Total No. of Questions : 4]

SEAT No. : ____

PA-429

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[5931]-37

S.E. (Information Technology)

DATA STRUCTURES AND ALGORITHMS

(2019 Pattern) (Semester - I) (214443)

Time : 1 Hour] ***[Max. Marks : 30***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicates full marks.***
3) ***Draw well labeled diagram wherever necessary.***

Q1) a) Explain following Data Structures with examples for each. **[6]**

i) Linear & Non-linear ii) Persistent & Epheneral

b) Discuss with examples time complexity & space complexity of an algorithm. **[6]**

c) Enlist differences between Data & Data Object. **[3]**

OR

Q2) a) In a matrix of order 5 × 5, having base address 6500, for storing characters, compute the address of element of stored at 4^{th} row and 3^{rd} column. (Say if the array is alpha[5][5], then find address of alpha [4][3]). Use column-major method. **[8]**

b) Discuss how frequency count is used to study time complexity. **[4]**

c) Write Sudo code to add an element at near end in singly circular list. **[3]**

Q3) a) Enlist & Explain charactertics of sorting algorithms. **[4]**

b) Discuss with examples Quick sort & Merge sort algorithms. **[8]**

c) Explain with example difference between linear search & binary search. **[3]**

OR

Q4) a) Demonstrate how Quick sort is performed on following set of no.s 50, 70, 45, 68, 30, 90, 20, 79 **[8]**

b) Explain time complexitier of following sorting algorithms. **[4]**

i) Insertion sort ii) Shell sort

c) Write sudo code for fibonacci search. **[3]**