BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BTECH/IMSC
BRANCH: CSE/IT/MATHS & COMP.

SEMESTER: III
SESSION : MO/2019

SUBJECT : CS201 DATA STRUCTURES

TIME: 2:00 HOURS

FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

Q1 (a) Explain the criteria that you will keep in mind while choosing an appropriate algorithm to solve a particular problem. Give examples. [2]
(b) Write a Non-Recursive function as well as recursive function for the same problem. Analyze their time complexity in detail. In general, Recursive algorithm is better than Non recursive algorithm with respect to time and space. Justify. [3]

Q2 (a) Distinguish between the row major order and column major ordering of an array. [2]
(b) Write a procedure to evaluate the POSTFIX expression E. Explain with example. [3]

Q3 (a) Convert the infix expression E= 2+3/1-6*2+9-3+5-6*2/1+4 to prefix expression. [2]
(b) Write a procedure to maintain a list of items as a circular Queue which is implemented using an array. Write the procedure for insertion and deletion and explain with example. [3]

Q4 (a) Differentiate between array and stack. [2]
(b) Write a procedure/algorithm to perform addition and subtraction on two polynomials using link list. [3]

Q5 (a) Write an algorithm/procedure to delete every second element/node from the List. [2]
(b) What is Sparse matrix? Explain the linked representation of Sparse matrix with example. [3]

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