CS-62

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Pre-Revised)

00803 Term-End Examination

June, 2015

CS-62 : 'C' PROGRAMMING AND DATA STRUCTURES

Time : 2 hours   *Maximum Marks : 60*

Note : Question number 1 is compulsory. Answer any three questions from the rest. All algorithms should be written nearer to 'C' language.

1. (a)   Write an algorithm to find the length of a string using pointers.   *6*

    (b)   (i)   Transform the following postfix expressions to infix :   *2*

          •   AB + C –

          •   ABC * –

          (ii) Transform the following expression to prefix and postfix :   *2*

                A + B – C * D / E

(c) (i) Draw a complete graph of four vertices. 2

(ii) Represent the graph through its adjacency lists. 3

(iii) Apply depth first search and list the vertices in the order they would be visited. 3

(d) What is a height balanced tree ? Construct a height balanced tree for the following list of elements :

5, 10, 15, 20, 8, 6, 11, 3, 12 6

(e) Apply Bubble sort algorithm for the following list of elements :

15, 10, 5, 4, 25, 30, 13

Show all the steps. 6

2. (a) Write an algorithm for binary search and apply the algorithm to search for an element.

Suppose that an aray x contains the following elements :

5, 7, 10, 15, 18, 25, 30, 35

in that order and we wish to search for element 25. 7

(b) Write the syntax and purpose of bit field structure. 3

3. (a) Write an algorithm to count the number of modes in a Singly Linked List. 7

(b) What is Indexed Sequential file structure ? Explain in brief. 3

4. **(a)** What are the applications of B-Trees ? Construct a B-Tree of degree '3' from the following data : 8

5 7 9 4 3 15 17 20

(b) Give an example of a sparse matrix. 2

5. **(a)** Write an algorithm to compare two strings and return 1, if the first string is greater than the second one, 0, if both are equal and −1, if the first one is smaller than the second one. 6

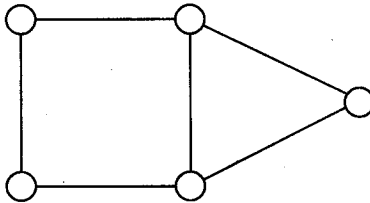**(b)** What is a spanning tree ? Draw three spanning trees of the following connected graph. 4

Figure : Connected Graph