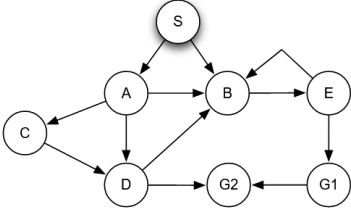


Course Code:		CST261		
Third Semester BE (Electronics Engineering) Examination				
Data Structure and Algorithms				
Time: 2 Hours]			[Max. Marks: 40	
Instructions to Candidates:				
1. All questions are compulsory.				
2. Stepwise explanation will be appreciated				
Question		Description of Question	Marks	CO
1	(a)	Find the worst case complexity for the code given below void compute(int n, int check){ in count=0; if(check) { for(int i=0;i<n;i++) for (int j = n ;j>n-i; j--) for(int k= 1 ;k<j;k=k*2) count++; } } else { for(int i=n;i>0;i--) for(int k=1; k<n;k=k*2) count++; } } Show the steps how the complexity is calculated.	3	CO1
	(b)	Sort the following number by Quick sort algorithm. Consider the last element as pivot element. 14,16,7,2,5,9,10,4,20,80,60,50 If the elements are the given in reverse order what will be the complexity of quick sort. Explain with an example	5	CO2, CO4
2	(a)	Convert the following expression to prefix expression using stack A+B-(C*D/F+G^(H/L*M-K))	4	CO3
	(b)	Consider 3 Queues are placed in one array. Design a C program for deletion and insertion of elements. Ensure all the queues have proper overflow and underflow conditions	4	CO3
3	(a)	Consider a double linked list is already created. Write C function for the following: (a) Find the number of occurrences of a given key (b) Delete the last occurrence of the key	8	CO3

		(c) Print the contents of double linked list in reverse order (d) Create a header node, which will be the first node of double linked list. The header node will store number of nodes in double linked list.		
4	(a)	Construct an AVL tree for the following keys 34,30,32,15,13,20,31,25,28	4	CO5
	(b)	Write a C program to construct a binary search tree. Create a function to find the inorder successor of a given node.	4	CO5
5	(a)	For the graph given below depict the DFS and BFS traversal with starting node as S. Select the edge/vertex in alphabetical order:  Write a C function for BFS traversal.	5	CO5
	(b)	Define the following terms 1) Strongly connected graph 2) Cyclic graph 3) Degree of a node in directed graph	3	CO5