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Total No. of Questions : 07] **[Total No. of Pages : 01**

BCA (Sem. – 2nd)
DATA STRUCTURES
SUBJECT CODE : BC – 204 (N_2)
Paper ID : [B0208]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.

Section – A

Q1) ***(10 × 2 = 20)***

a) What is time space trade off? Explain with example.
b) What is use of Big O notation in data structure?
c) List various applications of priority queue.
d) Explain how multi dimensional array is represented in memory.
e) Write an algorithm to traverse a linked list.
f) Explain how threaded binary tree is different from binary tree.
g) What is average and worst case complexity of merge sort and insertion sort?
h) What is garbage collection? Discuss its need.
i) What are various applications of linked list?
j) Explain how graph is represented in memory.

Section – B

(4 × 10 = 40)

Q2) Define data structure? What are its different types? Explain various operations that can be performed on data structures.

Q3) What is stack? How it is different from queue? Write an algorithm to implement stack by using an array and linked list.

Q4) What is bubble sort? Explain its working. Sort the following data using bubble sort.
44 33 11 55 77 90 40 60 99 22 88 66.

Q5) What is binary tree? How it is different from binary search tree? Write and explain the pre order traversal algorithm for traversing a binary tree.

Q6) What is linked list? Explain the advantages of linked list over an array and vice versa. Write an algorithm to insert a node in sorted linked list.

Q7) Write note on the following:-

- Linear search and binary search.
- Quick sort.