

- > KEEPING MOBILE PHONE/ELECTRONIC DEVICES EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- > DON'T WRITE ANYTHING ON THE QUESTION PAPER

General Instructions for the entire question paper:

1. Give example wherever it is necessary.
2. Show the steps clearly for all the problems.

Answer any TEN Questions

(10 X 10 = 100 Marks)

1. Create a two-dimensional character array to get multiple names from the user and search whether the specific name present in an array.

2. i) Find the time complexity for the following code snippet. [5]

```
def fib (int n)
{
    if n < 2{
        return n;}
    else
    {
        return(fib(n-1)+fib(n-2));}
}
```

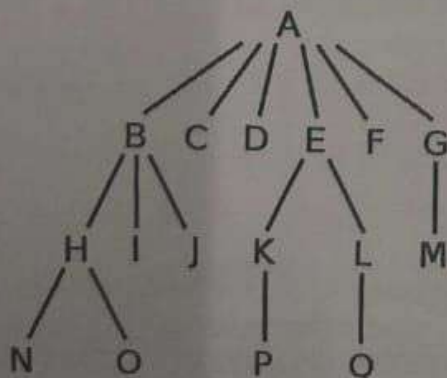
- ii) Find the time complexity for the following code snippet. [5]

```
int i, j, k = 0;
for (i = n / 2; i <= n; i++) {
    for (j = 2; j <= n; j = j * 2) {
        k = k + n / 2;
    }
}
```

3. Design a program for consulting a doctor in a clinic on priority basis. (Get patient Name and assign priority for them. Those who are having higher priority they will avail service first.)

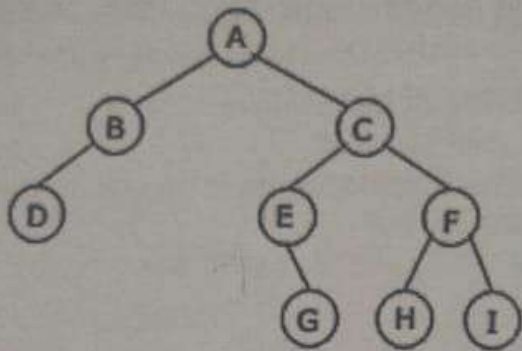
4. Inscribe an algorithm to implement various operations of Doubly Linked List.

5. i) Convert the following tree into Binary tree. [5]

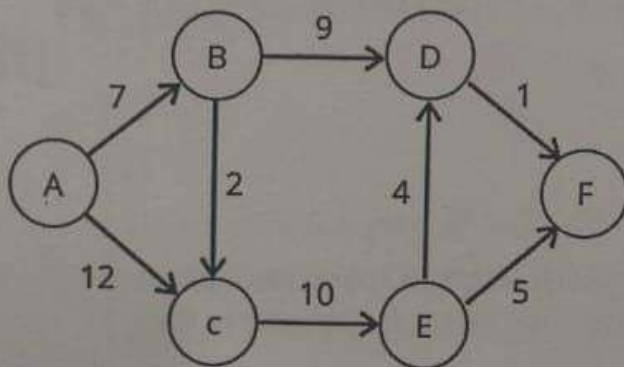


- ii) Inscribe an algorithm to find the K-th element in a Binary Tree. [5]

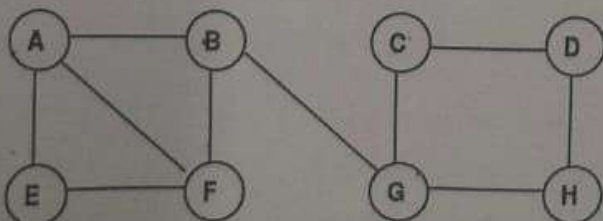
6. Find the in order, preorder, and post order notation of the following binary tree also write the procedure for those notations.



7. What is a heap? Sort the following elements in ascending order using heap sort.
181, 210, 19, 141, 15, 10, 17, 22, 3, 112.
8. Apply the merge sort to sort the list V, I, T, V, E, L, L, O, R, E in an alphabetical order. Write and trace the pseudo code.
9. Write an algorithm for the radix sort. Sort the following elements in ascending order using radix sort and give its complexity.
170, 45, 75, 90, 802, 24, 2, 66
10. State Dijkstra's algorithm. Consider the given graph, Find the shortest path from node-A to all other nodes using Dijkstra's algorithm.



11. What do you mean by depth first search? Write an algorithm for depth first search. Illustrate the algorithm for the following graph.



12. What do you mean by hashing? Hash the following keys in a hash table of size 11. Using modulo method avoid collision using separate chaining.
5611, 6656, 5332, 7785, 4341, 3987, 2874, 4367, 8272, 7793, 3714.

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