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[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]

P.T.O.

- (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 its 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]