

Code No: RT21042





II B. Tech I Semester Supplementary Examinations, Oct/Nov- 2017 DATA STRUCTURES (Com. to ECE, CSE, EIE, IT, ECC)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (Part-A and Part-B) 2. Answer ALL the question in Part-A

3. Answer any THREE Questions from Part-B

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## PART -A

| 1.             | <ul> <li>a)</li> <li>b)</li> <li>c)</li> <li>d)</li> <li>e)</li> <li>f)</li> </ul> | Write an algorithm for factorial of a given number<br>What are the applications of Queue<br>What are the advantages of double linked list<br>What is the maximum length and height of a tree with 32 nodes<br>Explain the searching operation of binary search tree with an example<br>What is spanning tree | (4M)<br>(3M)<br>(4M)<br>(4M)<br>(4M)<br>(3M) |
|----------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| <u>PART –B</u> |                                                                                    |                                                                                                                                                                                                                                                                                                              |                                              |
| 2.             | a)                                                                                 | Sort the following list of elements by using merge sort                                                                                                                                                                                                                                                      | (8M)                                         |
|                | b)                                                                                 | 39, 16, 45, 11, 55, 18, 43, 88<br>Explain about the Towers of Hanoi problem                                                                                                                                                                                                                                  | (8M)                                         |
| 3.             | a)                                                                                 | Write an algorithm to convert an infix expression into prefix expression                                                                                                                                                                                                                                     | (8M)                                         |
|                | b)                                                                                 | Explain the operations of a Queue with an example                                                                                                                                                                                                                                                            | (8M)                                         |
| 4.             | a)                                                                                 | Write a program for the implementation of circular linked list                                                                                                                                                                                                                                               | (10M)                                        |
|                | b)                                                                                 | Explain the operations of singly linked lists                                                                                                                                                                                                                                                                | (6M)                                         |
| 5.             | a)                                                                                 | Write an algorithm for post order traversal                                                                                                                                                                                                                                                                  | (8M)                                         |
|                | b)                                                                                 | Explain the operations of binary tree with an example                                                                                                                                                                                                                                                        | (8M)                                         |
| 6.             | a)                                                                                 | Write deletion algorithm of binary search tree                                                                                                                                                                                                                                                               | (8M)                                         |
|                | b)                                                                                 | Define Binary tree. Explain how to represent the Binary tree with an example                                                                                                                                                                                                                                 | (8M)                                         |
| 7.             | a)                                                                                 | Write an algorithm of BFS                                                                                                                                                                                                                                                                                    | (8M)                                         |
|                | b)                                                                                 | Explain about the Prim's minimum cost spanning tree with an example                                                                                                                                                                                                                                          | (8M)                                         |

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