END TERM EXAMINATION

Paper Code: MCA 106   Subject : Computer System Architecture
Paper ID: 44106

Time : 3 Hours   Maximum Marks : 60

Note: Question 1 is compulsory. Attempt one question from each unit.

Q1. Explain in brief: (6*2=12)

    a) Explain Big 'O' notations.   (2)
    b) Compare B+ and B* trees.   (2)
    c) Explain graph coloring technique and give its applications.   (2)
    d) Give best case and worst case analysis for quick sort and merge sort.   (2)
    e) Explain hashed file organization.   (2)
    f) Give an example to illustrate polynomial arithmetic expression using linked list.   (2)
    g) Give applications of stacks and queues.   (2)
    h) Give representations of threaded binary tree.   (2)
    i) Give analysis of Dijkstra algorithm.   (2)
    j) Compare prims and kruskal Spanning tree algorithm   (2)

UNIT-I

Q2   a) Convert the folloing infix expression to its equivalent prefix and postfix expression:-
    (A- B)/((D+E)*F)   (4)

    b) Wite an algorithm to delete an element from double linkes list   (6)
        i.   At beginning of list.
        ii.   At end of list.
        iii.   After a node P.

Q3 a) Write algorithm to implement muplication of two polynomial P1 and P2   (4)
    b) Compare queues and deques.
    c) Define and give examples for any two of the following :-
        i.   Sparse Matrix.
        ii.   Row major order expression.
        iii.   Column major order expression.
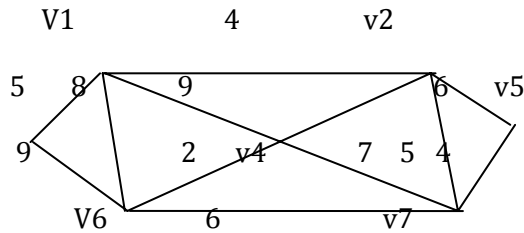
UNIT-II

Q4. a) Give an example for AVL tree   (2)

b) Write Kruskal's algorithm and give its analysis. (5)

c) Compare Dijkastra's and Floyd Warshall's algorithm. (3)

Q5 a) Consider the following undirected graph G

Using Prim's algorithm, generate minimum spanning tree for the above graph.

Give sequence of steps also. (4)

b) Give an example to illustrate graph coloring and its applications. (3)

c) Give an example to illustrate topological sort. (3)

UNIT-III

Q6 a) Mention any tow techniques for each of the following:- (4)

    i.   Internal Sorting Technique.

    ii.   Extrnal Sorting Technique.

b) Compare the following with a suitable example:- (6)

i.K-way merge sort

ii. Balanced merge sort.

iii.   Polyphase merge sort.

Q7. a) Compare the following:- (6)

    i.   Radix Sort

    ii.   Shell Sort.

    iii.   Selection Sort.

  b) Consider the list:- (4)

    50, 40, 20, 60, 80, 35, 90, 45

Sort the given list using quick sort. Give sequence of steps also.

UNIT-IV

Q8. a) Explain the following file organization technique:- (6)

    i.   Random Organization.

    ii.   Inverted Organization.

    iii.   Cellular Partition Organization

  b) Compare tree indexing and hashed indexing techniques. (4)

Q9. a) Mention any three file queries. (2)

  b) Explain linked file organization and trie indexing technique. (5)

  c) Explain cylinder surface indexing. (3)