Multiple choice Questions

Q.1 Which of the following methods is the most effective for picking the pivot element?
(A) First element
(B) Last element
(C) Median-of-three partitioning
(D) Random element

RIGHT ANSWER: (C)

Q.2 You have an array of n elements. Suppose you implement quicksort by always choosing the central element of the array as the pivot. Then the tightest upper bound for the worst case performance is
(A) O(n raise to the power 2)
(B) O(nlogn)
(C) Θ(nlogn)
(D) O(n raise to the power 3)

RIGHT ANSWER: (A)
[Hint: try for combination 6 4 2 1 3 5 7]

Q.3 Which of the following statement is false-
(A) Merge Sort is an external Sorting
(B) Best Case Complexity is same for quick sort and merge sort
(C) Quick Sort has same best case and average case complexity
(D) Worst case complexity of Merge Sort is $O(N^2)$ and for quick sort it is $O(NLog_2N)$

RIGHT ANSWER: (D)

Q.4 Given the following input (4322, 1334, 1471, 9679, 1989, 6171, 6173, 4199) and the hash function x mod 10, which of the following statements are true?

i. 9679, 1989, 4199 hash to the same value
ii. 1471, 6171 hash to the same value
iii. All elements hash to the same value
iv. Each element hashes to a different value

(A) i only
(B) ii only
(C) i and ii only
(D) iii or iv

RIGHT ANSWER: (D)

Q.5 Consider a hash table of size seven, with starting index zero, and a hash function (3x + 4) mod 7. Assuming the hash table is initially empty, which of the following is the contents of the table when the sequence 1, 3, 8, 10 is inserted into the table using closed hashing? Note that '_' denotes an empty location in the table.
(A) 8, _, _, _, _, _, 10
(B) 1, 8, 10, _, _, _, 3
(C) 1, _, _, _, _, _,3
(D) 1, 10, 8, _, _, _, 3

RIGHT ANSWER: (B)