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I Semester B.C.A. Degree Examination, May/June - 2022**COMPUTER SCIENCE****Data Structure****(NEP Scheme 2021)****Paper : CA-C3T****Time : 2½ Hours****Maximum Marks : 60****Instructions to Candidates : Answer all Sections.****SECTION - A****I. Answer any Four questions. Each question carries Two marks. (4×2=8)**

- 1) Define Abstract Data Type.
- 2) What is sparse matrix?
- 3) Define Linked list.
- 4) Define
 - a) Directed graph
 - b) Weighted graph.
- 5) Define Binary Search.
- 6) Define Hashing.

SECTION - B**II Answer any Four questions. Each question carries Five marks. (4×5=20)**

- 7) Explain traversal of singly linked list
- 8) Explain circular queue with example.
- 9) Write an algorithm for inserting values in circular queue.
- 10) Define Binary search Tree. Give example.
- 11) Explain Linear Search algorithm
- 12) Explain Topological sorting.

[P.T.O.]



SECTION - C

- III. Answer any Four questions. Each question carries Eight marks** (4×8=32)
- 13) a) Explain the different types of data Structures. (4)
b) Write a note on Asymptotic notations. (4)
- 14) a) Evaluate Postfix expression. Show step clearly 6, 5, 3, +, *, 12, 3, /, - (4)
b) Write algorithms for
i) Push
ii) Pop operations for stack (4)
- 15) What is Recursion ? Write an algorithm for tower of Hanoi Problem. (8)
- 16) Write short notes on : (8)
a) Lexicographic Search Trees
b) B - Trees.
- 17) a) Define Sorting (2)
b) Write a C Program to sort an array using insertion sort technique. (6)
- 18) Explain hashing techniques and techniques for collision resolution. (8)
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