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(2nd Semester)

BACHELOR OF COMPUTER APPLICATIONS

Paper No. : BCA–203

(Data Structure Using C)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

*The figures in the margin indicate full marks
for the questions*

1. Answer the following questions :

    (a) What is dynamic memory allocation? How does it differ from static memory allocation?   1+4=5

    (b) Explain the concept of pointer and function with an example.   5

G7/461a   (*Turn Over*)

(2)

Or

(c) Explain linear and non-linear data structure.   5

(d) Explain the concept of pointer and array with an example.   5

2. (a) Write a C program code for implementing a binary search technique.   5

(b) Write a C program code for sorting from a list of numbers using bubble sort.   5

Or

(c) Write a C program for implementation of linear search.   5

(d) Write a C program code for sorting from a list of numbers using insertion sort.   5

3. (a) What is stack? Write the C function code for push() and pop() operation using linked list.   1+4=5

(b) Convert the infix expression $A + B * C + (D * E + F) * G$ to postfix form using stack.   5

Or

(c)   Evaluate the given postfix expression

6 2 3 + − 3 8 2 / + * 2 ^ 3 +

using stack.   5

(d)   What is queue? Write the C functions code for insert() and delete() operation using array.   1+4=5

4. (a)   Write the C function of inserting a node at intermediate position of circular linked list.   4

(b)   Write the C functions code for inserting and deleting a node at last of single linked list.   3+3=6

Or

(c)   Write the applications of stacks.   4

(d)   Write the C functions code for insert and delete operations of circular queue.

3+3=6

5. (a)   Construct a binary tree from the given pre-order and in-order sequence :   4
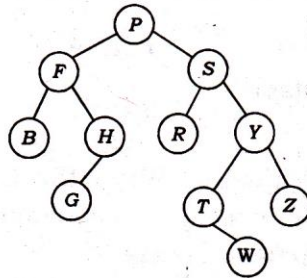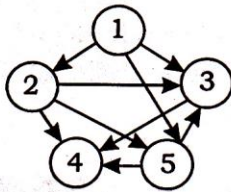
Pre-order : ABDGCEHIF

In-order : DGBAHEICF

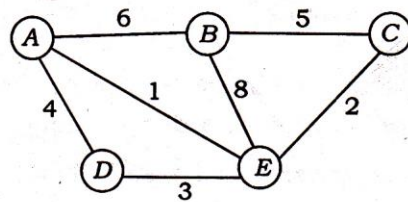(b) Traverse the following binary tree in pre-order, in-order, and post-order : 6

Or

(c) Find the adjacency matrix and adjacency list for the graph shown below : 4

(d) Find a minimal spanning tree (MST) for the graph shown below starting with the vertex A : 6

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