MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
MODEL QUESTION PAPER-1
DATA STRUCTURES USING PYTHON
DEPARTMENT OF CSE (DS,CS,IoT)

Roll No									

Time: 3 hours **Max. Marks: 70**

Note:

Question paper Consists of 5 SECTIONS (One SECTION for each UNIT).

Answer **FIVE** Questions, Choosing **ONE** Question from each SECTION and each Question carries 14 marks.

SECTION – I

1.) Discuss briefly about OOP concepts?[14M][CO1]

(OR)

2. a)What is a Constructor? Explain different types of constructors in python?[7M][CO1]

b) How can we achieve code reusability in python? Explain with one example[7M][CO1]

SECTION – II

3.) Define data structure? Explain Set & Tuple methods?[CO2][14M]

(OR)

4).a) Discuss List and Dictionary, GeneratorComprehensions with examples?[CO2][10M]

b) Write any ten methods of String?[CO2][4M]

SECTION – III

5 a)Performthe Binary Search for the following list of elements with key as 62

98,34,37,68,69,62,18,29[C03][9M]

b) How create an Arrays in Python using Numpymodule?[CO3][5M]

(OR)

6 a) Discuss briefly about Merge sort

b)Perform Quick Sort for the following list :12 ,-3,8,23,1,8,9,34

SECTION – IV

7 Discuss briefly about Queues and its applications?

(OR)

8. Explain briefly about Double Linked List?

SECTION – V

9. Discuss briefly about BFS and DFS with one example?

(OR)

10.Define AVL tree? Explain different types Rotations ?

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SECTION – I

1.)   Discuss briefly about OOP concepts?[14M][CO1]

(OR)

2. a)Write a Python Program to Implement Multiple Inheritance[7M][CO1]

   b) Define Encapsulation? How to achieve Encapsulation in Python?[7M][CO1]

SECTION – II

3.) Define data structure? Explain briefly about Dictionaries and List?[CO2][14M]

(OR)

4).a) Discuss Set and Dictionary, GeneratorComprehensions with examples?[CO2][10M]

 b) Write any ten methods of String?[CO2][4M]

SECTION – III

5 a)Performthe Binary Search for the following list of elements with key as 25

90,45,44,42,34,31,28,27,25[C03][9M]

b) How create an Arrays in Python ?[CO3][5M]

(OR)

6 a) Discuss briefly about Quick Sort

b)Perform Merge Sort for the following list :12 ,-3,8,23,1,8,9,34

SECTION – IV

7 Discuss briefly about Stacks and its applications?

(OR)

8. Explain briefly about Single Linked List?

SECTION – V

9. Discuss briefly about Tree Traversal Techniques with one example?

(OR)

10. Define Binary Search tree? Draw a BST for the following List:

10,12,43,7,56,34,67,87,98

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
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II B.Tech I Semester Regular/Supplementary Examinations, February 2023
Data Structures Using Python
(CSE, CSE-CS, CSE-AIML, CSE-DS, CSE-IOT, IT, AIDS & AIML)

Roll No | 2 | 1 | N | 3 | 1 | A | 6 | 9 | 3 | 5

Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1. Describe the benefits and applications of OOPS Concepts. Explain about constructors and types of variables with relevant examples **[14M]**

OR

2. What is inheritance? Classify different types of inheritance? Compare Inheritance vs Polymorphism? **[14M]**

SECTION-II

3. A. Define Data structure? Discuss in detail about Linear Data Structures? **[7M]**
   B. What is List? What are the methods of list objects? **[7M]**

OR

4. A. Define Tuple? What are the operations of tuples? **[7M]**
   B. Differentiate Sets Vs Tuples? **[7M]**

SECTION-III

5. A. What is an array? Discuss different types of array with examples **[7M]**
   B. Rearrange following numbers using quick sort: **[7M]**
   10, 6, 3, 7, 17, 26, 56, 32, 72

OR

6. A. Compare and contrast Arrays and Lists? **[7M]**
   B. Rearrange following numbers using Bubble sort? Write the step by step procedure? 10, 6, 3, 7, 17, 26, 56, 32, 72 **[7M]**

SECTION-IV

7. A. Explain various operations that are performed on queue with suitable algorithms **[7M]**
   B. Discuss about the insertion and deletion operations on single linked lists. Write pseudo code for the same. **[7M]**

OR

8. A. Write an algorithm to delete an element anywhere from doubly linked list. **[7M]**
   B. Write an algorithm to insert new node at the beginning, at middle position and at the end of a Singly Linked List. **[7M]**

SECTION-V

9. A. What is a binary tree? Construct a binary tree given the pre-order traversal and inorder traversals as follows: **[7M]**
   Pre-Order Traversal: G B Q A C K F P D E R H
   In-Order Traversal: Q B K C F A G P E D H R
   B. Discuss representation of different binary trees. **[7M]**

OR

A. What is a graph? Explain the properties of graphs. **[7M]**
B. Illustrate breadth first traversal algorithm with an example? **[7M]**

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