SE (I.T.) SEM III (CBSGS) NOV-DEC 2013

D.S.T A.A.

4/12/13

15-11-13-DTP6-MU-21

Con. 8628-13. **GX-12128**

(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **three** questions from remaining questions.
(3) Assume **suitable data** wherever **necessary**.
(4) **Figures** indicate marks.

1. (a) What is Data structure and Abstract Data Type? **2**
(b) What is AVL tree? Give example. **3**
(c) What is recursion? State its advantages and disadvantages. **3**
(d) What is Expression tree? Give example. **3**
(e) What is Link List? State the different types of Link List. **3**
(f) List out the properties of a symptotic notations. **3**
(g) What is Data structure for Graphs ? Explain. **3**

2. (a) What is Doubly Linked List? Write an algorithm to implement following operations:– **10**
(i) Insertion (All cases)
(ii) Traversal (Forward and Backward)

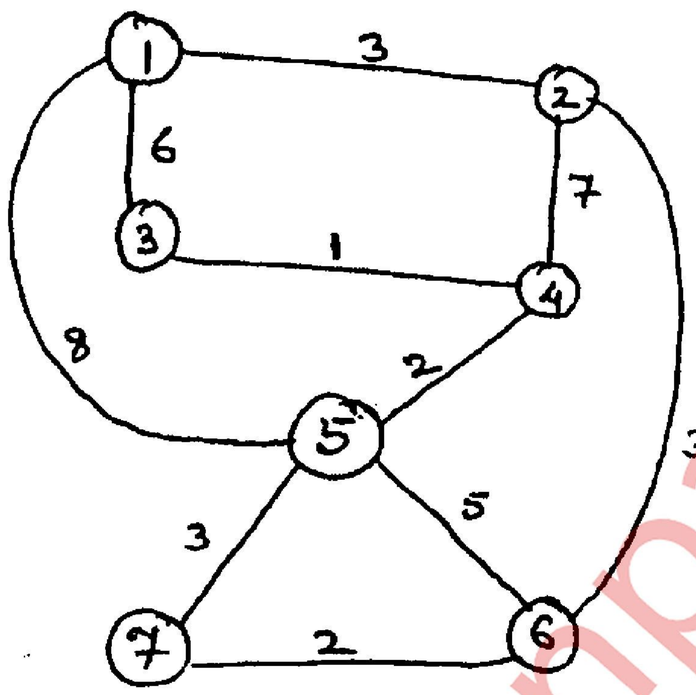
(b) Define Binary search tree. Write an algorithm to implement Insertion and Deletion operation. **10**

3. (a) Write a program to implement queue using array. **10**

(b) Explain in brief insertion sort and shell sort. **10**

4. (a) Explain in brief:– **10**
(i) Directed Graph
(ii) Weighted Graph
(iii) Minimum spanning tree
(iv) Adjacency Matrix representation
(v) Adjacency List representation

(b) Find Minimum spanning tree for following graph using Prim's and krusal algorithm. **10**
Show various steps.



5. (a) Write a program to convert INFIX expression into POSTFIX expression. **10**

(b) Write a program to create singly Linked List and display the List. **10**

6. (a) Write a program to implement a stack ADT using linked list. **10**

(b) What is an AVL tree? Construct the AVL tree for following set of data. [Mention the type of rotation for each case]. **10**
1, 2, 3, 4, 8, 7, 6, 5, 11, 10, 12.
