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Question Paper Code : 90152

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Third Semester

Computer Science and Engineering

CS8391 – DATA STRUCTURES

(Common to : Computer and Communication Engineering/Information
Technology)

(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define Linked List.
2. Define an Abstract Data Type.
3. List the applications of stacks.
4. State the rules to be followed during infix to postfix conversions.
5. What do you mean by level of the tree ?
6. Define a binary search tree.
7. What is meant by strongly connected in a graph ?
8. Define adjacency list.
9. What do you mean by internal and external sorting ?
10. Define radix sort.

PART – B

(5×13=65 Marks)

11. a) Explain the insertion operation linked list. How nodes are inserted after a specified node ?

(OR)

- b) What are the applications of linked list in dynamic storage management ?



12. a) Write an algorithm for Push and Pop operations on Stack using Linked list.
(OR)
- b) What is a DeQueue ? Explain its operation with example.
13. a) Explain the tree traversal techniques with an example.
(OR)
- b) How to insert and delete an element into a binary search tree and write down the code for the insertion routine with an example.
14. a) Explain depth first and breadth first traversal.
(OR)
- b) Explain the various applications of Graphs.
15. a) Write an algorithm to implement selection sort with suitable example.
(OR)
- b) Write an algorithm for binary search with suitable example.

PART - C

(1×15=15 Marks)

16. a) There are 'N' numbers of balls in the box. The colours of the balls are red and blue. You are requested to stack the balls in the bottom sealed basket one by one. The order of placing the balls is two consecutive red balls followed by the two consecutive blue balls. Later, Create two empty queues Q1 and Q2. Remove the last inserted ball from the basket and place it in Q1. Similarly remove the next ball from the basket and insert in Q2. Develop a program to repeat this process until the basket is empty and also print the colour of the balls in both queues.
(OR)
- b) Implement a priority queue using linked list.