



Mid Semester Examination

March 2018

Max. Marks: 30

Class: S.E.

Course Code: IT41/CE41

Branch: Information Technology/Computer Engineering

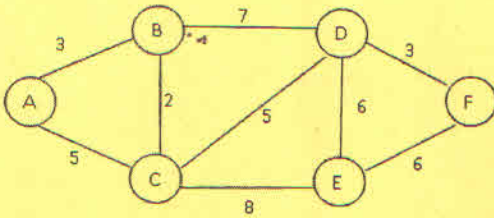
Name of the Course: DESIGN AND ANALYSIS OF ALGORITHM

Duration: 90 Min

Semester: IV

Instruction:

- (1) All questions are compulsory
- (2) Draw neat diagrams
- (3) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1	Write an Insertion Sort algorithm and analyze the Best Case and Worst Case time complexity.	04	CO1
Q.2	Determine the time complexity of following recursive function, using Recursion tree method. $T(n) = 4 T(n/2) + n^2$	03	CO1
Q.3	Derive the best and worst case time complexity of Quick Sort algorithm and Sort the following elements using Quick Sort Algorithm. Show the steps of each passes. 85, 36, 87, 10, 91, 18, 15, 52	06	CO2
	<p style="text-align: center;">OR</p> Derive the best and worst case time complexity of Merge Sort algorithm and Sort the following elements using Merge Sort Algorithm. Show the steps of Dividing and Merging the elements. 85, 36, 87, 10, 91, 18, 15, 52	06	CO2
Q.4	Make use of greedy approach to find the shortest distance from node A to F where node A is a source node 	05	CO4
Q.5	Find LCS of the following two strings: X="ABCDBCA" Y="ABBCCDB"	04	CO3

Q.6	<p>A Knapsack Capacity is 5. Solve the knapsack problem using Dynamic Programming approach and find the maximum profit that can be obtained. The weights and values of five objects are as follows:</p> <table border="1"><tr><td>Weight:</td><td>3</td><td>2</td><td>4</td><td>1</td></tr><tr><td>Value:</td><td>100</td><td>20</td><td>66</td><td>40</td></tr></table>	Weight:	3	2	4	1	Value:	100	20	66	40	04	CO3
Weight:	3	2	4	1									
Value:	100	20	66	40									
Q.7	<p>For the following graph find minimum spanning tree using Kruskal's Algorithm:</p> <p style="text-align: center;">OR</p> <p>Devise the Huffman code for the following set of frequencies based on the first 8 fibonacci numbers a=1 b=1 c=2 d=3 e=5 f=8 g=13 h=21</p>	04	CO4										