

Code No: NR-35-MCA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

MCA-III Semester Regular Examinations, February 2010

DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3hours

Max.Marks:60

Answer any Five questions

All questions carry equal marks

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- 1.a) Define big-oh notation. Explain the terms involved in the definition.
b) Explain how omega notation and theta notations are different from O-notation.
c) Find the time complexity using O-notation for set union algorithm.
- 2.a) State the control abstraction of divide and conquer design approach.
b) What are the steps involved in quick sort algorithm. Establish that the quick sort algorithm follows divide and conquer design approach.
3. Explain how the problem of optimal storage on tapes follows greedy method. Give the algorithm steps of optimal storage on tapes.
- 4.a) Explain how the traveling sales person problem can be put in the dynamic programming frame work
b) Explain how the traveling sales person problem can be put in the branch and bound design frame work.
5. What are the steps involved in flow shop scheduling. What is the time saving by divide and conquer design approach when compared with brute-force (conventional) approach for a given case study.
- 6.a) Give a brief note about alpha pruning and beta pruning. Give an example for each
b) What is meant bi-connected component. Explain the procedure to get the bi connected components.
- 7.a) What is the control abstraction for back tracking.
b) Explain the algorithm steps in solving n-queen problem
- 8.a) What are the characteristics of NP-Hard and NP-complete classes of problems. Give one example for each.
b) Give a brief note about LC branch and bound.
