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

Seat No.	

[5252]-574

S.E. (IT) (First Semester) EXAMINATION, 2017

FUNDAMENTALS OF DATA STRUCTURES

(2015 PATTERN)

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

N.B. **:—** (*i*) Answer *four* questions.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right side indicate full marks.

(*iv*) Assume suitable data if necessary

1. (*a*) Write the difference between while and for loop in C language. [6]

(*b*) Explain call by value and call by reference with suitable example. [6]

Or

2. (*a*) Differentiate between Text file and Binary file. [4]

(*b*) What is recursion ? Explain with example. [4]

(*c*) Explain various operators in C. [4]

3. (*a*) Define : [6]

(1) Data and Data object

(2) Data structure

(3) Abstract Data Types

(*b*) Write algorithm to sort a list of integers using bubble sort. Show output of each pass for the following list : 10, 5, 4, 18, 17, 1, 2. [6]

P.T.O.

Or

4. (*a*) Differentiate between the following : [6]

(1) Internal sorting and External sorting

(2) Linear and Binary searching

(*b*) Differentiate between the following : [6]

(1) Primitive and Non-primitive data structures

(2) Linear and Non-linear data structures

5. (*a*) Explain simple and fast transpose of a sparse matrix with example. Also write fast transpose c function for sparse matrix. [8]

(*b*) Explain the concept of row major and column major address calculation for multidimensional array using example. [6]

Or

6. (*a*) Explain row and column major representation of a matrix with example. [6]

(*b*) Represent the following polynomial using array : [8]

(*i*) $X^2 + 13XY^4 + 2X^3Y^3 + 15Y$

(*ii*) $3\ X^3 + 2Y^2X + 5Y^3X^3 + 17$

7. (*a*) Write short notes on :

(1) CLL

(2) DLL

(3) SLL

(4) Skip list [8]

(*b*) Write a 'C' function to reverse a singly linked list using three pointer. [4]

Or

8. (*a*) What is generalized linked list ? Represent the following lists : [8]

(1) (a, b, c(d, e, f), g, h)

(2) (p (q, r), s, (t, u), v)

(*b*) Differentiate between sequential and linked organization. [4]