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Total No. of Pages: 02

Total No. of Questions: 09

B.Tech. (Electronics & Communication Engineering) (Sem. – 4)

DATA STRUCTURES & ALGORITHMS

M Code: 77567

Subject Code: BTCS-301-18

Date of Examination : 06-01-2023

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly:
 - a) Relate data structures with data types.
 - b) Write a short note on Hash Tables.
 - c) How a binary tree can be represented as array structure?
 - d) What are the front and rear pointers of queue?
 - e) Define the term Radix Sort.
 - f) Write any two applications of graph.
 - g) State different ways traversing binary tree.
 - h) Write briefly on Algorithm complexity.
 - i) Write short note on Rehashing.
 - j) What are the applications of heaps?

SECTION-B

2. Write an algorithm to implement the stacks using Link List?
3. What are linear and non-linear data structures? Give one example of each.
4. Write an algorithm for deleting a specific element from an array?
5. Build a heap H from the following list of numbers:

40,65,15,48,14,50,17,22

6. Explain the concept of circular queue and priority queue with suitable example.

SECTION-C

7. Write the algorithms for the following:
 - a) Deleting an element from a doubly link list.
 - b) Inserting an element in a priority queue.
 - c) To reverse a string of characters using stack.
 - d) To search an element in a sorted array.
8. a) Explain application of stack in recursive functions with example.
b) What is traversing? Write an algorithm for traversing a link list.
9. How a linear array is represented in memory? Explain the program which reads two matrixes.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.