



## SECTION-B

11. Take the following list of functions and arrange them in ascending order of growth rate. That is, if function  $g(n)$  immediately follows function  $f(n)$  in your list, then it should be the case that  $f(n)$  is  $O(g(n))$ .  
 $f_1(n) = n^{2.5}$ ,  $f_2(n) = \sqrt{2}n$ ,  $f_3(n) = n + 10$ ,  $f_4(n) = 10^n$ ,  $f_5(n) = 100^n$ , and  $f_6(n) = n^2 \log n$
12. Sort the list 415, 213, 700, 515, 712, 715 using Merge sort algorithm. Also explain the time complexity of merge sort algorithm.
13. Explain breadth first search algorithm with an example.
14. Write a short note on approximation algorithms.
15. Explain the classes of P and NP.

## SECTION-C

16. Explain Strassen's algorithm for matrix multiplication with the help of an example.
17. Write a short note for the following :
  - a. Divide and conquer technique
  - b. Greedy algorithm
18. a. Why do we perform topological sorts only on DAGs? Explain.  
 b. Using Dijkstra's algorithm find the shortest path from A to D for the following graph.

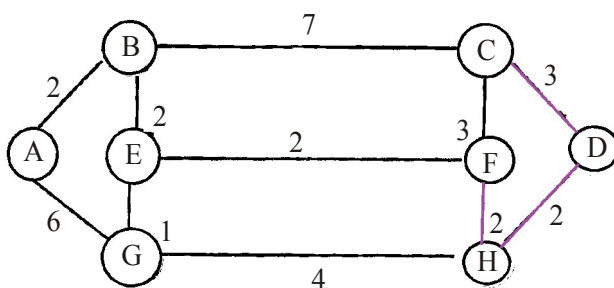


Fig.1

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