

SSN COLLEGE OF ENGINEERING, KALAVAKKAM – 603 110
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

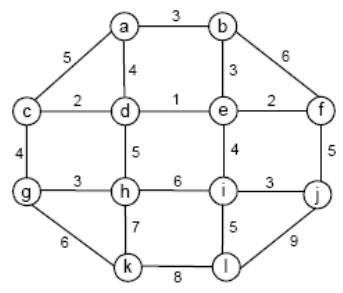
B.E. Computer Science and Engineering
CS6402 Design and Analysis of Algorithms

Date: 22.03.2017, 1.50-3.20 PM **UNIT TEST – 3 [Retest]** **Max. Marks: 50**
Academic Year: 2016-2017 Even **Batch: 2015-2019**
Semester: 4 **Faculty: Dr. R. S. Milton / Mr. V. Balasubramanian**

Qn. No	Part – A (5 * 2 = 10)	Marks	(KL,COn)
1	Maximize $3a + 2b + c$ Subject to, $2a+b+c \leq 3$, $a+b+c \leq 4$, $3a+3b+6c \leq 6$, $a,b,c \geq 0$.	2	K5,CO5
2	Define Network flow and cut.	2	K1,CO1
3	Using backtracking technique, solve the following instance of the subset sum problem on $S = \{1,3,4,5\}$ and $d = 11$.	2	K4,CO4
4	What is MST? Give an example.	2	K2,CO2
5	What is the advantage of set representation in Kruskal's algorithm?	2	K4,CO3

Part – B Answer any four questions (4 * 10 = 40)

6	A glass blower can form 8 simple vases or 2 elaborate vases in an hour. In a work shift of no more than 8 hours, the worker must form at least 40 vases. The glass blower makes a profit of Rs. 30 per hour worked on the simple vases and Rs.35 per hour worked on elaborate vases. How many hours should the worker spend on each type of vase to maximise profit.	10	K4,CO4
7	Discuss the design steps in Prim's algorithm to construct MST.	10	K4,CO3



8	Explain 8 queens problem with an algorithm.	10	K4,CO3
9	Maximise $z = 4x_1 + 6x_2$, constraints are $-x_1 + x_2 \leq 11$ $x_1 + x_2 \leq 27$ $2x_1 + 5x_2 \leq 90$	10	K5,CO5
10	A potter is making cups and plates. It takes her 6 minutes to make a		K5,CO5

cup and 3 minutes to make a plate. Each cup uses $\frac{3}{4}$ gms of clay and each plate uses 1 gm of clay. She has 20 hours available for making the cups and plates and has 250 gms of clay in hand. She makes a profit of Rs.2 on each cup and Rs. 1.5 on each plate. How many cups and plates should she make in order to maximize profit.

- 11 Construct a Huffman tree for the following data and obtain its Huffman code. K3,CO3

Character	A	B	C	D	E
Probability	0.1	0.1	0.2	0.2	0.4

and encode the text DADBE

- 12 Using Optimal Binary Search Tree (OBST) algorithm compute w_i , r_{ij} , c_{ij} . For three nodes $A < B < C$ with probability $A(0.3)$, $B(0.3)$, $C(0.4)$. K4,CO4

*****BEST OF LUCK*****

Prepared by	

Reviewed by HoD, CSE

