5)

(iii) Write the output of the following code fragments:

```
x = 15
y = 5
while x>y :
    Print (x, y)
    x = x - 2
    y = y + 2
```

Or

Write a program that asks the user to input a year and to find out whether it is a **leap** year or not.

5. Answer the following: $4 \times 2 = 8$

(i) What is the difference between **append** () and **insert** () methods of list. Explain with examples.

Or

Write a Python program to input three integers and find out the largest integer.

(ii) Draw a block diagram depicting organization of a mobile system.

Or

Explain **get** () and **update** () methods of Dictionary with examples.

(6)

6. Answer the following questions : $2 \times 3 = 6$

- (i) What is the purpose of head () and tail () of Series object? 2
- (ii) How is Series data structure different from a dataframe data structure? 2
- (iii) Write the syntax to add a column to the dataframe. Give one example. 2

7. Answer the following: $3 \times 2 = 6$

- (i) Write Python code to create a series object TEMP1 that stores maximum temperatures of seven days in it. Take any random Seven temperatures. 3

Or

Consider following Series objects. 3

| S1 | | S2 | |
|----|----|----|----|
| 0 | 4 | 0 | 5 |
| 1 | 10 | 1 | 2 |
| 2 | 5 | 2 | 20 |
| 3 | 7 | 3 | 4 |
| 4 | 20 | 4 | 3 |

- (a) What will be the result of **S1**2**
- (b) What will be the result of **S1 + S2**
- (c) What will be the result of **S1 - S2**

(7)

- (ii) How do you read/load a CSV file in a database.
Give one example. 3

Or

Write code segment to display the following from
a dataframe namely **students**. 3

- (a) Display only column '**Name**'
(b) Display rows from 3 to 7
(c) Display the mark of 5th student, '**Marks**'
column.

8. Answer the following : 4

Write a Python script to create a DataFrame
namely **Teacher** storing 'Name' and 'Department'.
Teacher's ID Number form the index of the
DataFrame. Add a column to the DataFrame
namely 'Salary'. Display the modified DataFrame.

Or

If **City** is Series type object having the name of
25 states then, what will be the output of the
following statements. 4

- (a) print (City.head(4))
(b) print (City.tail())
(c) print (City[2:5])
(d) City[9] = 'Meghalaya'.

(8)

9. Answer the following: $2 \times 2 = 4$

- (i) What is Primary Key? What is Primary Key constraint? 2
(ii) Write the purpose and example of each MYSQL
function. 2
(a) Upper()
(b) NOW()

10. What is NOSQL database? What are its main features?
List name of four types of NOSQL Databases. $1 + 2 + 1 = 4$

Or

Consider the following TEACHER table and write SQL
commands for the following queries. 4

| TNO | TNAME | SALARY | DEPT | DOJ |
|-----|-----------------|--------|---------------------|------------|
| T01 | VARUN SHARMA | 25000 | PHYSICS | 2000/01/01 |
| T02 | RUPAK DAS | 25700 | COMPUTER SCIENCE | 1999/01/05 |
| T03 | MITALE BARUA | 30000 | COMPUTER SCIENCE | 2001/10/01 |
| T04 | SHYAMA DUTTA | 24000 | CHEMISTRY | 2000/02/07 |

- (a) Display all records from the table TEACHER.

- (b) Display all records whose SALARY is more than 25000.
- (c) Display the NAME and SALARY of the teachers whose DEPT is COMPUTER SCIENCE.
- (d) Insert a new row in the TEACHER table with following data:

T05, SUMAN SINHA, 25200,
CHEMISTRY, 2001/04/01.

11. Answer the following questions:

- (i) What is Cyber bullying? 2
- (ii) What are Super Cookies? 2
- (iii) What is phishing? How is pharming different from phishing? 2
- (iv) What are different types of threats to computer security? Explain any one of them. 1 + 2 = 3

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