**II Semester B.A./B.Sc. Examination, May 2017
(CBCS) (Fresh+Repeaters) (2014-15 and Onwards)
COMPUTER SCIENCE – II
Data Structures**

Time : 3 Hours

Max. Marks : 70

Instruction : *Answer all Sections.*

SECTION – A

I. Answer **any 10** questions. **Each** question carries **2** marks :　　　　(2×10=20)

　1)　What are primitive data structures ?

　2)　How are strings stored in memory ?

　3)　What is space complexity and time complexity ?

　4)　Write a C function to copy one string into another. Write its syntax.

　5)　What is linked list ? Mention its types.

　6)　What is Garbage collection ?

　7)　Mention any two applications of stack.

　8)　Define recursion.

　9)　Define circular queue.

　10)　What is complete binary tree ?

　11)　Mention the applications of trees.

　12)　In a given tree, write preorder traversal.

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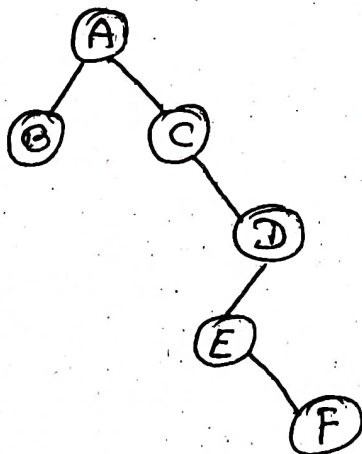
SECTION – B

II. Answer **any 5** questions. **Each** question carries **10** marks :

13) a) Explain linear and non linear data structure with examples.   5

     b) Write a C program to search for an element in an array using binary search.   5

14) a) Write a C program to implement Insertion sort.   6

     b) Write a algorithm to insert an element into an array.   4

15) a) Mention operations on singly linked list. Write an algorithm to insert an element in a linked list.   6

     b) Explain the list.   4

16) Write an algorithm to evaluate a valid postfix expression. Use the algorithm to evaluate the following postfix expression.

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17) a) Write a C program for Tower of Hanoi problem.   6

     b) List the applications of queues.   4

18) a) Write a algorithm to delete an element from circular queue.   5

     b) What is deque ? Explain the types of deque.   5

19) a) Explain linked representation of graphs in memory.   5

     b) Explain the depth first search graph traversal with an example.   5

20) a) Write a algorithm to creation of binary tree.   5

     b) Construct a binary tree given their preorder and in order traversals.

       Preorder : F A E K C D H G B

       Inorder   : E A C K F H D B G   5

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