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Code No.: 32001 AS

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.C.A. II-Semester (CBCS) Advanced Supplementary Examinations, August-2017

Data Structures

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Define Stack. List the applications of stack in computers.
2. What are the disadvantages of Linear queue? How are they overcome in Circular queue?
3. What are the different ways to implement Linked list?
4. Write the operations of polynomial manipulation.
5. What is Minimum cost spanning tree?
6. Define Binary search tree.
7. What are the factors to be considered during the selection of a sorting technique?
8. Define Hashing. What is the need for hashing?
9. Define AVL Tree.
10. How is the height of a red-black tree related to its size?

Part-B (5 × 10 = 50 Marks)

11. a) Explain how an Infix expression is converted to Postfix expression. [4]
b) Write a C++ program for converting Infix expression to Postfix expression. [6]
12. a) Write a C++ program to implement Queue using linked list. [5]
b) Write a C++ program to merge two sorted linked lists. [5]
13. a) Write an algorithm to copy a binary tree into another binary tree. [4]
b) Write a C++ program for Inorder traversal of a binary tree. [6]
14. a) What is Quick sort? Explain with example. [4]
b) Write a C++ program to implement Quick sort. [6]
15. a) Explain and give an example of deleting from an m-way search tree. [5]
b) Describe Deletion operation from B-tree with an example. [5]
16. a) Write a C++ program that uses a stack to check for matching left and right parenthesis in a string of characters. [5]
b) Write a C++ program that creates a new linear linked list by selecting alternate elements of a given linear linked list. [5]
17. Answer any *two* of the following:
 - a) Explain Depth First Search. [5]
 - b) How collisions are resolved in hashing? [5]
 - c) Draw the sequence of rotations required to perform a single right rotation and a double LR rotation in an AVL tree. [5]

