I E S COLLEGE OF ENGINEERING 2017 BATCH

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Sixth Semester B. Tech Degree Sessional II April 2020

CS 302 DESIGN AND ANALYSIS OF ALGORITHMS

Time: - 2 Hour **Maximum Marks: 50**

PART A(Answer all questions)

<table>
<tr><th>Q.No</th><th>Questions</th><th>Marks</th><th>CO</th><th>BTL</th></tr>
<tr><td>1</td><td>Multiply the matrix using Strasssens Matrix Multiplication.
A= $\begin{pmatrix} 1 & 2 \\ 0 & 2 \end{pmatrix}$ B = $\begin{pmatrix} 0 & 1 \\ 3 & 2 \end{pmatrix}$</td><td>5</td><td>CO4</td><td>2</td></tr>
<tr><td>2</td><td>Consider the following matrix and its dimensions.
<table><tr><td>Matrix</td><td>Dimensions</td></tr><tr><td>A1</td><td>30 * 35</td></tr><tr><td>A2</td><td>35 * 15</td></tr><tr><td>A3</td><td>15 * 5</td></tr><tr><td>A4</td><td>5 * 10</td></tr><tr><td>A5</td><td>10 * 20</td></tr><tr><td>A6</td><td>20 * 25</td></tr></table>Find the optimal cost of m[2,5].</td><td>5</td><td>CO4</td><td>3</td></tr>
<tr><td>3</td><td>Analyze the Bellman – Ford Algorithm.</td><td>5</td><td>CO4</td><td>2</td></tr>
<tr><td>4</td><td>Compare and contrast Divide and Conquer algorithm with Dynamic Programming.</td><td>5</td><td>CO5</td><td>2</td></tr>
<tr><td>5</td><td>Find the optimal solution to the knapsack.
Capacity W=20.
<table><tr><td>I</td><td>W_i</td><td>P_i</td></tr><tr><td>1</td><td>18</td><td>30</td></tr><tr><td>2</td><td>15</td><td>21</td></tr><tr><td>3</td><td>10</td><td>18</td></tr></table></td><td>5</td><td>CO5</td><td>2</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
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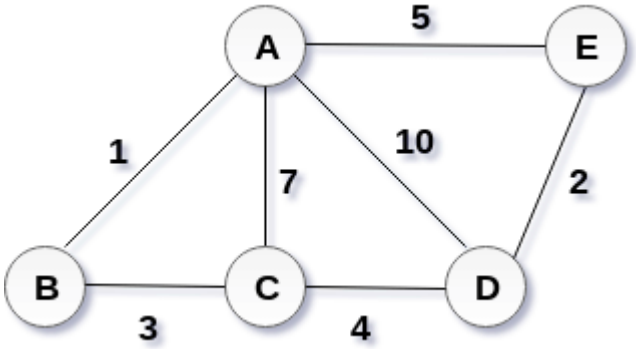
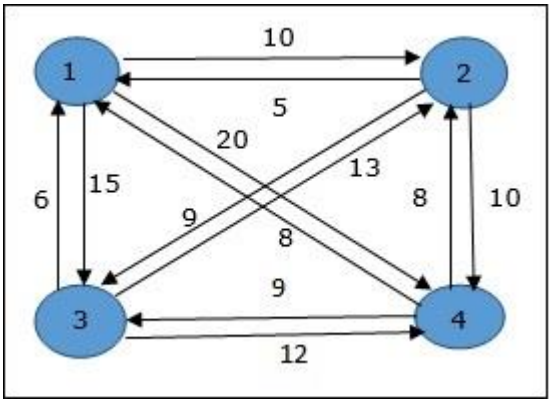
6	Consider the given graph. Construct the minimum spanning tree for the below graph using Kruskal's algorithm. Also write Kruskal's algorithm. Analyze its complexity.  	**5**	**CO5**	**3**
7	State and Explain N Queen Problem. Write the backtracking algorithm for solving N-Queen problem.	**5**	**CO6**	**3**
8	Solve the TSP.  	**5**	**CO6**	**3**
9	State the steps used to show a given problem is NP complete. Write notes on polynomial time reducibility. Give examples.	**5**	**CO6**	**2**
10	Prove that HAM-CYCLE is NP Complete.	**5**	**CO6**	**3**

All the Best