1
a)
ii. The sub-array A[1 . . . j] contains the original contents of sub-array A[(n + 1 − j). . . n] in reverse order.
v. The sub-array A[(n+1−j). . . n] contains the original contents of sub-array A[1 . . . j] in reverse order.

b) 2n-1

c) 2(r-p)+1

Proof: The total number of calls to MergeSort is 2 times the difference between r and p, plus 1

Base Case: For MergeSort(A, 1, 1), r = p = 1. This means that the total number of calls to MergeSort is 2(1-1)+1=1 call.

Induction Hypothesis: Let k, l ε Z. Assume 2(k-l)+1 is true.

Induction Step: a) k=2, l=1 (simplest case)
                            2(2-1)+1 = 3
                       b) k=3, l=2
                            2(3-2)+1 = 3
                       c) k=3, l=1
                            2(3-1)+1 = 5
        Therefore, by Induction Rule, we can say the MergeSort is called 2(r-p)+1 times