

**S.Y.B.SC. (Computer Science) SEM –IV (2014 COURSE) : WINTER -  
2018**

**SUBJECT : DATA STRUCTURES USING C ++**

Day : Tuesday  
Date : 09/10/2018

**W-2018-0959**

Time : 03.00 PM TO 05.00 PM  
Max. Marks : 40

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**N.B.:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
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**Q.1** Attempt **ANY TWO** of the following: **[10]**

- a) Write a C++ program to implement linear queue using array.
- b) Differentiate between static and dynamic memory allocation methods.
- c) Write a C++ program to sort 'n' integer values using simple exchange sort.

**Q.2** Attempt **ANY TWO** of the following: **[10]**

- a) Convert the given infix expression to prefix and postfix notations:
  - i)  $a + b * c - d / e$
  - ii)  $p / q * r - s$ .
- b) What is binary search tree? Construct a binary search tree for the following data values:  
10, 27, 9, 31, 11, 40, 30, 8, 33, 5, 35, 32, 28.
- c) Explain Depth First Search in detail.

**Q.3** Attempt **ANY TWO** of the following: **[10]**

- a) Elaborate the concept of multiple stacks with suitable example.
- b) Write a C++ program to insert a node in the singly linked list.
- c) What is adjacency matrix and adjacency list?

**Q.4** Attempt **ANY FIVE** of the following: **[10]**

- a) Define data type.
- b) State any two differences between stack and queue.
- c) Define generalize linked list.
- d) What is spanning tree?
- e) Define threaded binary tree.
- f) State application of arrays.
- g) Define dequeue.

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