Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5057]-245

S.E. (E&TC/Electronics) (First Semester) EXAMINATION, 2016

DATA STRUCTURES AND ALGORITHM

(2012 PATTERN)

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

N.B. **:—** (*i*) Neat diagrams must be drawn wherever necessary.

(*ii*) Figures to the right indicate full marks.

(*iii*) Assume suitable data, if necessary.

1. (*a*) Write a C function for insertion sort to sort integer numbers. [6]

(*b*) Explain the examples different types of data structures. [7]

Or

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

(*b*) Evaluate the following postfix expression using stack : [7]

$$623 + - 382 / + * 2 \wedge$$

Note : $\wedge$ stands for power and all operands are single digit.

P.T.O.

3. (*a*) What is SLL ? Write C function for create a node into a singly link list. [6]

(*b*) Write a short note on circular queue. Compare it with linear queue. [6]

Or

4. (*a*) What is doubly link list ? Explain insert operation in doubly link list. [6]

(*b*) Explain selection sort algorithm. [6]

5. (*a*) Define BST. Create BST for the following numbers : [6]

56, 34, 89, 11, 45, 67, 6, 78

(*b*) Define the following terms with examples : [6]

(*i*) Strictly binary tree

(*ii*) Left skewed binary tree

(*iii*) Completely binary tree.

Or

6. (*a*) Explain threaded binary tree with an example. What is its advantage ? [6]

(*b*) Explain expression tree with *one* example. [6]

7. (*a*) Write a C function to implement "BFS" traverse of graph implemented using adjacency matrix. [6]

(*b*) What is indegree and outdegree of vertex in graph ? Write C function to find indegree and outdegree of vertex in graph implemented using adjacency matrix. [7]

Or

8. (*a*) Define the term graph. With the help of suitable example give adjacency matrix representation and adjacency list representation of a graph. [7]

(*b*) What is difference between DFS and BFS methods. [3]

(*c*) Explain term topological sorting with suitable example. [3]