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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
SUMMER SEMESTER EXAMINATION- 2018
B.Tech II Semester

COURSE CODE: 10B11CI211 MAX. MARKS: 50
COURSE NAME: Data Structures
COURSE CREDITS: 4 MAX. TIME: 2Hr

Note: *All questions are compulsory.*

Q1)

(a) Write a function that will add two polynomials with the help of linked list. [5]

(b) Given a singly linked list. Write a function to find the kth node from end of the linked list in single pass. Check whether linked list is even or odd? [5]

Q2)

(a) Write a C code to translate the infix mathematical expressions into the equivalent postfix expression. [5]

(b) Explain how to implement two stacks in one array A[1… n] in such a way that neither stack overflows unless the total number of elements in both stacks together is n. The PUSH and POP operations should run in O(1) time. [5]

Q3)

(a) Write the methods to implement queues in a linear array with two indices front and rear, such that, when rear reaches the end of the array, all the entries are moved to the front of the array. [5]

(b) Give an algorithm for reversing a Queue. [5]

Q4)

(a) Construct a binary tree from the traversal order given below:

PREORDER = A B D E F C G H L J K
INORDER = D B F E A G C L J H K [5]

(b) Differentiate Binary Tree and Binary Search Tree (BST). Give an algorithm for searching an element in binary tree without recursion. [5]

Q5)

(a) Write a nonrecursive function **int** gcd(**int** x, **int** y), where x and y are required to be positive integers, that searches through the positive integers until it finds the largest integer dividing both x and y. [5]

(b) Write a C function to print the middle of a given doubly linked list. [5]