

Total No. of Questions—8]

[Total No. of Printed Pages—2

Seat No.	
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[5252]-174

S.E. (Information Technology) (I Semester) EXAMINATION, 2017
FUNDAMENTALS OF DATA STRUCTURES
(2012 PATTERN)

Time : Two Hours

Maximum Marks : 50

- N.B. :—** (i) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
(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 structure in 'C' ? How do we declare the pointer of structure ? [3]
(b) Explain with suitable example function call by reference and function call by value. [4]
(c) Write a pseudo 'C' routine to multiply two matrices. [5]

Or

2. (a) What is a pointer variable ? Explain declaration, initialization and accessing a pointer variable with an example. [4]
(b) Write and explain any *four* functions used for file handling. [4]
(c) Write a pseudo C routine using pointer to add two matrices. [4]
3. (a) What is frequency count ? What is its importance in analysis of algorithm ? [4]
(b) What is Abstract Data Type ? Explain ADT for an array. [4]

P.T.O.

- (c) What are Linear and Non-Linear Data Structures ? Explain with example. [4]

Or

4. (a) Sort the following numbers using insertion sort. Show all passes : [4]

60, 15, 80, 50, 40, 01, 07, 20

- (b) Write a pseudo code for binary search without recursion. [4]
(c) Explain the time complexity for bubble sort method. [4]

5. (a) What is sparse matrix ? What are its applications ? [4]

- (b) Represent the following polynomials using arrays :

(i) $15x^3 - 7xy + y^2 - 50$

(ii) $y^4 + 9y + 5$ [4]

- (c) Explain row major and column major representation of array. [5]

Or

6. (a) Write a pseudo C algorithm for addition of two sparse matrices. [5]

- (b) Define stack and queue with example. [4]

- (c) What is dynamic data structure ? List the advantages of Linked List. [4]

7. (a) Define and explain SLL, DLL & CLL with example. [6]

- (b) Write a pseudo code for the addition of a node after the position 'p' in singly linked list. [7]

Or

8. (a) Explain GLL with suitable example. [6]

- (b) Compare Array with Linked List. List the applications of Linked List. [7]