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JAYA GROUP OF INSTITUTIONS - THIRUNINRAVUR

4th SEM – B.E. / B.Tech.

INTERNAL ASSESSMENT –III (MODEL EXAMINATION –III)

Sub. Name : Design & Analysis of algorithm

Date : 7.04.2015

Sub. Code : CS6402

Branch : IT

Duration : 180 minutes

Max. Marks : 100

PART – A ($10 * 2 = 20$) Answer all questions

1. What is an Algorithm?
2. Define best, worst & average case efficiency of an algorithm.
3. Define Exhaustive search.
4. What is Hamiltonian circuit.
5. What is the principle difference between divide & Conquer & Dynamic programming.
6. Differentiate prim's & kruskal's algorithm.
7. Define feasible & optimal solution.
8. Define Bipartite graph.
9. Define P & NP problem.
10. Define Branch & Bound problem.

PART – B ($5 * 16 = 80$) Answer all the Questions as per the Choice

11(a) Write the asymptotic notations used for best case, average case and worst case analysis of algorithms and Write an algorithm for finding maximum element of an array perform best, worst and average case complexity with appropriate order notations

(16)

(Or)

11.(b) Explain Non- recursive algorithm with suitable examples

(16)

12.(a) Explain the following in detail

(i) Closest pair problem

(ii) Convex Hull problem

(16)

(Or)

12 .(b) Find the feasible solutions for assignment problem given below

(16)

	JOB 1	JOB 2	JOB 3	JOB 4
PERSON 1	4	3	8	6
PERSON 2	5	7	2	4
PERSON 3	16	9	3	1
PERSON 4	2	5	3	7

13. (a) (i) Describe Warshall's algorithm with example & analyze its efficiency.

(8)

(ii) Describe Knapsack & Memory Function with suitable example

(8)

(Or)

13 (b) Explain Dijkstra's algorithm in detail & analyze its efficiency.

(16)

14. (a) Trace the simplex method on the following problem.

(16)

Maximize $P = 2x - 3y + 4z$

Subject to $4x - 3y + z \leq 3$

$x + y + z \leq 10$

$2x + y - z \leq 10$ where x, y, z are non-negative integers.

(Or)

14.(b)(i) Write the algorithm for maximum matching in Bipartite graph & prove the theorem with example.

(8)

(ii) Explain stable marriage problem with suitable example.

(8)

15. (a)(i) Describe in detail about P & NP problem

(8)

(ii) Describe NP completeness problem.

(8)

(Or)

15.(b) Solve the following instance of Knapsack problem by branch & Bound algorithm.

$W = 15$

(16)

ITEM	WEIGHT	PROFIT
1	5	40
2	7	35
3	2	18
4	4	4
5	5	10
6	1	2