Total No. of Questions : 8] *[Total No. of Printed Pages :2*

Roll No .....

MEDC-201

M.E./M.Tech., II Semester

Examination, December 2016

System Programming

Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks.

1. a) What do you understand by recursion? Explain how recursion works.
   b) Explain how does object oriented programming approach's overcome procedural programming approach problems.

2. a) Explain the pointer data type in 'C'. Discuss the importance of pointers in 'C' programming giving suitable examples.
   b) Discuss the advantages and disadvantages of representing a group of items as an array versus of linear linked list.

3. a) What is stack? How the conversion of an infix expression to post fix expression takes place using stack?
   b) What is queue? Write 'C' procedure which implements circular queue.

4. a) Write an algorithm to insert a node in a doubly linked list.
   b) Create a binary search tree for the following numbers start from an empty BST. 45, 26, 10, 60, 70, 30, 40. Delete keys 10, 60 and 45 one after the other. Show the trees at each stage.

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5. a) What is AVL tree? Write an algorithm for inserting a node in an AVL tree.
   b) Write an algorithm for inorder traversal of a binary tree.

6. a) Sort the following list using heap sort
   7, 3, 9, 5, 1, 13, 11, 15
   b) Give an optimal solution of 0/1 Knap sack problem where $n=4, (w_1, w_2, w_3, w_4)=(2,3,4,5), (P_1, P_2, P_3, P_4)=(1,2,5,8)$ and $m=9$ using dynamic programming.

7. a) What are the advantage of dynamic programming? Compare it with divide and conquer method.
   b) What is System Program? Explain in detail compiler and compare with interpreter.

8. Write short notes on any three :
   a) Editor
   b) Merge sort
   c) Dynamic memory management
   d) Garbage collection
   e) Huffman codes

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