M.C.A. Semester:-2 Examination April-2016

Paper Code: 2911 Paper Title: Data Structures and Algorithms

Time: 2:30 Hours Marks: 70

Q1 Answer any FIVE from the following: [10]

a. List out linear data structures.

b. Give advantages and disadvantages of doubly circular linked list.

c. Differentiate prim's and kruskal algorithms.

d. Define algorithm and space complexity.

e. Give advantages and limitations of binary search and merge sort.

f. Discuss types of dequeue.

g. What do you mean by backtracking?

Q2 Answer any FIVE from the following: [15]

a. What do you mean by chromatic number?

b. Evaluate given postfix notation using stack.
7 2 + 3 4 + *

c. Which method is suitable to represent graph in computer memory?

d. Apply insertion sort on given data
23,45,65,12,87,27

e. Give control abstraction of greedy method.

f. Write a short note on Graph coloring method.

g. Explain circular queue.

Q3 Answer any FIVE from the following: [25]

a. Explain peep operation on stack. Write an algorithm of peep.

b. Give optimal and feasible solutions of following knapsack problem:

N=4,m=25
Profit=(330,120,55,178)
Weight=(12,8,9,15)

c. Write an algorithm of n-queen problem.

d. Explain different types of tree traversal.

e. Find optimal solution using prims algorithm

(V1,V5)=10 (V1,V4)=14 (V1,V3)=55 (V2,V1)=23 (V3,V5)=32
(V4,V3)=23 (V5,V6)=37 (V5,V7)=27

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f. Define following terms with example.

Binary tree, height of tree, level of tree, degree, external node and forest

g. Give applications of minimum spanning tree, queue, linked list.

Q4 Answer any TWO from the following: **[20]**

a. Explain radix sort with its advantages and disadvantages.
42,11,87,89,19,2,47,66,88,16

b. Write a code which performs following operations on singly linked list.
Create, sort and display

c. Define tree, spanning tree and binary search tree.
Give algorithm of job sequencing with deadline method.