

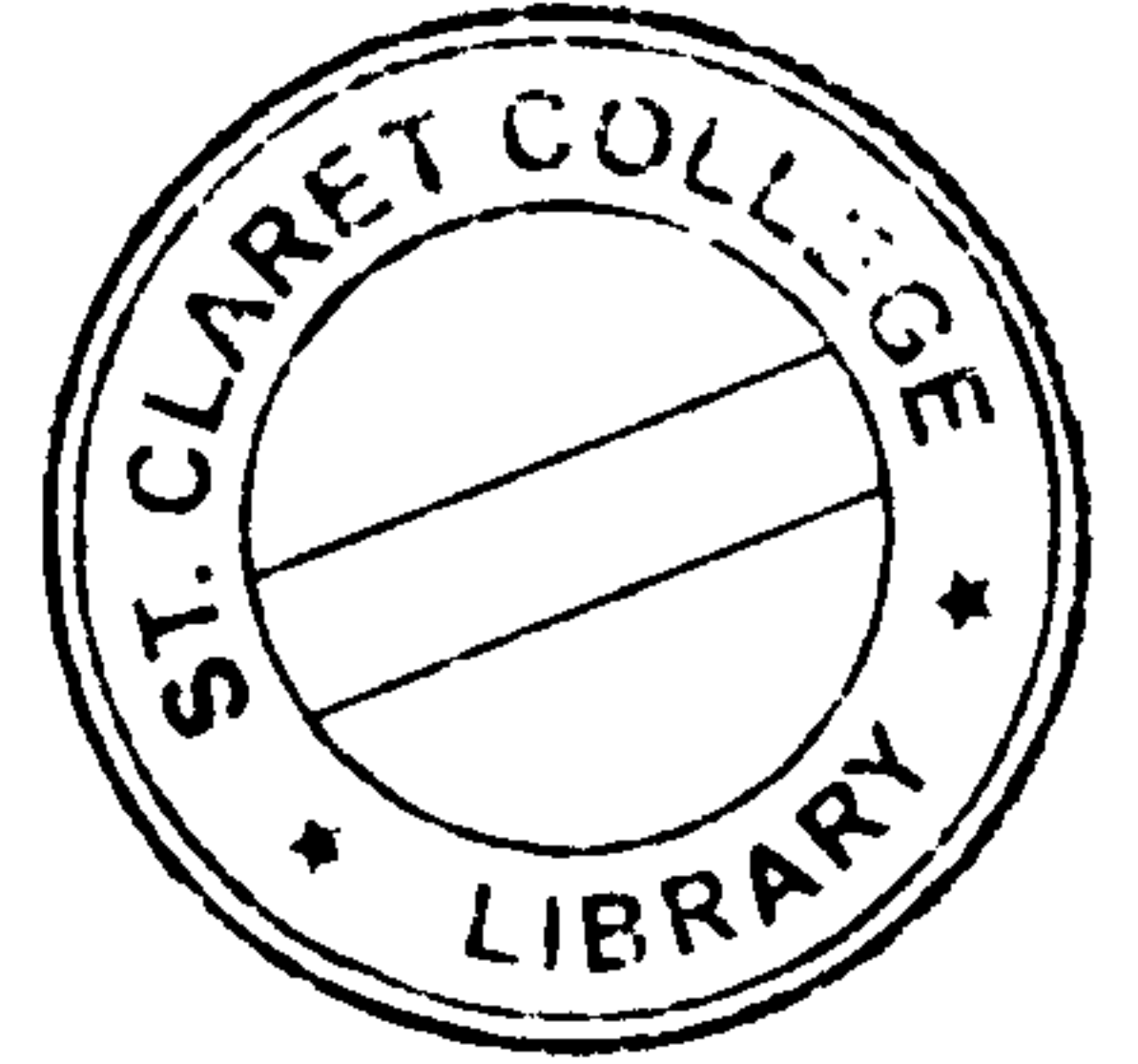


UN – 320

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III Semester B.C.A. Degree Examination, November/December 2015  
(Y2K8 Scheme) (R)

BCA 305 : COMPUTER SCIENCE  
Data Structures Using C  
(70 : 2012-2013 and Onwards)  
(60 : Prior to 2012-13)



Time : 3 Hours

Max. Marks : 70/60

**Instructions :** 1) Answer *all* the Sections.

2) Candidate who have taken admission from **2012–2013** and  
Onwards must attend Section – **D** also.

SECTION – A

I. Answer **any ten** questions.

(10×1=10)

- 1) Define primitive and non-primitive data structure.
- 2) Define searching.
- 3) What is stack ? Give an example.
- 4) What are the different sorting techniques ?
- 5) Write any 2 applications of recursion.
- 6) Convert the following infix to postfix expression.  
 $(A + B \wedge C) * (E + F / D)$ .
- 7) What is dequeue ?
- 8) Define degree of a node.

P.T.O.



- 9) What is priority queue ?
- 10) Define binary tree.
- 11) Define stack overflow.
- 12) What is meant by leaf node ?

### SECTION – B

II. Answer **any five** questions.

**(5×3 = 15)**

- 13) Write any 3 differences between recursion and iteration.
- 14) Write applications of a stack.
- 15) Write an algorithm for sequential search.
- 16) Write an algorithm to insert an element into linear queue.
- 17) Write a function to delete an element from circular queue.
- 18) Explain the concept of selection sort technique with an example.
- 19) Explain various types of linked list.

### SECTION – C

III. Answer **any five** questions.

**(5×7 = 35)**

- 20) Define a data structure. Explain different types of classification of data structure.
- 21) Explain towers of Hanoi problem. Write a program to solve towers of Hanoi problem.
- 22) Write a menu driven program to implement stack operations.
- 23) Write functions for the following :
  - a) Insert a node at the end of a linked list.
  - b) Delete node at the beginning of a linked list.

**(4+3)**



- 24) Write a program to implement operations on a circular queue.
- 25) Explain bubble sort with an example. Write a program to sort elements using bubble sort.
- 26) What is tree traversal ? What are different types of traversals ? Explain with examples.
- 27) Sort the following numbers using merge sort technique.  
18, 17, 31, 15, 8, 21, 37, 20.

SECTION – D

IV. Answer **any one** questions.

(1×10 = 10)

- 28) Write a program to sort elements using quick sort technique.
  - 29) Write a program to convert an expression from infix to postfix.
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