



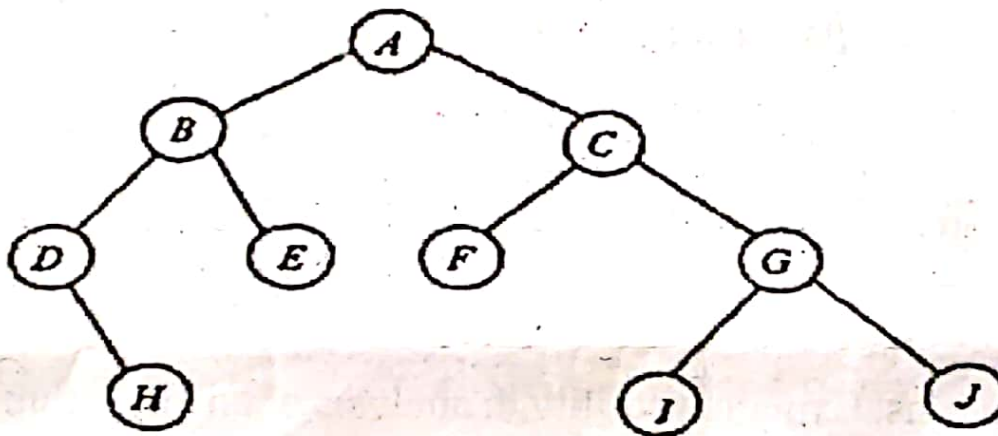


6. Write short notes on any two of the following:

- a) Topological sorting of a directed graph.
- b) Sparse Matrix.
- c) Lexicographic Search Trees.

7. Write a recursive algorithm to solve factorial of a number.

8. Traverse the given tree using inorder, preorder and postorder traversal.



**PART - B**

B. Answer any Four . Each question carries Ten marks.

(4×10=40)

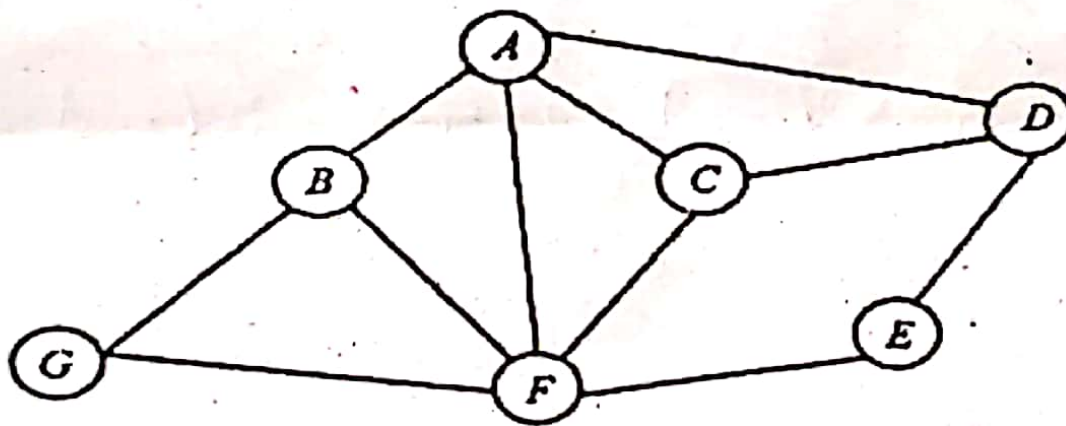
- 9. a) Calculate the number of comparisons required to match the given pattern using Naïve string-matching algorithm.
- b) Analyse how the efficiency is increased by the pre-computed tables in Boyer Moore algorithm with the following example. (5+5)

**Text: GCAATGCCTATGTGACC**

**Pattern: TATG TG**



10. a) Describe the steps to convert infix to postfix expression.
- b) Show the detailed contents of stack to convert the given infix expression  $((A+B)^C)-((D*C)/F)$  to postfix expression. Evaluate it for the given values  $A=6, B=3, C=2, D=4, F=2$ . Priorities are of the order  $C, \wedge, * \& \gamma, + \& -$  (5+5)
11. a) Write an algorithm to insert a NEWNODE at the beginning of a singly linked list and delete a node at the end of a singly linked list.
- b) Differentiate between circular queue and doubly ended queue. Calculate the minimum number of queues required to implement a priority queue. (5+5)
12. a) Show the Binary Search Tree that is obtained after inserting the key 8, 11, 5, 7, 9, 6, 10, 14, 12. Redraw the tree after deleting the Root.
- b) Apply Breadth first Search (BFS) on the following graph. (5+5)



13. a) Illustrate the working of Heap sort algorithm on the following input: 35, 15, 0, 1, 60
- b) Build an AVL tree with the following values: 15, 20, 24, 10, 13, 7, 30, 36, 25, 42, 29. (5+5)
14. a) Show the tracing of the following list of numbers writing a merge sort algorithm. 8, 2, 4, 6, 9, 7, 10, 1, 5, 3.
- b) Explain the Binary Search technique using an algorithm. Search 5 in the list. {1, 2, 4, 5, 9, 18, 21} (5+5)