

CRM08	Rev 1.10	CSE	28/07/22
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CONTINUOUS INTERNAL EVALUATION- 2

Dept: CSE	Sem / Div: 4 th (A&B)	Sub: Design and Analysis of Algorithms	S Code: 18CS42
Date: 3/8/2022	Time: 3- 4.30 PM	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

Q N	Questions	Marks	RBT	COs
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PART A

1 a	Illustrate the topological sorting for the following graph. (Apply DFS method to achieve topological sorting)	9	L1	CO2
b	Obtain the optimal solution for the job sequencing problem with deadline where n = 6 (P1, P2, P3, P4, P5, P6) = (200, 180, 190, 300, 120, 100) (d1, d2, d3, d4, d5, d6) = (5, 3, 3, 2, 4, 2)	8	L1	CO3
c	Apply greedy method to obtain an optimal solution to the knapsack problem given M = 60, (w1, w2, w3, w4, w5) = (5, 10, 20, 30, 40) (p1, p2, p3, p4, p5) = (30, 20, 100, 90, 160). Find the total profit earned.	8	L2	CO3

OR

2 a	Perform Matrix Multiplication using Strassen's Method $A = \begin{pmatrix} 1 & 3 \\ 7 & 5 \end{pmatrix}$ $B = \begin{pmatrix} 6 & 7 \\ 3 & 4 \end{pmatrix}$	9	L2	CO2												
b	Define MST. Write Prim's algorithm to construct minimum cost spanning tree and trace it for the following graph	8	L2	CO3												
c	Construct a Huffman code for the following data:	8	L3	CO3												
<table border="1" style="width: 100%;"> <tr> <td>symbol</td> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>-</td> </tr> <tr> <td>frequency</td> <td>0.4</td> <td>0.1</td> <td>0.2</td> <td>0.15</td> <td>0.15</td> </tr> </table>					symbol	A	B	C	D	-	frequency	0.4	0.1	0.2	0.15	0.15
symbol	A	B	C	D	-											
frequency	0.4	0.1	0.2	0.15	0.15											
Encode ABACABAD using the code. Decode 100010111001010																

PART B

CONTINUOUS INTERNAL EVALUATION- 2

3	<p>a) Write Kruskals algorithm to construct minimum cost spanning tree. Apply Kruskals algorithm for the following graph.</p>	9	L1	CO3
b	<p>Define transitive closure. Write Warshall's algorithm to compute transitive closure. Find its efficiency</p>	8	L2	CO4
c	<p>Apply Dijkstra's algorithm to find single source shortest path for the graph given below. Consider Node 5 as source</p>	8	L2	CO3
<p>OR</p>				
4	<p>a) Define coin change problem. If coins available are of values { 2, 5, 3, 6 }, find the least denominations for a) 55 b) 77</p>	9	L1	CO3
b	<p>Find the shortest path from S to T in the following multistage graph using dynamic programming. Use forward approach</p>	8	L2	CO4
c	<p>Sort the array 1, 9, 7, 6, 4, 8 by heapsort</p>	8	L2	CO3