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[5057]-2063**S.E. (Information Technology) (I Sem.) EXAMINATION, 2016****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) Use of calculator is allowed.
 - (v) Assume suitable data, if necessary.

1. (a) Explain entry controlled loop structures in C. [4]
- (b) What are advantages of using structure ? Give difference between Union and Structure. [4]
- (c) What is pointer variable ? Explain declaration, initialization and accessing a pointer variable with an example. [4]

Or

2. (a) Write pseudo C algorithm for reverse of String using pointers. [4]
- (b) Explain concept of arrays with suitable example. [4]
- (c) Explain call by value and call by reference functions with suitable example. [4]

P.T.O.

3. (a) Define the following terms with example : [6]
(i) Data Object
(ii) Data Structure
(iii) Abstract Data Type.
- (b) Write Pseudo C algorithms for :
(i) Linear Search [3]
(ii) Binary Search. [4]

Or

4. (a) Explain Big-oh, omega and theta notation with example. [6]
(b) Explain selection sort with given example by showing all passes.
Also analyze time complexity. Number are :
17, 35, 24, 13, 26, 14. [7]
5. (a) Write a pseudo C algorithm for addition of two sparse matrices.
Analyze its time complexity. [6]
(b) Explain the two-dimensional array in detail with column and
row major representation and address calculation in both
the cases. [6]

Or

6. (a) Explain stack and write pseudo C algorithm for PUSH and
POP operations of stack. [6]
(b) Explain polynomial representation of an array and also write
data structure declaration with suitable example. [6]

7. (a) Explain concept of Generalized Linked List and representation polynomial using GLL with given example :

$$4x^3 + 2x^2 + 6xy + 7xy^3. \quad [6]$$

- (b) Write C function to insert a node and delete a node in DLL. [7]

Or

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

(i) Circular Linked List

(ii) Linked List as an ADT.

- (b) Write a pseudo C algorithm to merge two Sorted Linked Lists into the third. [7]

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