GOVT. COLLEGE OF ENGINEERING, AMRAVATI
Department of Computer Science and Engineering
CLASS TEST-II (Summer 2018) B. Tech. Third Year

Course: Design and Analysis of Algorithms Code: ITU601 Time: 1 hrs. Marks: 15 Date: 05/03/2018

Solve any Three

Q1. Use a recursion tree to determine a good asymptotic upper bound on the recurrence $T(n)=4T(n/2+2)+n$. Use the substitution method to verify your answer

Q2. Determine an upper bound on the following recurrence using substitution method.

$$T(n) = 2T(\lfloor n/2 \rfloor) + n$$

Q3. Use the master method to give tight asymptotic bounds for the following recurrences:

a. $T(n) = 2T(n/4) + 1.$

b. $T(n) = 2T(n/4) + \sqrt{n}.$

c. $T(n) = 2T(n/4) + n.$

d. $T(n) = 2T(n/4) + n^2.$

e. $T(n) = T(n/2) + \Theta(1)$

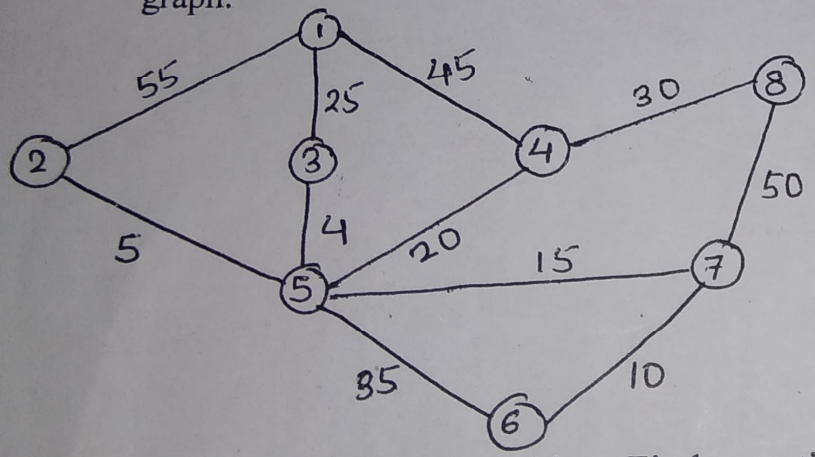
Q4. State and explain substitution method, recursion tree method, homogeneous method, non homogeneous method and master theorem for solving recurrence.

Government College of Engineering, Amravati
Department of Computer Science and Engineering
Class Test-II (S-19)

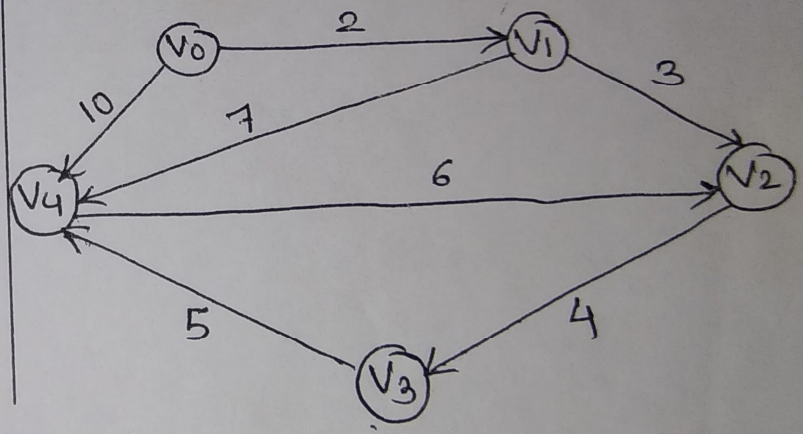
Sub: ITU 601 DAA **Marks: 15** **Time: 1 hour**

Solve Any Three

Q.1 Write the Kruskal's algorithm to generate minimum spanning tree. Simulate the algorithm for the given graph.



Q.2 Explain Dijkstra's algorithm and find the shortest paths from a single source to the other nodes of the graph



Q.3 Explain the Knapsack problem. Find an optimal solution to the instance n=3, W=15, p={25,24,15} and w={18,15,10}.

Q.4 Explain job sequencing with deadlines for the following scheduling problem when n=6.

i	1	2	3	4	5	6
Pi	20	15	10	7	5	3
di	3	1	1	3	1	3

V/w
w/v