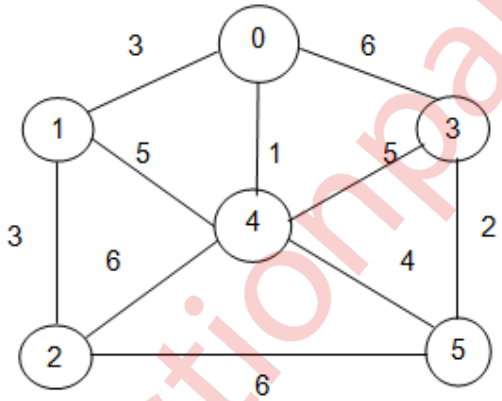
Time: 3 Hours **Max Marks: 80**

N.B. 1) Question No.1 is compulsory
2) Solve any three questions from the remaining questions.
3) Assume suitable data if necessary.

1		**Solve any four of the following**	
	(a)	Write and explain merge sort algorithm?	5
	(b)	Write algorithms for greedy knapsack problem with an example?	5
	(c)	Explain Big Oh and Big Theta?	5
	(d)	Explain Ford Fulkerson method?	5
	(e)	Explain multistage graph with example?	5
2	(a)	Write and explain sum of subset algorithm for N=5, W={2,7,8,9,15},M=17 ?	10
	(b)	Sort the following numbers using quicksort 50,31,41,38,77,81,16,34 ?	10
3	(a)	Explain 15 puzzle problem using suitable algorithm?	10
	(b)	Find MST of following graph using prim's algorithm?	10



4	(a)	Describe the relationship among P, NP, NP-HARD,NP-COMPLETE?	10
	(b)	Write an algorithm to find the minimum and maximum value using divide and conquer and also derive its complexity?	10
5	(a)	Write an algorithm to solve N queens problem for N=4?	10
	(b)	Explain Dijkstra's single source shortest path algorithm with an example?	10
6		**Write short notes on any two?**	20

a) Longest Common Subsequence
b) Recursion Tree Method
c) Matrix muliplication

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