B TECH
(SEM-III) THEORY EXAMINATION 2020-21
BASIC DATA STRUCTURE AND ALGORITHM

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Qno.	Question	Marks	CO
a.	Explain Big-oh notation.	2	1
b.	What do you understand by spare matrices?	2	1
c.	Discuss Stack operation.	2	2
d.	What is Array representation of stacks?	2	2
e.	Discuss Binary Tree.	2	3
f.	What do understand by Complexity of searching algorithm?	2	3
g.	Explain Graphs & Multigraph.	2	4
h.	What is Minimum Cost spanning tree?	2	3
i.	Discuss binary Search.	2	5
j.	Explain B+ Tree.	2	5

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

Qno.	Question	Marks	CO
a.	What is meant by string operation? Discuss with the help of any example.	10	1
b.	Explain Priority Queue and Define Big-Oh notation and find the complexity of the following recursive function $T(n) = 4T(n/2)+n\log n$	10	2
c.	Discuss Complete Binary Trees. Draw a binary tree for following data: {15 22 12 1 8 7 17 25 28 6 9 2}	10	3
d.	Discuss the Breadth First Search with the help of any example.	10	4
e.	Explain quick sort. Draw a tree of the following with the help of Quick short: {52,37,63,14,17,8,6,25}	10	5

SECTION C

3. Attempt any *one* part of the following: **10 x 1 =10**

Qno.	Question	Marks	CO
a.	What do you understand by complexity of an algorithm? Discuss at least 4 types of string operations in details.	10	1
b.	What is the use of sparse matrix? Explain how sparse matrix is different from normal Matrix? Discuss.	10	1

4. Attempt any *one* part of the following: **10 x 1 =10**

a.	What do you understand by D Queue? Discuss D -Queue with the help of suitable example.	10	2
b.	What do you understand by PUSH and POP Operation? Discuss the tower of Hanoi problem in detail.	10	2

5. Attempt any *one* part of the following: **10 x 1 =10**

a.	Sort the following data with the help of Heap sorting and write the Pseudo Code for the above: {23,10,16,11,20}	10	3
b.	Explain Extended binary tree. Discuss the Type of Binary tree in detail.	10	3

6. Attempt any *one* part of the following: **10 x 1 =10**

a.	Discuss the Kruskal Algorithm with the help of an example.	10	4
b.	What is minimum cost spanning tree with respect to data structure? Explain with example.	10	4

7. Attempt any *one* part of the following: **10 x 1 =10**

a.	What do you understand by B-Tree? Differentiate between B-Tree & B+ Tree.	10	5
b.	Explain Briefly: I. Linear Search II. Bubble sorting	10	5

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