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06CS35

Third Semester B.E. Degree Examination, December 2011
Data Structures with C

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What is a pointer? What are the differences between pass by value and pass by reference? **(05 Marks)**

b. Explain the lvalue and rvalue, with examples. **(05 Marks)**

c. Write a C program to search an element, using the binary search (store the elements in an array using pointers) . **(10 Marks)**

2 a. What is a string? Explain the different string handling functions. **(05 Marks)**

b. Write approximate structure definition and variable declarations to store following information about 50 students:
Name, USN, Gender and Marks in the three subjects m_1, m_2 and m_3.
Find the average of the best of two subject's marks. **(08 Marks)**

c. Explain the three file status functions available in 'C' language. **(07 Marks)**

3 a. Define stack. Write a C program to simulate the stack operations. **(08 Marks)**

b. Write an algorithm to evaluate post fix expression. **(05 Marks)**

c. Write a C function to convert prefix to postfix expression. **(07 Marks)**

4 a. What is recursion? Write a recursive function for computing n^{th} term of a Fibonacci sequence. Hence give the trace of stack contents for n = 3. **(10 Marks)**

b. What are the advantages of circular queue? Write a C program to implement circular queue, using an array. **(10 Marks)**

PART – B

5 a. Write a C program to concatenate two singly linked lists. **(04 Marks)**

b. Write a C program to perform the operation on queue, using the singly linked list. **(10 Marks)**

c. Write a C function to insert a node at the specified position. **(06 Marks)**

6 a. Write a C program to perform the following operations, on a doubly linked list:
i) To delete a node whose info field is specified.
ii) To display all the elements in reverse order. **(10 Marks)**

b. Explain the following, using suitable diagrams:
i) Circular list ii) Doubly linked list **(10 Marks)**

7 a. Write a C function to find the maximum value of a tree BST. **(05 Marks)**

b. What is binary tree? Explain. **(05 Marks)**

c. Write a C program to construct BST and traversing of it. **(10 Marks)**

8 a. Explain : i) Binary search tree ii) Threaded binary tree iii) Strictly binary tree iv) Expression tree. **(08 Marks)**

b. Write a C program that accept a pointer to a binary tree and a pointer to a node of the tree and returns the level of the node, in the tree. **(06 Marks)**

c. Construct a binary tree for the expression: ((7 + (8 – 3) * 6) ^ 5 + 4). **(06 Marks)**

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