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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKEUP EXAMINATION- 2016

B.Tech. II Semester

COURSE CODE: 10B11CI211 MAX. MARKS: 25

COURSE NAME: Data Structures

COURSE CREDITS: 4 MAX. TIME: 1Hr 30 Min

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1. Why do we use a symptotic notation in the study of algorithm? Describe commonly used asymptotic notations and give their significance. [3.5]

Q2. Illustrate the steps for converting an infix expression into a postfix expression for the following expression $(a + b) * (c + d)/(e + f) \uparrow g$. [3.5]

Q3. Let P be a pointer to a singly linked list. Show how this list may be used as a stack. That is, write algorithms to push and pop elements. Specify the value of P when the stack is empty. [3.5]

Q4. Given the following inorder and preorder traversal reconstruct a binary tree

Inorder sequence D, G, B, H, E, A, F, I, C

Preorder sequence A, B, D, G, E, H, C, F, I [3.5]

Q5. Make a BST for the following sequence of numbers.

45,32,90,34,68,72,15,24,30,66,11,50,10 Traverse the BST created in Preorder, Inorder and Postorder. [3.5]

Q6. Suppose a queue is housed in an array in circular fashion. It is desired to add new items to the queue. Write down a procedure Enqueue to achieve this also checking whether the queue is full. Write another procedure Dequeue to delete an element after checking queue empty status. [3.5]

Q7. Write a complete programme in C to create a single linked list. Write functions to do the following operations (i) Insert a new node at the end (ii) Delete the first node [4]