

Model Questions
Department of Computer Engineering
Govt. Mahila Engineering College, Ajmer
Sub.: Design and Analysis of Algorithms
B. Tech. VI Semester Computer Engineering

Q 1: Solve the following recurrence relation

- (a) $T(n) = 2T(n/2) + 7n$, if $n > 1$. Assume $T(n)=4$ if $n=1$.
- (b) $T(n) = 2T(n-1) + 5n$, if $n > 1$. Assume $T(n)=2$ if $n=1$.

Q 2: Explain quick sort algorithm with example. How the worst case time complexity can be improved? Justify your answer.

Q 3: Prove that the time complexity of strassen's matrix multiplication is $O(n^{\log_2 7})$

Q 4: Calculate Longest Common Subsequence for the sequences $X = 'ababa'$ and $Y='abbaa'$ also explain the algorithm.

Q 5: What is Matrix Chain Multiplication problem? Create a C program to that optimally parenthesise a given Chain of Matrices.

Q 6: Explain 0/1 Knapsack problem. Find optimal solution if weight set is $\langle 3, 4, 2, 5 \rangle$ and profit sets is $\langle 12, 8, 6, 15 \rangle$. The maximum knapsack capacity is 9.

Solution: As discussed, explained and dictated in the classes.

Books: Introduction to Algorithms by Thomas H. Cormen (Available in Library)