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 : 2×5=10

(a) What is array?

(b) What do you mean by AVL tree?

(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 : 5×4=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

(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 : 10×2=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

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

(i) Threaded binary trees

(ii) Dequeue

(iii) Heap sort technique

(iv) Circular linked list

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