Total No. of Questions : 4]

SEAT No. : ____

PA-21

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S.E. (Electronics & Computer/Artificial Intellegence & Data Science)

FUNDAMENTALS OF DATA STRUCTURES

(2019 Pattern) (Semester - I) (210242)

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

Instructions to the candidates:

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

Q1) a) Define the following terms with suitable example. **[4]**

i) Data Structure

ii) Abstract Data Type

iii) Algorithm

iv) Flowchart

b) What is frequency count? Why is frequency count important in the analysis of algorithm. **[5]**

c) Write an algorithm to compute the sum of the digits of the given number. Justify that your algorithm satisfies all the characteristics of an algorithm. **[6]**

OR

Q2) a) Give complete classification of data structures with one example of each. **[4]**

b) Explain divide & conquer Strategy and Greedy strategy with suitable example. **[5]**

c) Draw flowchart to check whether a given number is a perfect square of an integer. What is the time complexity of your algorithm. **[6]**

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Q3) a) What are advantages & disadvantages of sequential organization of data structure? **[4]**

b) Explain row major & column major representation of arrays in computer memory. **[5]**

c) Write an algorithm to perform polynomial addition state the time complexity of the algorithm. **[6]**

OR

Q4) a) Write a short note on storage representation of an array. **[4]**

b) Write pseudo code to reverse the in numbers in one dimensional array. **[5]**

c) Write an algorithm to perform sparse matrix addition & state its time complexity. **[6]**

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