

2023

BCA 2nd Semester Examination

Data Structure

PAPER — CC4T

Full Marks : 50

Time : 2 hours



The figures in the right-hand margin indicate marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Illustrate the answers wherever necessary.

Answer from **all** the Groups as directed.

GROUP—A

1. Answer **any five** questions : $2 \times 5 = 10$

(a) What is array?

(b) What do you mean by AVL tree?



(2)

- (c) What is Big O notation?
- (d) What are linear and non-linear data structures?
- (e) What is meant by topological sorting?
- (f) What is abstract data type?
- (g) What do you mean by linear data structure?
- (h) Define priority queue.

GROUP—B

2. Answer any **four** questions : $5 \times 4 = 20$

- (a) Define searching. Differentiate between internal sorting and external sorting. $2+3$
- (b) What is the disadvantage of array over linked list? What do you mean by doubly linked list? $2+3$
- (c) Define a binary tree. What do you mean by tree traversal? $3+2$

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(Continued)

(3)

- (d) Illustrate the construction of a binary tree given its inorder and postorder traversal.
INORDER : HDIJEKBALFMCNGO
POSTORDER : HIDJKEBLMFNOGCA 5
- (e) Describe bubble sort algorithm and find its complexity. 5
- (f) Write a short note on postorder traversal. 5

GROUP—C

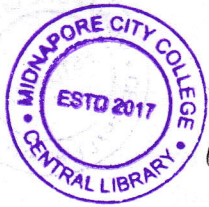
3. Answer any **two** questions : $10 \times 2 = 20$

- (a) What is linked list? Write and explain the algorithm to create and traverse operations in single linked list with an example. $2+8=10$
- (b) What is hashing? Describe different types of hash functions. What is collision resolution technique in hashing? $2+5+3=10$
- (c) Define stack. How is it different from queue? Show implementation of a queue. $2+2+6=10$

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(Turn Over)





(4)

(d) Write short notes on *any two* of the following : $5 \times 2 = 10$

- (i) Threaded binary trees
- (ii) Dequeue
- (iii) Heap sort technique
- (iv) Circular linked list

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