SN – 455

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III Semester B.C.A. Degree Examination, Nov./Dec. 2014
(Y2K8 Scheme) (F + R)
COMPUTER SCIENCE
BCA 305 : Data Structures Using C
70 – 2012-13 and Onwards
60 – Prior to 2012-13

Time : 3 Hours Max. Marks : 60/70

Instructions : *1) Answer Sections **A**, **B**, **C**.*
*2) Candidates who have taken admission from **2012-2013 and Onwards** must attend Section **D** also.*

SECTION – A

Answer **any ten** questions : **(10×1=10)**

1. Mention any two operations performed on non-primitive data structures.
2. Define time complexity of an algorithm.
3. What is a pointer ?
4. How is a pointer variable initialized ?
5. What is the significance of base case ?
6. In which situation binary search technique will be useful ?
7. Mention the applications of stack.
8. Define stack overflow.
9. What is a priority queue ?
10. What is linked list ?
11. Define binary tree.
12. Define height of a tree.

P.T.O.

SECTION – B

Answer **any five** questions : **(5×3=15)**

13. Explain any two dynamic memory allocation functions in detail.
14. Write a program to find factorial of a given number using recursion.
15. Explain the working of a stack with an example.
16. Write an algorithm to insert an element into linear queue.
17. Describe the concept of selection sort technique with an example.
18. Explain various types of linked lists.
19. What is binary search tree ? Explain the construction of binary search tree with an example.

SECTION – C

Answer **any five** questions : **(5×7=35)**

20. Explain classification of data structures in detail.
21. Explain the tower of Hanoi problem for three disks.
22. Write a program to search an element using linear search.
23. Arrange the following numbers in ascending order using quick sort.

    45, 36, 15, 92, 35, 71
24. Write a program to simulate the working of stacks using arrays.
25. Write a program to implement insertion and deletion operations of a circular queue.
26. a) Write an algorithm to insert a node at the end of linked list. **4**
    b) Write an algorithm to delete a node from the linked list. **3**
27. Explain various tree traversals and write all the three traversal functions.

SECTION – D

Answer **any one** question : **(1×10=10)**

28. Write a program to sort an array of elements using bubble sort.
29. Write a program to convert the given infix expression into postfix expression.
