Total No. of Questions : 4]

SEAT No. : ____

P-5403

[Total No. of Pages : 2

[6186]-529

S.E. (Information Technology) (Insem.)

DATA STRUCTURES AND ALGORITHMS

(2019 Pattern) (Semester - III) (214443)

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

Instructions to the candidates :

1) ***Answers Q.1 or Q.2 and Q.3 or Q.4.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Define the following terms with example **[5]**

i) Data

ii) Data Object

iii) Data Type

iv) Data Structure

b) Explain with example **[5]**

i) Static and dynamic data structure.

ii) Linear and nonlinear data structure.

c) What is array? Explains different types of array with example? **[5]**

OR

Q2) a) Calculate row major and column major address of a[1][2] for a[m][n]=a[2][3], where base address = 102. (Each element size is 2). **[5]**

b) What is time complexity? How is the time complexity of an algorithm computed? **[5]**

c) Explain Linked Organization. Write advantages and disadvantages of linked organization? **[5]**

P.T.O.

Q3) a) Write short note on searching and sorting? **[5]**

b) Explain Linear search and binary search with example? **[5]**

c) Sort following list using bubble sort, show the output of each pass. 10, 5, 4, 18, 17, 1, 2. **[5]**

OR

Q4) a) Explain with example sort stability, efficiency and passes? **[5]**

b) Consider following numbers and sort them using quick sort. **[5]**

25, 57, 48, 37, 12, 92, 86, 33

c) Sort the data using merge sort. Show all passes 10,5, 7, 6, 1, 4, 8, 3,2, 9.**[5]**

▽▽▽▽