[Time : 3 hours]   **[Marks : 80]**

N.B.

1. Attempt any Four from the following questions.

2. Assume suitable data if necessary.

3. Figures to right indicate full marks.

Q.1 A) Explain in detail with example maximum bipartite matching using Ford-
Fulkerson method.   10

   B) Explain Graham's Algorithm to find convex hull.   10

Q.2 A) Explain in detail the Dijkstra's Algorithm with suitable example.   10

   B) Explain all cases of Master method to solve recurrences.   10

Q.3 A) Explain Johnson's all pair shortest path algorithm with suitable example.   10

   B) Explain insertion and deletion in red-black with example.   10

Q.4 A) If f (n) denotes the number of moves in tower of Hanoi puzzle when n

      disks are involved, give a recurrence relation for f (n) and solve the

      recurrence relation.   10

   B) Explain push relabel Algorithm with suitable example.   10

Q. 5 A) What is Binary Heap, Binomial tree and Binomial Heap? List the properties
of Binomial Heap.   10

   B) Explain line segment properties.   10

Q. 6 A) Compare dynamic programming and divide and conquer approach.

      Suggest the solution using both approaches for generating Fibonacci series.   10

   B) Explain Bellman - Ford Algorithm with suitable example.   10

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