CS2223 D Term 2020 Quiz 7

(1 point) Question 1: "My brain is open. . . ."
I pledge that I am taking this quiz on my own, with help from no one else and no notes:

(3 points) Question 2: MERGESORT is $O(n \log n)$ because:

a.) It makes $O(1)$ comparisons on each of $O(n^2)$ passes through the data to be sorted.
b.) It makes $O(\log n)$ comparisons on each of $O(\log n)$ passes through the data to be sorted.
c.) It makes $O(\log n)$ comparisons on each of $O(n)$ passes through the data to be sorted.
d.) It makes $O(n)$ comparisons on each of $O(\log n)$ passes through the data to be sorted.
e.) It makes $O(n^2)$ comparisons on each of $O(1)$ passes through the data to be sorted.

(3 points) Question 3: QUICKSORT is $O(n^2)$ but can almost always be made to behave as if it were $O(n \log n)$ by . . . :

a.) . . . randomizing the order of the list to be sorted.
b.) . . . using the minimum (or maximum) of the list to be sorted as a pivot.
c.) . . . using pivot values closer to the median than the minimum (or maximum) of the list to be sorted.
d.) Both a) and b)
e.) Both a) and c)

(3 points) Question 4: MERGESORT is $O(n \log n)$; the *log* arises because. . .

a.) . . . MERGESORT is an exhaustive search algorithm.
b.) . . . MERGESORT is a brute force algorithm.
c.) . . . MERGESORT is a decrease-and-conquer algorithm.
d.) . . . MERGESORT is a divide-and-conquer algorithm.
e.) . . . MERGESORT is implemented using trees and forests.

(1 point) Bonus Question: MERGESORT . . .

a.) . . . makes $O(1)$ comparisons in the best case.
b.) . . . makes $O(n)$ comparisons in the best case.
c.) . . . makes the same number of comparisons regardless of the order of the input list.
d.) . . . makes $O(n^2)$ comparisons in the worst case.
e.) None of the Above.