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CS-62

BACHELOR OF COMPUTER APPLICATIONS (BCA)

(PRE-REVISED)

Term-End Examination

June, 2019

CS-62 : C PROGRAMMING AND DATA STRUCTURES

Time : 2 Hours *Maximum Marks : 60*

Note : *Question No. 1 is* ***compulsory****. Answer any* ***three*** *questions from the rest. All algorithms should be written nearer to C-language.*

1. (a) Convert the following infix notations into postfix notations : 4

   (i) A * B/C * D

   (ii) A/B ** C + D * E – A * C

   (b) What are the advantages of postfix notation ? Write an algorithm for evaluation of postfix notation. 7

   (c) What is recursion ? List types of problems that can be solved in data structure through recursion. 4

(d) Consider the set of integers : {57, 25, 65, 20, 35, 70, 80}. Build a binary search tree. 2

(e) What is a B^+ Tree ?

Consider the following data items in a B-tree of order 5 : 6

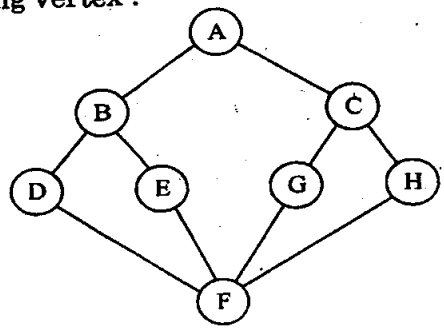
D, H, K, Z, B, P, O, Q, E, A, S, W, T, N C, L

and show all the intermediate steps during the process.

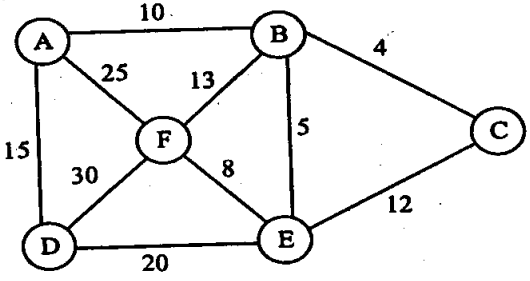
(f) Write an algorithm for multiplication of two sparge matrices and explain its steps. 7

2. (a) Give an example of pointer arithmetic. Write a program to count the length of a string using pointer arithmetic. 6

(b) What is the difference between DFS and BFS ? Apply DFS to the following graph. What will be the order of vertices in traversing the graph ? Let A be the starting vertex : 4



3. Write Prim's algorithm and apply it to the following graph to construct a minimum cost spanning tree. Show all the intermediate steps of a calculation : 10



4. (a) Write an algorithm to implement insertion sort. Illustrate this for the following list of numbers given below : 6

100, 15, 85, 25, 5, 40, 45, 35

(b) What are the limitations of BST ? How does an AVL tree overcome this limitation ? 4

5. (a) Write algorithms for push and pop functions for array based stack-implementation. 8

(b) What is the use of sizeof( ) operator in C-language ? 2