Assignment on Repeated Prisoner's Dilemma

RPD1.
Given the following payoff matrices for the Prisoner's Dilemma Game, let β be the discount factor.

$$\boxed{\begin{matrix} 2,2 & -1,3 \\ 3,-1 & 0,0 \end{matrix}}$$

(i) Find $\delta \in (0,1)$ so that $\beta > \delta$ implies $\langle \mathrm{PR}, \mathrm{PR} \rangle$ is a SE.

(ii) Find $\delta \in (0,1)$ so that $\beta > \delta$ implies $\langle \mathrm{TFT}, \mathrm{TFT} \rangle$ is a SE.

RPD2.
Given the following payoff matrices for the Prisoner's Dilemma Game, let β be the discount factor.

$$\boxed{\begin{matrix} 2,2 & -1,3 \\ 3,-1 & 0,0 \end{matrix}}$$

Let s be a nice strategy (start with Cooperate and never the first one to Defect) such that <s, s> is a SE. Show that there is a constant K independent of s such that $\beta \geq K$.

RPD3.
Let S be the strategy that it will start with C and continue to do so until the opponent plays D in the previous game. In this case, this strategy will play C with probability1/3 and D with probability 2/3. Find the transition matrix when Player I uses S and Player II uses TFT.

RPD4.
Use the Prisoner's Dilemma payoff matrix in Problem RPD1 to show that in a population using ALLD and PR, PR is an ESS when β is sufficiently large.