



US – 412

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

Time : 3 Hours

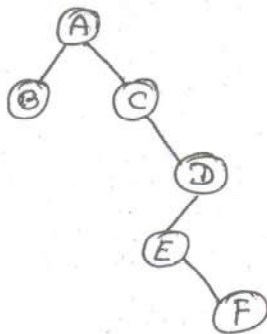
Max. Marks : 70

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.



P.T.O.



SECTION - B

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

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|---|----|
| 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 |