

**DATA STRUCTURES**  
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- Describe about system life cycle.
  - What is an abstract data type? Give two examples for ADT.
  - Write applications of heap sort.
  - Discuss about Selection trees.
  - State various operations performed on graphs.
  - What is a dictionary? List its operations.
  - Define priority queue. Give two applications of it.
  - Write about minimum heap.
  - Discuss about Splay trees.
  - Write applications of multi-way search trees.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 What is double linked list? Write code for insertion of a node, deletion of a node and search a node.

**OR**

- 3 (a) List different operations on stack.  
(b) Write a C code to represent Queue as an array and perform insertion and deletion on it.

**UNIT – II**

- 4 Explain how to implement merge sort on a given n numbers and show its complexity.

**OR**

- 5 (a) Quick sort is not effective when compared with merge sort in some case. Justify it with an example.  
(b) Write about various tree traversal techniques.

**UNIT – III**

- 6 (a) Distinguish between static and dynamic hashing.  
(b) Explain how a graph can be represented as a Linear List.

**OR**

- 7 (a) Describe about Graph abstract data type.  
(b) How a graph is represented as a hash table.

**UNIT – IV**

- 8 Write a program to Implement heap as a priority queue.

**OR**

- 9 (a) What is Fibonacci heap? Explain its functionality.  
(b) Describe about single ended priority queue.

**UNIT – V**

- 10 What is an OBST? Implement its operations.

**OR**

- 11 Write short notes on the following:

- AVL trees.
- B+ trees.

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