

**MASTER OF COMPUTER APPLICATIONS (CBCS - 2020 COURSE)**  
**M.C.A. Sem-II : WINTER : 2021**  
**SUBJECT: DATA STRUCTURES USING PYTHON**

**Day :** Wednesday  
**Date :** 19-01-2022

**W-22731-2021**

**Time :** 10:00 AM-01:00 PM  
**Max. Marks:** 60

**N.B.**

- 1) **Q.No. 4** from Section-I is **COMPULSORY**.
- 2) Attempt **ANY TWO** questions from Q.No. 1 to Q. No. 3 in Section – I.
- 3) Attempt **ANY TWO** questions from Q.No. 5 to Q. No. 7 in Section – II.
- 4) Figures to the **RIGHT** indicate **FULL** marks.
- 5) Answers to both the sections should be written in **SEPARATE** answer book.
- 6) Draw a labeled diagram **WHEREVER** necessary.

**SECTION – I**

- Q.1** Answer the following : **(12)**
- a) List and describe the type of statements supported in Python.
  - b) When to use relational operators? List and describe relational operators in Python.
- Q.2** Answer the following : **(12)**
- a) What is the need of function? Explain syntax of defining function in Python with example.
  - b) What is recursion? Explain advantages of recursion with the help of suitable example.
- Q.3** Answer the following : **(12)**
- a) Illustrate exception handling in Python.
  - b) What is file? Explain various modes of operating files.
- Q.4** Write short notes on **ANY THREE** of the following : **(12)**
- a) Operator precedence and associativity in Python
  - b) List and Tuple
  - c) User defined exception
  - d) Dictionaries data type
  - e) Nested if else clause

**SECTION – II**

- Q.5** Answer the following : **(12)**
- a) What is the need of control statements in programming? List control structure in Python and explain any one of them.
  - b) What are different types of tree traversal algorithms? Explain Depth First Search(DFS).
- Q.6** Answer the following : **(12)**
- a) What are linked lists? Implement a linked list in Python and explain insertion and deletion operation.
  - b) Write a program to implement Queue using Python.
- Q.7** Explain the following : **(12)**
- a) Write a program to implement bubble sort method using Python. Explain its efficiency.
  - b) Compare the complexities of various searching and sorting algorithms.

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