

End Semester Examination

May-June 2023

COS5007B - Algorithm Design Strategies

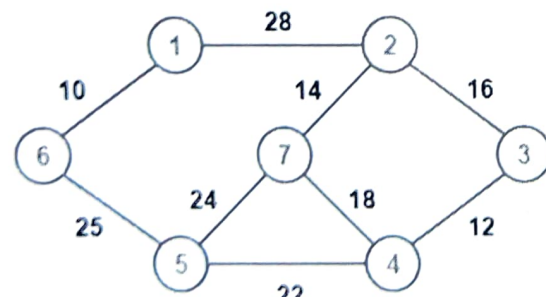
Schedule ID: 13183

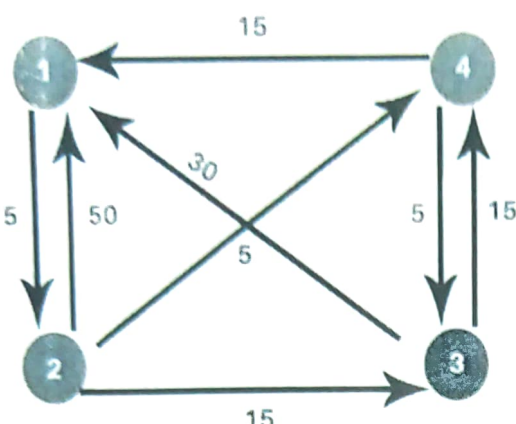
Faculty/School	Faculty of Science	Term	Semester II
Program	FYM.Sc- CS	Duration	1 Hours 30 Minutes
Specialization	--	Max. Marks	40

Read the instructions provided for every question properly before attempting the answer.

Section 1 - [7 Questions, 8 Marks] (5 X 8 Marks)

Answer any 5 questions

1	Explain the following Non-comparison-based Sort with one example of each 1. Counting Sort 2. Radix Sort	8 marks	CO2,CO3	Understanding																
2	A file contains the following characters with the frequencies as shown. <table><tr><td>Characters</td><td>a</td><td>e</td><td>i</td><td>o</td><td>u</td><td>s</td><td>t</td></tr><tr><td>Frequencies</td><td>10</td><td>15</td><td>12</td><td>3</td><td>4</td><td>13</td><td>1</td></tr></table>	Characters	a	e	i	o	u	s	t	Frequencies	10	15	12	3	4	13	1	8 marks	CO3	Analysing
Characters	a	e	i	o	u	s	t													
Frequencies	10	15	12	3	4	13	1													
3	Draw MST for the following graph using Prim's and Kruskal's Algorithm 	8 marks	CO3	Analysing																

4	<p>Solve the following graph by using Floyd Warshall Algorithm</p> 	8 marks	CO3	Applying																		
5	<p>Explain the Concept of Graph coloring with one Example.</p>	8 marks	CO2	Applying																		
6	<p>Explain the Greedy Method and solve the following problem using the Fractional Knapsack where the capacity of the bag is 60 ($C=60$)</p> <table border="1" data-bbox="166 1016 716 1289"><thead><tr><th>Item</th><th>Weight</th><th>Value</th></tr></thead><tbody><tr><td>1</td><td>5</td><td>30</td></tr><tr><td>2</td><td>10</td><td>40</td></tr><tr><td>3</td><td>15</td><td>45</td></tr><tr><td>4</td><td>22</td><td>77</td></tr><tr><td>5</td><td>25</td><td>90</td></tr></tbody></table>	Item	Weight	Value	1	5	30	2	10	40	3	15	45	4	22	77	5	25	90	8 marks	CO3	Analysing
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1	5	30																				
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5	25	90																				
7	<p>State and explain the algorithm for N-Queens Problem and solve the problem when $N=4$.</p>	8 marks	CO2	Evaluating																		

END OF QUESTION PAPER