cs 3 sem data structures dec 2015

QP Code : 5162

(3 Hours) [Max Marks 80

N.B.

(1) Question no. 1 is compulsory.
(2) Attempt any 3 from the remaining questions.
(3) Assume suitable data if necessary.
(4) Figures to right indicate full marks.

Q1(a)	Write a function to implement an HUFFMAN coding given a symbol and its frequency occurrence.	10
Q1(b)	Write a function to count the leaf nodes in Binary tree and Branch nodes in Binary tree.	10
Q2(a)	Explain Linked list as an ADT. Write a function for deletion of a node from Doubly linked list?	10
Q2(b)	What do you mean by Sparse matrix ? How one can implement sparse matrix using Linked list ? Support your answer with an example	10
Q3(a)	Explain STACK as ADT ? Write a function in C to convert prefix expression to postfix expression.	10
Q3(b)	Write a function in C to maintain 2 stacks in a single array.	10
Q4(a)	Explain Queue as ADT ? write a function in C to insert , delete and display elements in Circular Queue.	10
Q4(b)	Explain the concept of threaded binary search tree ? Show the declaration of a node in threaded binary search tree? Write a function for inorder traversal of threaded binary search tree.	10
Q5(a)	What are different methods for traversing the graph ? Explain DFS in detail with an example. Write a function for DFS.	10
Q5(b)	Write a function for creating a tree if IN-ORDER traversal and POST-OREDER traversal of a tree is given.	10
Q6(a)	Write an algorithm for Shell sort. Sort the following numbers in ascending order 23 , 12 , 45 ,54 ,76 , 67 ,88, 97 , 54 using shell sort. Show output after each pass.	10
Q6(b)	Explain Index sequential Search with an example.	10