Code No. 31227TS

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (EEE) III Year I-Semester Main & Backlog Examinations, December-2017

Finishing School-III: Technical Skills

Time: 1½ hours

Max. Marks: 35

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

Part-A (5 × 2 =10 Marks)

1. Define algorithm. How do we measure performance of an algorithm?
2. Write pseudo code for enqueue operation of queue data structure using array.
3. Distinguish between arrays and linked lists.
4. Define splay tree. List out various splay tree rotations.
5. Draw the adjacency matrix for the given undirected graph.
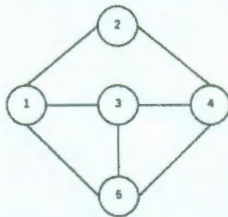
Part-B (5 ×5=25 Marks)

6. a) Explain various types of data structures and their applications. [2]

    b) Define array as an ADT? Write the pseudo code to find length of a string without using string functions. [3]

7. a) Write pseudo code for push and pop operations in a stack data structure. [2]

    b) Apply stack to evaluate postfix expression. Show the changing status of the stack in tabular form: X Y Z ^ * + A B / C + - for X=1,Y=5,z=2,A=15, B=3 and C =8. [3]

8. a) Apply doubly linked list to write the pseudo code for the following operations: [2]
       i) Insert node at the beginning of the list   (ii) Delete the last node

    b) Write and explain functions of insertion and deletion for queues using linked list. [3]

9. a) Write short notes on AVL tree rotations. [2]

    b) What is a Binary Search Tree (BST)? Make a BST for the following sequence of numbers. [3]
       45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48

10. a) Using any Graph traversal technique, visit all vertices for the below graph without forming loop. [2]
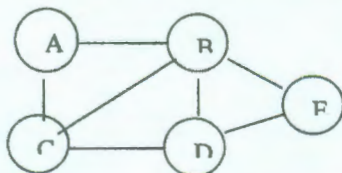
    b) Construct sorting for the following numbers using insertion sort procedure. **5, 8, 12, 3, 9, 1, 4, 6.** [3]

11. a) Define polynomial ADT. Write representation of adding two polynomial expressions. [2]

    b) Describe implementation of Towers of Hanoi program using recursion. [3]

12. Write short notes on any *two* of the following:

    a) Circular queues. [2½]
    b) Red-Black tree. [2½]
    c) Breadth First Search. [2½]

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