

Code No: I4001/R16

M. Tech. I Semester Regular Examinations, December-2016

**ADVANCED DATA STRUCTURES / ADVANCED DATA STRUCTURES AND
ALGORITHM ANALYSIS**

**Common to Information Technology (40), Computer Science (05), Computer Science &
Technology (59) and Computer Science & Engineering (58)**

Time: 3 Hours

Max. Marks: 60

*Answer any FIVE Questions
All Questions Carry Equal Marks*

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| 1. | a | Explain about the implementation of stack operations using linked lists | 6M |
| | b | What is a linked list. Specify the difference between singly, doubly and circular linked lists. | 6M |
| 2. | a | How can you perform the selection sort and sort the following elements by using the selection sort technique
70, 30, 20, 50, 60, 10,40 | 6M |
| | b | Explain about Breadth First Search Traversal technique with an example. | 6M |
| 3. | a | What do you mean by a hash table and a hash function. Explain the following hash functions with an example
(i). Division method (ii). Mid square (iii). Digit analysis | 6M |
| | b | What do you mean by collision and how can you handle it by using linear probing. | 6M |
| 4. | a | What is a binary search tree (BST) and specify the steps showing the construction of a BST for the following data
10, 08, 15, 12, 13, 07, 09, 17, 20, 18, 04, 05 | 6M |
| | b | What is a priority queue ADT and explain the insertion & deletion operations on a priority queue with an example. | 6M |
| 5. | a | What do you mean by a balance factor in AVL tree and explain about LL & RR rotations with an example. | 6M |
| | b | What is a B-Tree. Specify its properties and describe the construction of a B-Tree for the following elements
5, 2, 13, 3, 45, 72, 4, 6, 9, 22 | 6M |
| 6. | a | Create a binary tree from the following in-order and pre-order traversal data
In-order traversal data: g,d,h,b,e,i,a,f,j,c.
Pre-order traversal data: a,b,d,g,h,e,i,c,f,j. | 6M |
| | b | Explain with an example about the collision handling by using a double hashing technique. | 6M |
| 7. | a | What do you mean by height of an AVL tree and explain about double rotations with an example. | 6M |
| | b | What is a binary tree and define the following binary tree's with an example
(i). Full binary tree (ii). Complete binary tree
(iii) left & right skewed binary tree | 6M |

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8. a). Write an algorithm for a binary search technique and explain it with the help of an example. 6M
b). Specify the sequence of steps, that shows the deletion of elements in a sequential order from the following heap 6M


