14CSIT305

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017 — **Computer Science & Engineering**

Third Semester — **Data Structures**

Time: Three Hours — **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)

a. Define ADT
b. What is Big Oh Notation
c. What is the structure of node for storing polynomial equations.
d. What is the ADT of a Stack
e. Write the post fix expression for (a+b)*c^d-e
f. List any two applications of queues.
g. Define tree
h. What is the difference between binary tree and binary search tree
i. What are the applications of AVL Tree
j. Explain any two types of hash functions
k. Define a priority queue
l. How do we represent a DAG using adjacency matrix

UNIT – I

2.a What are the advantages and disadvantages of doubly linked list over singly linked list? Explain the applications of doubly linked lists. 6M

2.b Write a program to reverse a singly linked list 6M

(OR)

3.a How do we perform addition of two polynomials using singly linked list 6M

3.b What are the various ways to analyze the time/space complexity of recursive functions? Explain with an example 6M

UNIT – II

4.a List any two applications of stacks in computing environment 4M

4.b Write a C program to implement a Stack which a restriction that, the first two elements which are to be pushed are 0 & 1, later you can only push an element which is equal to sum of last two elements of stack.(i.e. when all elements are popped you will see a reverse order of Fibonacci series). 8M

(OR)

5.a List the advantages and disadvantages of linked representation over array representation of queue. 4M

5.b Write a C program that enqueues only palindrome numbers. 8M

UNIT – III

6.a Construct a binary tree for the following data items: 80, 40, 75, 30, 20, 90, 50, 25, 80. Write the inorder, preorder & postorder notation of constructed tree. 8M

6.b Explain about the height of an AVL Tree 4M

(OR)

7.a What are tree properties? List any four applications of trees. 6M

7.b Explain the double rotations of AVL Tree using examples 6M

UNIT – IV

8.a Explain linear probing with an example. What are the disadvantages of this approach 6M

8.b Define a Graph. Explain BFS with an example 6M

(OR)

9.a What are the applications of Priority Queues 4M

9.b Explain chaining mechanism with an example. What are the disadvantages of chaining mechanism? 8M