SYLLABUS

Subject: Computer Science	**Semester: V/VI**
Course Title: Data Science	**Course Code: 20CSSEC12DP3**
with Python	

No. of Hours: 45   **LTP: 300**   **Credits: 3**

Objectives

- To learn the process of data science.
- To learn the basics of python.
- To analyze the importance of data science and exploring data in Python programming.

Course Outcomes

CO1: Explain the basic concepts of data science
CO2: Understand why python is a useful scripting language for developers.
CO3: Use standard programming constructs like selection and repetition.
CO4: Use aggregated data (list, tuple, and dictionary).
CO5: Implement functions and modules.

UNIT-I (9 Hrs.)

Introduction to data science: Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.- Programming Exercises

UNIT-II (9 Hrs.)

Introduction to python: What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, break, continue, pass-Programming Exercises.

UNIT-III (9 Hrs.)

Control structures and strings: Strings - definition, accessing, slicing and basic operations; Lists - introduction, accessing list, operations, functions and methods; Tuples - introduction, accessing tuple; Dictionaries - introduction, accessing values in dictionaries - Programming Exercise.

UNIT-IV (9 Hrs.)

Functions and modules: Functions - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda

and recursive functions, Modules- math and random - Programming Exercises.

UNIT-V   (9 Hrs.)
Classes & Objects:
Classes and Objects, Class method and self-argument, class variables and object variables, public and private data members, private methods, built-in class attributes, static methods. - Programming Exercises.

Co-Curricular Activities
- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Book
1. Steven cooper--- Data Science from Scratch, Kindle edition

Reference Book
1. Reema Thareja—Python Programming using problem solving approach, Oxford Publication.

Blueprint

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Course Title: Data Science   Course Code: 20CSSEC12DP3
with Python
Time: 3 Hrs.   Max. Marks: 100

SECTION – A

Answer **ALL** questions   **20 x 1 = 20M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
1	I	1	
2	I	1	
3	II	1	
4	II	1	
5	III	1	
6	III	1	No. of questions to be set
7	IV	1	RBT1 – 8
8	IV	1	RBT2 – 8
9	V	1	RBT3 – 2
10	V	1	RBT4 – 2
11	I	1	
12	I	1	
13	II	1	
14	II	1	
15	III	1	
16	III	1	
17	IV	1	
18	IV	1	
19	V	1	
20	V	1	

SECTION – B

Answer any **FOUR** questions   **4 x 8 = 32M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
21	I	8	**No. of questions to be set**
22	II	8	RBT1 – 2
23	III	8	RBT2 – 2
24	IV	8	RBT3 – 1
25	V	8	RBT4 – 1
26	I / II / III / IV / V	8	

SECTION – C

Answer any **FOUR** questions   **4 x 12 = 48M**

Q. No.	UNIT	Marks Weightage	RBT LEVEL
27	I	12	**No. of questions to be set**
28	II	12	RBT1 – 2
29	III	12	RBT2 – 2
30	IV	12	RBT3 – 1
31	V	12	RBT4 – 1
32	I / II / III / IV / V	12	

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SECTION – A

Answer **ALL** questions   **20 x 1 = 20M**

1. Which of the following would be more appropriate to be replaced with question mark in the following figure?

   A.   Data Analysis
   B.   Data Science
   C.   Descriptive Analytics
   D.   None of the mentioned

2. Which of the following is performed by Data Scientist?
   A.   Define the question
   B.   Create reproducible code
   C.   Challenge results
   D.   All of the mentioned

3. Which of the following is characteristic of Processed Data?
   A.   Data is not ready for analysis
   B.   All steps should be noted
   C.   Hard to use for data analysis
   D.   None of the mentioned

4. Is Python code compiled or interpreted?
   A.   Python code is both compiled and interpreted
   B.   Python code is neither compiled nor interpreted
   C.   Python code is only compiled
   D.   Python code is only interpreted

5. What will be the output of the following Python program?

```
i = 0
while i < 5:
    print(i)
```

```
    i += 1
    if i == 3:
        break
    else:
        print(0)
```
   A. error
   B. 0 1 2 0
   C. 0 1 2
   D. none of the mentioned

6. Which of the following statements would create a tuple in python?
   A. mytuple = ("apple", "banana", "cherry")
   B. mytuple[123] = ("apple", "banana", "cherry")
   C. mytuple = ("2" * ("apple", "banana", "cherry"))
   D. None of the these

7. Which of the following is not a core data type in Python programming?
   A. Tuples
   B. Lists
   C. Class
   D. Dictionary

8. Which of the following functions is a built-in function in python?
   A. factorial()
   B. print()
   C. seed()
   D. sqrt()

9. Which of the following best describes inheritance?
   A. Ability of a class to derive members of another class as a part of its own definition
   B. Means of bundling instance variables and methods in order to restrict access to certain class members
   C. Focuses on variables and passing of variables to functions
   D. Allows for implementation of elegant software that is well designed and easily modified

10. What is the biggest reason for the use of polymorphism?
    A. It allows the programmer to think at a more abstract level
    B. There is less program code to write
    C. The program will have a more elegant design and will be easier to maintain and update
    D. Program code takes up less space

11. _____ is one of the key data science skills

12. _____ developed Python Programming Language.

13. _____ character is used to give single-line comments in Python

14. _____ be the output of the following Python code

   l=[1, 0, 2, 0, 'hello', '', []]

```
list(filter(bool, l))
```
15. _____ will be the output of the following Python code snippet?
    ```
    for i in [1, 2, 3, 4][::-1]:
        print (i)
    ```
16. _____ keyword is used for function in Python language
17. _____ used for id() function in python.
18. _____ be the output of the following Python function
    min(max(False,-3,-4),2,7)
19. _____ represents an entity in the real world with its identity and behaviour.
20. _____ is not a class method

SECTION – B

Answer any **FOUR** questions   **4 x 8 = 32 M**

21. Explain in detail about the process of Data science.
22. Explain in detail about the features of python.
23. Explain about looping statements in python.
24. Describe about the various operations performed on strings.
25. Describe about lamda and recursive functions in detail.
26. Explain about various data members.

SECTION – C

Answer any **FOUR** questions   **4 x 12 = 48 M**

27. What are the responsibilities and qualifications of data scientist?
28. What is python? Discuss about the history of python.
29. Explain in detail about various decision making statements.
30. Explain about list, tuple and dictionary in detail.
31. What are the types of functions?
32. Explain about various methods in python classes.