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[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. [8]
(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]