INDIAN INSTITUTE OF INFORMATION TECHNOLOGY SRI CITY

MID SEMESTER EXAMINATION – MAY, 2021

(ONLINE MODE)

DATA STRUCTURES AND ALGORITHMS

DATE: 16-05-2021

PART B – SET 4

1a. Explain Random Access Model (RAM model) with appropriate example by calculating time complexity of a snippet code.

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(3 marks)

1b. Draw the recurrence tree for the given recurrence relation $T\ (n)\ = 3T\ (n/2)\ +\ \Theta(n^2)$ and solve it using Master theorem to determine a good asymptotic upper bound.

(2 marks)

2a Write an algorithm and give the time and space complexity, (No need to write a C program, write a step wise solution) to Push all the zero's of a given array to the end of the array.

(2 marks)

2b What is the advantage of using dynamic linked list over static linked list. Explain with an example.

(1 mark)

2c Write a C program to insert an element at the end of circular linked list

(2 marks)

3a Explain the usage of stack in recursive algorithm implementation with suitable examples.

(3 marks)

3b Evaluate the following postfix expression using stack

6 2 3 + - 3 8 2 / + * 2 ∧

(Note: ∧ stands for power and all operands are single digit).

(2 marks)