Total No. of Questions : 8]

SEAT No. :

P2326

[Total No. of Pages : 2

[5870]-1144
T.E. (Information Technology)
DESIGN & ANALYSIS OF ALGORITHMS
(2019 Pattern) (Semester - I) (314445A) (Elective - I)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Consider 0/1 knapsack problem N = 3:W=(4,6,8) and P=(10, 12, 15).by using dynamic programming determine the optimal profit for knapsack capacity 10? **[9]**

b) Explain coin change Making problem in detail? **[9]**

OR

Q2) a) Explain how dynamic programming is used to obtain optimal solution for travelling salesperson problem. also explain why this technique is not used to solve TSP for large number of cities? **[9]**

b) What is dynamic programming? Is this the optimization technique? Give reasons what are its drawbacks? **[9]**

Q3) a) Find all possible solutions for 5 queens problem using backtracking. **[9]**

b) Current configuration is (7,5,3,l) for 8 queens problem. Find the answer tuplc using backtracking method. **[8]**

OR

Q4) a) State the principle of backtracking. Explain the constraints used in backtracking with an example. **[9]**

b) What is m colorability optimization problem. Explain with an example. **[8]**

Q5) a) Differentiate between backtracking & branch and bound. Illustrate with example of Knapsack problem. **[9]**

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b) Solve following Job sequencing with deadline problem using Branch and Bound. **[9]**

Job	P	d	t
1	5	1	1
2	10	3	2
3	6	2	1
4	3	1	1

OR

Q6) a) Solve the following instance of the knapsack problem by branch and bound algorithm for W=16. **[9]**

Item	Weight	Value in Rs.
1	10	100
2	7	63
3	8	56
4	4	12

b) Describe the following with respect to B & B **[9]**

- The method
- LC search
- Control abstraction for LC search
- Bounding function

Q7) a) When do you claim that algorithm is polynomial time algorithm? Explain with an example. **[9]**

b) Explain i) Complexity Classes ii) Deterministic Algorithms. **[8]**

OR

Q8) a) Explain Vertex cover problem is in detail. **[9]**

b) What is deterministic algorithm? Write any one deterministic algorithm. **[8]**

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