Total No. of Questions : 9] [Total No. of Printed Pages : 3

(1126)

# Bachelor of Computer Applications IIIrd Semester (0029) Examination

# 0924

## DATA STRUCTURES

## Paper : BCA-302

Time : 3 Hours] [Maximum Marks : 90

*Note* :– (i) Attempt *one* question from each Section A, B, C and D and entire compulsory Question No. 9.

(ii) All questions carry equal marks.

### Section–A

1. (a) Define Data-structure along with its basic operation. Also explain the various applications of data structures. 5+4

(b) Draw difference between stacks and queues along with their working. 9

2. (a) Define Complexity. How do you measure it ? Explain the complexity of any *two* data-structures along with example. 2+2+5

(b) Explain various operations of stacks and queues. 4.5+4.5

## Section–B

3. (a) Define linked list. Explain its any *two* types along with their operations. 2+7

(b) How polynomials are solved using linked lists ? 9

4. (a) Draw difference between simple and Header linked list. Also explain various operations on header linked lists. 3+6

(b) Solve equation $3x^2 + 5x - 4 = 0$ for $x = 5$ through linked lists. 9

## Section–C

5. (a) Draw difference between tree and binary tree. How Binary trees are traversed ? Explain with examples. 3+6

(b) Write a note on 'Binary Search Tree' in detail. 9

6. (a) What is Binary Tree ? Explain various operations on it. 2+7

(b) What is the importance of AVL Trees ? Explain its usage and representation in detail. 9

## Section–D

7. (a) Define Searching. Explain any method of your choice along with C-code and example. 2+7

   (b) Compare and contrast Merge sort and Quick sort. 9

8. (a) Compare any *two* searching techniques in detail. 9

   (b) How Heap sort is carried out. Sort 15, 5, 25, 40, 8, 12 elements through it. 5+4

## Compulsory Question

9. Explain :

   (a) Memory representation of array

   (b) Applications of stacks and queues

   (c) Doubly linked list

   (d) Tree representation as contiguous storage

   (e) Radix sort

   (f) Garbage Collection

   (g) Application of linked lists

   (h) Differentiate between data and data-structures

   (i) Shell sort

9×2=18