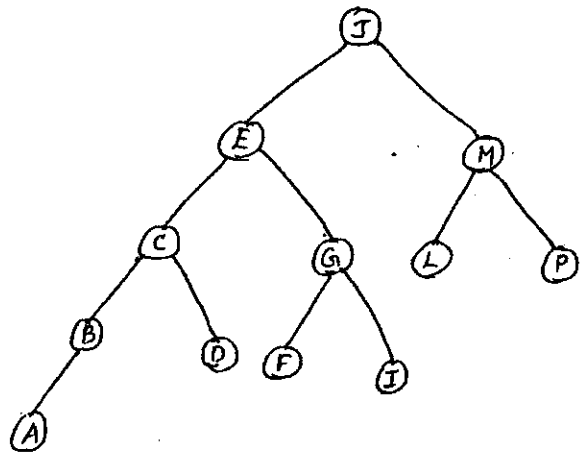
B.Tech Degree IV Semester Examination November 2002

IT/CS 404 DATA STRUCTURES AND ALGORITHMS USING 'C'

(1998 Admissions)

Time: 3 Hours Maximum Marks: 100

I.	(a)	Write short notes on different loops available in C with examples.	(10)
	(b)	Write a program to find the product of two matrices.	(10)
		OR	
II.	(a)	Write short notes on different storage classes available in C. Explain the lifetime, scope and visibility of each with examples.	(10)
	(b)	Write a function to extract a substring from a string if it is present in the string and print the patched up string. Eg. abcde is the string and bc the substring then ade should be the output.	(10)
III.	(a)	Define stacks and explain the different methods of implementation.	(10)
	(b)	Write a C program to evaluate a postfix expression.	(10)
		OR	
IV.	(a)	Write procedures to implement a queue using linked representation.	(10)
	(b)	Write algorithms to perform the following. Create a sorted linked list. Neither the data values are given in sorted order nor should it be sorted before inserting values into the node.(Hint: Insert nodes in the linked list in appropriate positions such that the list remains sorted).	(10)
V.	(a)	Explain the linked representation of a binary tree. Write algorithm to delete a node from a binary search tree.	}(20)
	(b)	Give the inorder, preorder and postorder traversals of the following tree:	}



OR

VI.		Explain the concept of game trees with example.	(20)
VII.	(a)	What is meant by Hashing? Explain the different collision resolution techniques.	(10)
	(b)	Write recursive algorithm for binary search. Calculate the time complexity of the algorithm.	(10)
		OR	
VIII.	(a)	Write an algorithm for radix sort. Explain it using an example.	(10)
	(b)	Write an algorithm to perform insertion sort. Calculate its time complexity.	(10)
IX.	(a)	Define Graphs. Explain the various methods of representation of graphs.	(10)
	(b)	Define spanning tree. Write any one algorithm to find the minimum cost spanning tree.	(10)
		OR	
X.	(a)	What is meant by transitive closure. Explain Warshall's algorithm to find reachability matrix.	(10)
	(b)	Explain with example to find the shortest path between any two vertices of a graph.	(10)

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