CS2223 D Term 2020 Quiz 22

(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 matrix below is not a legitimate **Ranking Matrix** for finding a Stable Marriage of 5 hockey players and 5 positions. Why not?

	LeftWing	Center	RightWing	LeftDefense	RightDefense
Adrian	1,1	2,2	3,3	4,4	5,5
Bobby	2,2	1,1	3,4	5,2	4,2
Chip	3,3	2,3	3,5	1,3	3,3
Denver	4,4	2,5	3,1	1,1	5,4
Everett	5,5	4,4	3,2	1,5	2,1

a.) (1,1) cannot appear more than twice in a valid ranking matrix, but it's here thrice.
b.) The first entries under the 'Right Wing' column are all 3's. That's impossible.
c.) Chip doesn't have a least-favorite/worst position.
d.) Hockey requires 6 players – the Goalie is left out!
e.) It is, indeed, a valid Ranking Matrix.

(3 points) Question 3: The ranking matrix below represents the expected top three players and cities for the upcoming National Ultimate Frisbee League draft. Which pair constitutes a blocking pair of the suggested marriage in the ranking matrix below?

a.) (Hailey, Atlanta)
b.) (Hailey, Boston)
c.) (Hailey, Chicago)
d.) (Izzy, Chicago)
e.) (Joey, Chicago)

	Atlanta	Boston	Chicago
Hailey	1,3	**2,2**	3,1
Izzy	**2,2**	3,1	1,2
Joey	2,1	1,3	**3,3**

(3 points) Question 4: Which of the following constitutes a stable marriage based on the ranking matrix above?
a.) (Hailey, Atlanta), (Izzy, Boston), (Joey, Chicago)
b.) (Hailey, Atlanta), (Izzy, Chicago), (Joey, Boston)
c.) (Hailey, Boston), (Izzy, Boston), (Joey, Boston)
d.) (Izzy, Atlanta), (Izzy, Boston), (Izzy, Chicago)
e.) No stable marriage exists for this ranking matrix.

(1 point) Bonus Question: Another stable marriage for the ranking matrix above is: (Hailey, Boston), (Izzy, Chicago), (Joey, Atlanta). It is:

a.) City-Optimal
b.) Player-Optimal
c.) Neither Player-Optimal *nor* City-Optimal
d.) Both Player-Optimal *and* City-Optimal
e.) A stable marriage with a blocking pair.