1.

a. For A:
   - Maxmin value: 3, by choosing row 2.
   - Minmax value: 3, if the opponent chooses column 2.

   For B:
   - Minmax value: 3, by choosing column 2.
   - Maxmin value: 3, if the opponent chooses row 2.

b. Only 5\5 is Pareto efficient

c. Pure Nash equilibria: 5\5 and 3\3.
   For A, row 3 is strictly dominated.
   For B, column 3 is strictly dominated.
   This leaves us with a matrix:

A\B	1	2
1	5\5	1\4
2	4\1	3\3

   This gives for A:
   5p + (1-p) = 4p + 3(1-p)
   Resulting in p = 2/3
   The strategy for A is therefore (2/3,1/3)

   This gives for B:
   5x + (1-x) = 4x + 3(1-x)
   Resulting in x = 2/3
   The strategy for B is therefore (2/3,1/3)

d. The expected utility for the mixed strategy is the same due to how the game works.
   2/3 * 2/3 * 5 + 1/3 * 1/3 * 3 = 2.555556

e. This is a self-committed utterance, because if the column player believes the utterance the action will indeed be the best for player A
   This is not a self-revealing utterance, because if player B does not believe the utterance it will result in a sub-optimal solution for player B. In other words, player A will want player B to believe this statement no matter what because otherwise the player will be put in a lesser utility value. Player A has an incentive to make player B believe the utterance.

f. This is not a self-committed utterance, because column 3 is strictly dominated by the other columns. So, if player A believes player B, player B has every incentive to play a different column.
   This is also not a self-revealing utterance, because the utterance will result in row 2 being chosen by player A which creates a scenario with the lowest possible utilities for player B.

2.

a. G = ({a,b,c},v), where
   - v(0) = 0
   - v({a}) = 40, v({b}) = 25, v({c}) = 35,
   - v({a,b}) = 65, v({a,c}) =75, v({b,c}) = 60, and
   - v({a,b,c}) = 100

b. The core of this game is indeed empty. While the efficiency $\sum_{i \in N} x_i = v(N)$ is being met, the stability equations are not being met. These being: a + b ≥ 65 and a + c ≥ 75 and b + c ≥ 60.
c. As all parties are interchangeable, the correct Shapley values are (33.33, 33.33, 33.33).

3.

a. Pure, the equilibrium is (r,r,L).
b. The sub game equilibria are: (r,l,R) and (r,r,L).
c.

A\B	L	R
l	2\2	2\2
r,l	5\4	3\6
r,r	4\2	1\0

For player A, (r,l) is a dominant strategy.
For player B, no dominant strategies exist.

4.

a. Plurality: c
Majority: d
Condorcet: d
Approval: d
Borda: d
b. *d* is the winner in this system. This is due to *a* dropping out first, followed by either *b* then c or *c* then *b*. After this only *d* remains and is therefore winner.
c. As said, this wil probably not impact any decisions as the order for b and c does not matter.
d. .
e. .

5.

a. .
b. .