Questions on static games

1. Write the definition of a normal form game.

2. Write the definition of the Nash equilibrium.

3. Write the definition of dominated strategy.

4. Write the definition of strictly dominated strategy.

5. Write the definition of dominant strategy.

6. Write the definition of strictly dominant strategy.

7. Any combination of strategies that is Pareto optimal is also a Nash equilibrium. If the statement is true try to reason why, if it is false find a counterexample.

8. Any Nash equilibrium in a normal form game is also Pareto optimal. If the statement is true try to reason why, if it is false find a counterexample.

9. A weakly dominated strategy for a player may be part of a Nash equilibrium. If the statement is true try to reason why, if it is false find a counterexample.

10. A strictly dominated strategy for a player may be part of a Nash equilibrium. If the statement is true try to reason why, if it is false find a counterexample.

11. Let us define a social optimum as a combination of strategies such that the sum of utilities for all players is greater or equal than the sum of utilities in any other strategy combination. Any social optimum is also a Nash equilibrium. If the statement is true try to reason why, if it is false find a counterexample.

12. Every Nash equilibrium is also a social optimum. If the statement is true try to reason why, if it is false find a counterexample.

13. If a game has only one Nash equilibrium in pure strategies then it has no Nash equilibrium in mixed strategies. If the statement is true try to reason why, if it is false find a counterexample.

14. Discuss a particular characteristic that is necessary for a normal form game with a finite number of pure strategies to have an infinite number of equilibria in mixed strategies. You may use an example.

15. Classify the following games using the labels “coordination”, “battle of the sexes”, “matching pennies” and “prisoners’ dilemma”.

16. Give an example of each one of the following types: “coordination”, “battle of the sexes”, “matching pennies” and “prisoners’ dilemma”.
(Here some games would be displayed.)

17. Provide an example of a game in which one / two player(s) has /have a dominated /estrictly dominated / dominant /strictly dominant strategy.

18. A pure strategy can be dominated by a mixed strategy. If the statement is false try to reason why, if it is true find an example.

19. If a player chooses a mixed strategy in an equilbrium this implies that the utility of using that mixed strategy is the same as the utility of using any of the pure strategies in it. If the statement is true try to reason why, if it is false find a counterexample.