Optimization homework

Q1. Develop the extensive form of the game of matching pennies. In the game each player chooses to show heads or tails.

Player A wins a Rupee if both players make the same choice and B wins a Rupee if the choices are different.

List pure strategies of both the players and then give the normal form.

Now the players decide to modify the game. The basic rule remains the same (i.e. A wins for the same choices while B wins for the different ones) but now a player has to win 2 out of 3 such mini games before he wins a Rupee.

Modify the extensive form, pure strategies and the normal form.

Q2. Represent the following game in extensive form and then reduce it to matrix form. Player A has an Ace and a Queen. Player B has a King and a Joker. The rank precedence is Ace > King > Queen but Joker is peculiar as it is described further.

Each player contributes a Rupee to the pot before the game starts. Each selects one of the cards and reveals them simultaneously.

If B selects the king then the highest card owner wins the pot and the game ends. If B selects the joker and A Queen then they share the pot equally and the game ends. If B selects a joker and A the Ace then A may either resign (in which case B gets the pot) or may demand a replay. If there is a replay then each of them put another Rupee in the pot. Now if B selects the joker and A the Ace then B wins the pot.