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IIIrd SEMESTER
Supplementary Examination

Roll No.....
B.TECH. [IT]
(Feb. - 2019)

IT-201 DATA STRUCTURES

Time: 3:00 Hours **Max. Marks: 40**

Note: Answer any five questions.
Assume suitable missing data, if any.

Q.1.

a) Explain the average case complexity of Merge Sort. [3]

b) Explain the procedure to convert infix to postfix expression and evaluate the following postfix expression 7 3 4 + - 2 4 5 / + * 6 / 7 +? [5]

Q.2.

a) Write an algorithm to find the 3rd elements from the end in a linked list in one pass. [4]

b) Write the difference between Stack and Queue. Also explain all the operations on Queue data structure. [4]

Q.3.

a) Assuming that priority queue is implemented using the linked lists where a master list contains a pointer to the corresponding priority list. Write a function to insert an element x of priority p into this queue. [4]

b) Write a program to implement stack using singly linked list. [4]

Q.4.

a) What are the advantages of Complete Binary tree? Explain the operations of Complete Binary tree with suitable example. [4]

P.T.O

b) Write an algorithm for heap sort. Discuss its complexity. For the following key sequence determine the binary heap obtained when the keys are inserted one by one in the order given into an initially empty heap and perform heap sort: 9, 91, 74,58, 45, 11, 76, 40, 98, 15. [4]

Q.5.

a) How we can represents the graph explain? Write Depth First Search (DFS) algorithm for traversing a graph. [4]

b) What are the advantages of hash tables? Explain with a suitable example. [4]

Q.6. Write short notes on any four: - [4x2]

a) Binary Search
b) Threaded trees
c) Collision resolution techniques
d) Spanning Tree
e) External Sorting

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