Code No: RT21042 **R13** SET - 1

II B. Tech I Semester Regular Examinations, Dec - 2015
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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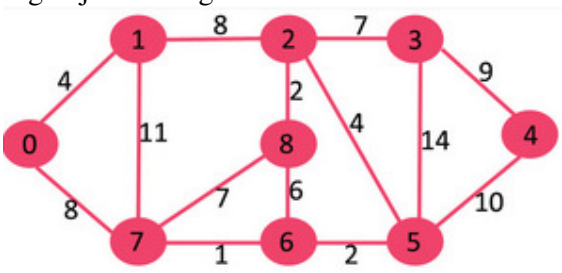
PART –A

1.	a)	Write the algorithm for bubble sorting?	(4M)
	b)	What is meant by enqueue and dequeue operations?	(3M)
	c)	What are the steps to insert a new item between two values in a linked list?	(3M)
	d)	Explain Array representation of Binary tree?	(4M)
	e)	Explain Balanced Binary search tree?	(4M)
	f)	What is Graph? Give Adjacency list representation of graph?	(4M)

PART –B

2.	a)	Explain Towers of Hanoi problem with example? Write a recursive algorithm?	(10M)
	b)	Explain Binary search operation? Write an algorithm?	(6M)
3.	a)	Explain representation of Infix, prefix and postfix notations? Give its need?	(6M)
	b)	Explain Infix to postfix transformation? Convert the Infix expression '*(a+b) * c/d + (e+f)*' to postfix expression:	(10M)
4.	a)	What is Linked List? Explain its representation?	(8M)
	b)	Explain the representation of polynomial expression using single linked list?	(8M)
5.		Construct the binary tree from the following: Pre-order: 1, 2, 4, 8, 9, 10, 11, 5, 3, 6 , 7 In-order: 8, 4, 10, 9, 11, 2, 5, 1, 6, 3, 7 Find Post order traversal?	(16M)
6.	a)	Explain the operations on Binary search trees?	(8M)
	b)	Explain the Threaded binary trees?	(8M)
7.		Explain Dijkstra's Single source shortest path problem? Find the shortest path form Vertex'0' using Dijkstra's algorithm?	(16M)



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Code No: RT21042 **R13** SET - 2

II B. Tech I Semester Regular Examinations, Dec - 2015
DATA STRUCTURES
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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. a) Write an algorithm for selection sorting? (4M)
   b) What is meant by PUSH and POP on Stack? (4M)
   What is State of the STACK After insert 12, 75, 04, 100, 23, POP, POP, Insert 11, POP?
   c) Give the Advantages and Disadvantages of single linked lists? (3M)
   d) What is Binary tree? List the properties of Binary tree? (3M)
   e) Explain the application of Binary search trees? (4M)
   f) Explain about Minimum cost spanning tree? (4M)

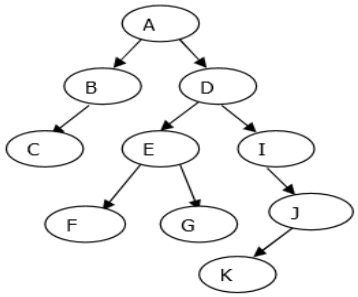
PART -B

2. a) What is meant by recursion? Write a recursive algorithm to generate Fibonacci sequence? (8M)
   b) Explain about Fibonacci search? Give an example? (8M)

3. Explain about Circular Queues implementation? Write the pseudo code for the operations on Circular Queues? (16M)

4. Explain different cased of insertion and deletion operations on single linked lists? Write the pseudo code for the same? (16M)

5. Explain about Inorder, Preorder and Postorder traversals? (16M)
   Perform Inorder, Preorder and postorder for the given binary tree



6. a) Explain the properties of Binary search tree? Construct Binary search tree for the following elements: **47, 12, 75, 88, 90, 73, 57, 1, 85, 50, 62** (8M)
   b) Explain the Threaded binary trees? (8M)

7. What is Graph? Explain two representation methods of graph? Brief Insertion and deletion of vertices and edges to the graph? (16M)

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Code No: RT21042 **R13** SET - 3

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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.	a)	Write a recursive algorithm to compute GCD?	(4M)
	b)	Explain any application of the Queue?	(4M)
	c)	What are the steps to insert a new item at the head of a linked list?	(3M)
	d)	Explain insertion operation on Binary tree?	(4M)
	e)	What is threaded binary tree? Draw an example for it?	(3M)
	f)	Explain the Edge and vertex insertion operation on the Graph?	(4M)

PART –B

2.	a)	Explain and Write an algorithm for Merge Sorting?	(8M)
	b)	Sort the elements using Merge Sort: **52, 38, 81, 22, 48, 13, 69, 93, 14, 45, 58, 79, 72**	(8M)
3.		What is Stack? Explain the implementation of stacks using linked lists? Write the pseudo code for PUSH and POP operations on the Stack?	(16M)
4.		Explain and write pseudo code for creation, insertion and deletion operations on circular linked list?	(16M)
5.		What is Binary tree? Differentiate from the trees? Briefly Explain the Array representation of the binary tree? Give an example?	(16M)
6.	a)	Write the algorithm for insertion and deletion of binary search trees?	(8M)
	b)	Write the non recursive algorithm using stack for the Preorder traversal of a binary tree	(8M)
7.		What is Minimum Spanning Tree? Explain Prim's algorithm and trace with an example?	(16M)

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Code No: RT21042 **R13** SET - 4

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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.	a)	Write a recursive algorithm for factorial of a given number?	(3M)
	b)	Write the pseudo code for reversing the List using Stacks?	(4M)
	c)	What are the steps to insert a new item at the Tail of a linked list?	(3M)
	d)	Explain operations on binary trees?	(4M)
	e)	Draw the binary search tree for the following: 40, 67, 71, 33, 91, 56, 22, 32	(4M)
	f)	What is Graph? Define degree of vertex?	(4M)

PART –B

2.	a)	Explain and Write an algorithm for Quick Sorting?	(8M)
	b)	Sort the elements using Quick Sort: **52, 38, 81, 22, 48, 13, 69, 93, 14, 45, 58, 79, 72**	(8M)
3.		What is priority Queue? Explain the implementation of Priority queue? Write an algorithm for operations on Priority queues?	(16M)
4.		What is Double linked list? Describe creation and operations of Double linked list?	(16M)
5.		What is Binary tree? Differentiate from the trees? Explain the Linked list representation of the binary tree? Give an example?	(16M)
6.	a)	Explain the Insertion and deletion operations on the Binary Search Tree?	(8M)
	b)	Explain the properties and applications of binary search trees?	(8M)
7.		Write an algorithm for BFS and DFS? Trace with an example?	(16M)

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