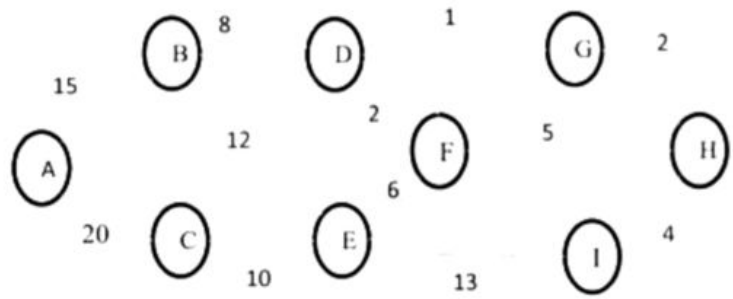
Q. P. Code: 22957

(3 hours) 80 Marks

N.B 1) Question no. 1 is compulsory
2) Attempt any three questions out of remaining questions
3) Assume suitable data if necessary
4) Figure to Right indicates full marks.

Q.1	a) What is ADT? Write ADT for Stack.	3
	b) Explain Asymptotic notations	3
	c) Explain Complete Binary Tree with example	3
	d) Define Minimum spanning tree.	3
	e) Write an algorithm to count the number of nodes in singly linked list.	3
	f) Write properties of Red-Black tree.	3
	g) Define algorithm and state its properties	2
Q.2	a) Write an algorithm for insertion and deletion from doubly linked list.	10
	b) Write a program to implement QUEUE as an array.	10
Q.3	a) Construct Binary Tree from Inorder and postorder traversal given and write an algorithm to traverse a tree in inorder and postorder traversal. Inorder: I N F O R M A T I O N Postorder: I N O F M A I N O T R	10
	b) Write properties of Heap. Also build Max-Heap from given data: 56 , 12, 45, 33, 8, 63, 74, 25, 18, 36	10
Q.4	a) What is Binary Search Tree? Construct BST for following data set : 35, 13, 45, 8, 11, 39, 60, 55, 58, 5, 9, 18	10
	b) Find shortest path from A to H using Dijkjstra's algorithm	10



TURN OVER

Q.5 a) Write an algorithm to implement STACK ADT using linked list. 10

b) Write an algorithm to implement merge sort. Explain it's time complexity. 10

Q.6 Write short note on (**any four**) 20

a) BFS algorithm

b) Selection sort

c) Circular Queue

d) Types of graphs

e) Linear and Non-linear data structures

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