MASTER OF COMPUTER APPLICATIONS (CBCS - 2020 COURSE)
M.C.A. Sem-II : : SUMMER - 2022
SUBJECT : DATA STRUCTURES USING PYTHON

Day : Saturday   Time : 02:00 PM-05:00 PM
Date : 28-05-2022   **S-22731-2022**   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 various data types in Python.
  b) List and describe working of logical operators in Python.

Q.2 Answer the following :   (12)
  a) What do you know about scope of variable? Describe various scopes with example.
  b) Explain Set data structure in Python.

Q.3 Answer the following :   (12)
  a) List the steps to read the contents of a file. Discuss usage of various read methods.
  b) What is exception? Explain its need with example.

Q.4 Write short notes on **ANY THREE** of the following :   (12)
  a) Iterative statements
  b) Recursion
  c) Finally clause
  d) Hash tables
  e) Skip lists

SECTION – II

Q.5 Answer the following :   (12)
  a) What is Abstract Data Type? Explain algorithm to implement Stack ADT.
  b) Define Queue. Explain algorithm to implement Queue ADT.

Q.6 Answer the following :   (12)
  a) What are binary trees? Create a binary search tree for following list of values:- 30,35,40,20,21,25,60,37.
  b) Write a short note on Red Black Trees and its application.

Q.7 Explain the following :   (12)
  a) Explain Quick sort algorithm with appropriate example and explain its complexity.
  b) Compare efficiency of linear search with binary search algorithm.

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