CS2223 D Term 2020 Quiz 18

(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: Horspool's Algorithm takes as input two strings:
The first is called the ***text*** which is scanned for the other, called the ***pattern***.
What is the output of Horspool's Algorithm on a successful search?

a.) The left index (position in the text) of the first matching substring of the pattern.
b.) The right index (position in the text) of the first matching substring of the pattern.
c.) The left index (position in the text) of the last matching substring of the pattern.
d.) The right index (position in the text) of the last matching substring of the pattern.
e.) The number of occurrences of the pattern in the text.

(3 points) Question 3: The entries in a pattern's shift table for an execution of Horspool's Algorithm take on what values?

a.) 0 to m, the length of the pattern being sought.
b.) 0 to n, the length of the text being searched.
c.) 1 to m, the length of the pattern being sought.
d.) 1 to n, the length of the text being searched.
e.) 0 to nm, the product of the lengths of the text and the pattern.

(3 points) Question 4: Horspool's Algorithm has worst case $O(nm)$ and average/expected case $\Theta(n)$, where n is the length of the text through which the algorithm searches for a pattern of length m. The brute-force single-advance algorithm has the same time complexity. Why is Horspool's Algorithm nonetheless preferable?

a.) The Big-O and Θ notations conceal bigger constants in Horspool's Algorithm.
b.) The Big-O and Θ notations conceal bigger constants in the brute-force method.
c.) Horspool's Algorithm encounters average case more often than the brute-force method.
d.) The brute-force method encounters worst case more often than Horspool's Algorithm.
e.) There's no reason to prefer Horspool's Algorithm over the brute-force method.

(1 point) Bonus Question: Horspool's Algorithm string matching algorithm grows from considering four distinct cases. Why are there exactly four cases?

a.) Terminal symbol t of pattern matches text c or not; there is a duplicate of c in pattern or not; $2 + 2 = 4$.
b.) Terminal symbol t of pattern matches text c or not; there is a duplicate of c in pattern or not; $2 \times 2 = 4$.
c.) Horspool's Algorithm checks the first and last characters of the pattern—each matches or not.
d.) The Horspool's Algorithm makes four passes of the pattern in constructing the shift table.
e.) The pattern "Horspool's Algorithm" has four (4) 'o' symbols in it.