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VELAGAPUDI RAMAKRISHNA
SIDDHARTHA ENGINEERING COLLEGE
(AUTONOMOUS)



II/IV B.Tech. DEGREE EXAMINATION, NOVEMBER, 2017

Third Semester

INFORMATION TECHNOLOGY

14IT3303 DATA STRUCTURES

Time: 3 hours

Max. Marks: 70

Part-A is compulsory

Answer One Question from each Unit of Part - B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1.
 - a. List out any two applications of linked lists.
 - b. What is Big-O notation?
 - c. What are the types of dequeues?
 - d. Define tree.
 - e. What is binary heap?
 - f. What are the applications of queues?
 - g. List the binary tree traversals.
 - h. What is rehashing?
 - i. Define B tree.
 - j. What are the various stack operations?

PART-B

4 x 15 = 60M

UNIT-I

2. a. Discuss about stacks using dynamic arrays. 7M
- b. Write a C program that creates a sorted linked list and eliminate the duplicate nodes from it. 8M
- (or)
3. a. Write a program to merge two linked list into third. 8M
- b. Convert the given infix expression to postfix expression using stack $(a + b * c ^ d) * (e + f / g)$. 7M

UNIT-II

4. a. Write a linked list program to implement the addition of two polynomials. 8M
- b. Discuss about properties of Binary trees. 7M
- (or)
5. a. Explain inserting an element into a Binary search tree with example. 8M
- b. For the given inorder and postorder traversals, construct a binary tree
- Postorder: H D E B F G C A
- Inorder : H D B E A F C G. 7M

UNIT-III

6. a. What is a Heap? Give examples of Max and Min Heap and write their applications. 7M
- b. Write an algorithm for an AVL tree considering all the cases. 8M
- (or)
7. a. Show the result of inserting 2, 1, 4, 5, 9, 3, 6, 7 into an empty AVL tree. 7M
- b. Construct a B-Tree of order 5 for the following data. 54, 4, 44, 3, 6, 7, 8, 12, 33, 56, 87, 52, 53, 9, 17, 28, 26, 16. 8M

UNIT-IV

8. a. Explain shell sort procedure to sort the following elements 75, 25, 11, 18, 95, 85, 72, 66, 55, 42 8M
- b. Write the algorithm for Merge sort. 7M
- (or)
9. a. Explain various types of hashing techniques. 8M
- b. How do you represent graphs in computer applications? Explain with suitable examples. 7M

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