May 2018

Total No. of Questions—8] [Total No. of Printed Pages—2

Seat No.	

[5352]-534

S.E. (E & TC/Elect.) (I Sem.) EXAMINATION, 2018
DATA STRUCTURES AND ALGORITHMS
(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. :— (*i*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.
(*ii*) Neat diagrams must be drawn wherever necessary.
(*iii*) Figures to the right indicate full marks.
(*iv*) Use of calculator is allowed.
(*v*) Assume suitable data, if necessary.

Q1) (a) Explain algorithm binary search with example. [6]

(b) Sort the following numbers 38, 27, 43, 3, 9, 82, 10 using: [6]
i) Bubble sort
ii) Merge sort

OR

Q2) (a) What is pseudo code? Write a pseudo code to find the factorial of *n* number. [6]

(b) What is the difference between internal sorting and external sorting? Sort the following numbers using selection sort. [6]

25, 17, 31, 13, 2

Q3) (a) Convert the given infix expression to postfix expression using stack [7]

(A * B - (C - D)) / (E + F)

(b) Compare array and linked list. [6]

OR

Q4) (a) Draw and explain circular linked list. State the limitations of single linked list. [7]

(b) Write limitations of arrays over linked list? Represent the following polynomial using linked list: [6]

$$23x^9 + 18x^7 + 41x^6 + 16x^4 + 3$$

Q5) (a) Explain the different cases to delete an element from binary search tree. [6]

(b) Write a recursive 'C' function for preorder and postorder traversal of a binary Search tree. [6]

OR

Q6) (a) Define traversal of binary tree? Explain three popular methods of binary tree traversal. [6]

(b) Explain with suitable example how will you represent a binary tree using Linked list. [6]

$$23x^9 + 18x^7 + 41x^6 + 16x^4 + 3$$

Q5) (a) Explain the different cases to delete an element from binary search tree. [6]

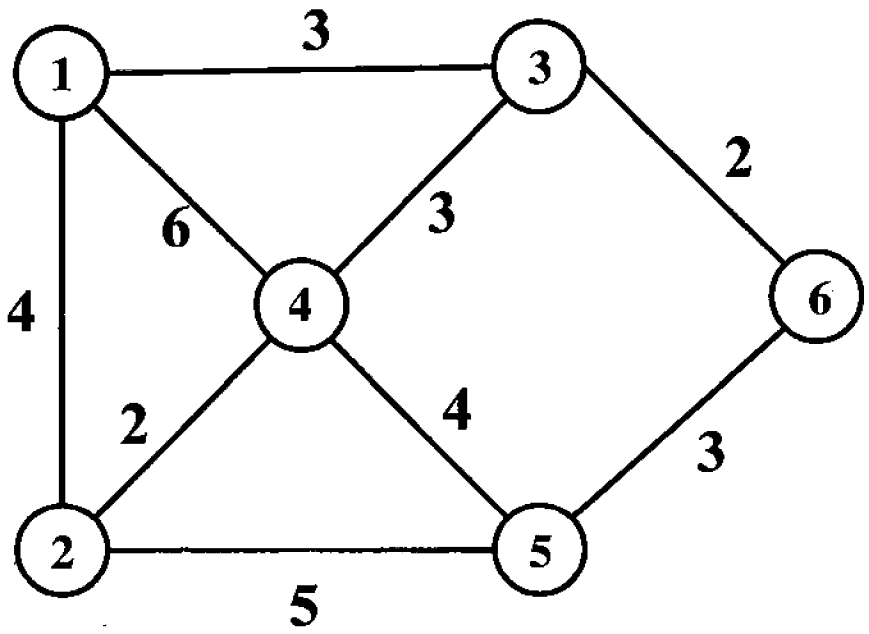
(b) Write a recursive 'C' function for preorder and postorder traversal of a binary Search tree. [6]

OR

Q6) (a) Define traversal of binary tree? Explain three popular methods of binary tree traversal. [6]

(b) Explain with suitable example how will you represent a binary tree using Linked list. [6]

Q7) (a) Draw adjacency list and adjacency matrix for the following graph: [6]



(b) Explain with suitable example, BFS and DFS traversal of a graph. [7]

OR

Q8) (a) Explain Dijkstra's algorithm with example. [6]

(b) What is MST? Explain with suitable example Kruskal's Algorithm to find out MST. [7]