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Roll No .....

MEDC-201

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

Examination, June 2017

System Programming

Time : Three Hours

Maximum Marks : 70

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

1. a) What do you mean by Direct and Indirect recursion? Write a recursive 'C' function for "Tower of Hanoi" problem.
   b) Define Programming. What is Object Oriented Programming? How it is different from the procedure-oriented programming?

2. a) Explain the function in 'C' language that can be used to find length of string and to compare string.
   b) What is an Abstract Data Type (ADT)? Explain with an example.

3. a) What is Stack? Explain function performed by the stack related operation - push, pop, stack top and empty.
   b) Show how sequence of insertions and deletion from a queue represented by a linear array can cause overflow to occur upon an attempt to insert an element into an empty queue.

4. a) How two sorted linked list are merged to produce a single sorted list?
   b) What is Tree? Prove that a binary tree with 'n' nodes has exactly 'n + 1' null branches.

5. Insert the following entries into an initially empty B-tree of order 5.
   a, g, f, b, k, c, h, n, j, d, r, i, s, x, e, l, m, t, u, v.

6. a) What is Sorting? Sort the following list of numbers using quick sort method.
   50, 10, –10, 40, 15, 25, 20, 35, 30.
   Show important passes.
   b) Solve the travelling salesman problem having the following cost matrix.

	A	B	C	D
A	X	5	2	3
B	4	X	1	5
C	4	2	X	3
D	7	8	6	X

7. a) Suppose that you have k-sorted arrays, each with n elements and you want to combine them into single sorted array of k elements. Give an efficient solution to this problem. Using divide and conquer.
   b) What is System Program? Explain the working of Assembler in detail.

8. Write short notes on any three :
   a) Bubble Sort
   b) Operating System
   c) k-ary tree
   d) Iteration condition
   e) Compiler

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