Name -
Student ID -

CSE 2217 Spring 2022
Class Test 1   Total Marks: 10
You have to answer here. No extra page will be provided.

1   Derive the runtime equations of the functions **printBooks** and **dummy** and write the best   **[2.5**
    case and worst-case runtime using asymptotic notation.   **+**
                                                               2.5]

    1. function **printBooks**(books[], int nBooks) {

    2.   print("I've so many books!")

    3.   for (i := 0; i <= nBooks; i++) {

    4.   print((i+1), books[i]);

    5.   }

    6.   print("See!")

    7. }

    1. function **Dummy**(A, m, n):

    2.   for k=1 to n do

    3.   j=1

    4.   while j <= m do

    5.   print(A[j])

    6.   j = j+2

    7.   end

    6.   end

2   Write a *divide-and-conquer algorithm* to calculate the product of an array of n integers.   **[3]**
    Write its runtime's recurrence equation.

3   Sort the following array A using the merge sort algorithm and draw the recursion tree.   **[2]**
    A = [40, 7, 50, 61, 56, 6, 69]