CS2223 D Term 2020 Quiz 13

(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: The augmented upper-triangular coefficient matrix below represents a system of three linear equations in three variables with solution:

$$\begin{bmatrix} 1 & 1 & 1 & 4 \\ 0 & 3 & 1 & 6 \\ 0 & 0 & 2 & 6 \end{bmatrix}$$

a.) (0,1,3)
b.) (1,0,3)
c.) (0,1,6)
d.) (1,0,6)
e.) (4,6,6)

(3 points) Question 3: Pivot values / entries

What is the purpose of a pivot in the Gaussian Elimination algorithm?

a.) To sort values in the same row as the pivot.
b.) To sort values in the same column as the pivot.
c.) To zero out all the entries to the right of the pivot in its row.
d.) To zero out all the entries below the pivot in its column.
e.) To turn an unsolvable problem matrix into a solvable one.

(3 points) Question 4: Which of the following does NOT preserve the nature of the solution(s) of a system of equations represented by an $n \times (n+1)$ matrix?
(That is, which move is illegal in Gaussian Elimination?)

a.) Multiplying a row by a non-zero scalar.
b.) Subtracting a scalar multiple of a row from another row.
c.) Subtracting a row from itself.
d.) Adding a row to another row.
e.) Swapping (interchanging) two rows.

(1 point) Bonus Question: A system of n linear equations in n unknowns. . .

a.) Always has one unique solution.
b.) Can have up to n unique solutions.
c.) Always has n solutions, counting multiplicities.
d.) Has one unique solution unless it is inconsistent, in which case it has no solution.
e.) Has exactly one solution, or has infinitely many solutions, or has no solution.