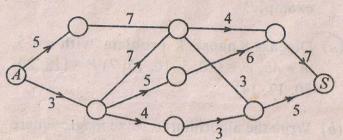
(4) (4) marelland published

(b) Find the shortest path from  $A_{S}$ 



- 8. (a) Discuss NP hard and NP complete problem with suitable examples.
  - (b) Discuss Graph coloring problem.

Full Marks: 70

Time: 3 hours

Answer Q. No. 1 which is compulsory and any five questions from the rest

The figures in the right-hand margin indicate marks

1. Answer all questions:

 $2 \times 10$ 

- $F(n) = n^2 \log n + n^3$ , then find O(F(n))
- $F(n) = n^2$ ,  $g(n) = n^3$  then find O(fg(n))
- $T(n) = 4T(n/2) + n^2$  then O(T(n)) is \_
- $T(n) = 8T(n/2) + n^2$  then O(T(n)) is \_
- What do you mean by time complexity and space complexity?



(vi) Arrange the terms  $n^3$ ,  $\log n^3$ ,  $5n^2$ ,  $2^n$  in asymptotic order.

(vii) Construct a max heap tree with {A, L, G, O, R, I, T, H, M}

(viii) If A is an algorithm of  $O(n^2)$ , n = 100000, computer C is of speed 3.0 GHz find execution time of A in C. 36Hz/sec.

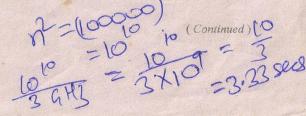
Draw optimal tree with the weights 3, 5, 9, 2, 4, 10.

- (x) What is NP hard problem.
- 2. (a) If  $T(n) = 4T(\sqrt{n}/2) + (\log n)^2$  then find O(T(n))

(b) Write the recursive algorithm to find max and min of n given numbers and discuss its time complexity.

3. (a) Discuss Graham's algorithm to find convex hull of a given set.

MCA-4/ADA (Set-1)



	(3)		problem	3
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(b)	What is TVSF	?	Discuss	with	a	suitable
	example.					

4. (a) Discuss Knapsack problem with n = 5, m = 45, w = (20, 5, 10, 15, 7) P = (18, 20, 30, 17, 14)

- (b) Write the algorithm to solve magic square problem and test it with n = 5
- 5. (a) Discuss Prim's algorithm to find spanning tree of a given graph with a suitable example.
  - (b) X = aabaababaa Y = babaabab find a minimum edit sequence that transfer X into Y.
- 6. (a) Discuss 8 queens problem.
  - (b) Write the algorithm to find Hamiltonian circle of a graph.
- .7. (a) Discuss dynamic programming with a suitable example.

MCA-4/ADA (Set-1)

(Turn Over)