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

Seat No.	

[5152]-574

S.E. (I.T.) (I Sem.) 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 indicate full marks.

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

1. (*a*) What is the use of void data type ? [2]

(*b*) What is Macro ? Compare it with function. [4]

(*c*) Explain the use of pointer to array of structure with suitable example. [2]

(*d*) Explain any *four* functions used for file handling. [4]

Or

2. (*a*) Explain different storage classes in C. [4]

(*b*) What is pointer ? Explain pointer to a function with suitable example. [5]

(*c*) Differentiate between binary and text file. [3]

3. (*a*) Explain static and dynamic data structures with suitable examples. [3]

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(*b*) What is space complexity of an algorithm ? Explain its importance with example. [3]

(*c*) Explain the following terms : [6]

(*i*) Internal sorting

(*ii*) External sorting

(*iii*) Sort stability.

Or

4. (*a*) Explain linear data structure with suitable example. [3]

(*b*) What are different asymptotic notations ? [3]

(*c*) Write pseudo C code for insertion sort. Show all the passes to sort the values in ascending order using insertion sort, values are : 5, 15, 3, 7, 2. [6]

5. (*a*) Write a pseudo C algorithm for simple transpose of sparse matrix. What is it time complexity ? [5]

(*b*) Explain row and column major storage representation of two dimensional array. [6]

(*c*) Explain stack as Abstract Data Type (ADT). [2]

Or

6. (*a*) Explain sequential memory organization using suitable data structure. [6]

(*b*) Write an algorithm to add two sorted polynomial in a single variable. Analyze its time complexity. [7]

7. (*a*) What is generalized linked list ? Give graphical representation of the generalized list : [4]

A = (1, 2 (3, (4, 5)), 6)

(*b*) Compare linear and circular linked list. [3]

(*c*) Write pseudo C code to delete a node from doubly linked list (DLL). [6]

Or

8. (*a*) Compare array and link list [3]

(*b*) Write pseudo C code to insert a node at start and end of singly linked list (SLL). [6]

(*c*) Give practical applications of circular linked list. [4]