III Semester B.C.A. Degree Examination, October/November 2012
(Y2K8 Scheme) (F+R)
Computer Science
BCA 305 : DATA STRUCTURES USING – C

Time : 3 Hours Max. Marks : 60/70

Instructions : *1) Answer **all** Sections.*
*2) Section **D** is applicable for students who have taken admission in **2011**.*

SECTION – A

I. Answer **any 10** questions. **(10×1=10)**

1) Define Data structure.

2) What are primitive data types ?

3) How do you initialize a pointer variable in C ?

4) Which function in C is used to resize the size of memory block which is already allocated ?

5) Define recursion.

6) What is sequential search ?

7) What is divide and conquer technique ?

8) Write any one difference between Stack and Queue.

9) What is Circular queue ?

10) What are the different types of linked list ?

11) What is a binary tree ?

12) What is a terminal node ?

SECTION – B

II. Answer **any 5** questions. **(5×3=15)**

13) Write the differences between static memory allocation and dynamic memory allocation.

14) Write a C program to find the binomial co-efficient using recursion.

15) Convert the infix expression ((A+B)/(C*D)^E) into postfix expression.

16) Write a C program to sort n elements using bubble sort.

17) Explain overflow and underflow conditions in a stack.

18) What is a double-ended queue ? Explain with an example.

19) Write an algorithm to insert a node in a singly linked list.

20) Formulate an algorithm for post order traversal of binary tree.

SECTION – C

III. Answer **any 5** questions. **(5×7=35)**

21) Write an algorithm to sort N numbers using quick sort technique. **7**

22) Write a C program to implement a linear queue. **7**

23) Write a C program to perform Merge Sort. **7**

24) a) *What is a circular linked list ? Explain with an example.* **3**

b) What are the different operations performed on non primitive data structure ? **4**

25) What is a binary search tree ? Write a C program to construct a binary search tree. **7**

26) a) What are the advantages of doubly linked list over singly linked list ? 3

b) Convert the arithmetic expression a+b/c*d/e ^ f to post fix expression. 4

27) Write an algorithm to implement stack operations. 7

28) Explain binary search technique with an example. 7

SECTION – D

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

29) Write short notes on :

a) Towers of Hanoi 4

b) Priority queues 3

c) Memory allocation functions 3

30) Write an algorithm :

a) To search for an element using linear search. 3

b) To generate the first N terms of Fibonacci series using recursion. 4

c) To find the factorial of a given number using recursion. 3
