Lab A2

Question 1.

Possible states: Up to 12 of each color on the black squares of the board, Not possible to have zero of both. ~ 500 Billion Billion (internet source)

Initial state: Start board, the same as the image on the lab (figure 1.1).

Transition function: For the current player: Each piece, if not king, can be moved diagonally forward 1 step if that step is empty or two steps diagonally if the first step is occupied by the opponents piece. The oponents piece is removed if jumped over. A piece can keep on jumping as long as it jumps over the opponents piece. When a piece reaches the top row, the piece becomes a "king" and backwards diagonal movements and jumps become possible.

+ If you can jump over the opponent's piece, you have to jump over it.

Question 2: for checkers: If a player can not make any moves due to being blocked or if one player doesn't have any pieces left.

Question 2: For tic tac toe: If a player have three in a line, horizontally, diagonally or vertically. Or if all squares are occupied.

Question 3:

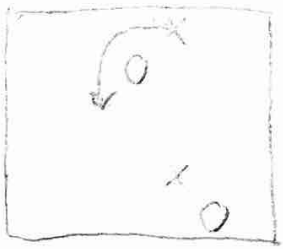
① Easy to compute, compared to all possible states.

② More pieces on the board is usually better.

Question 4: At the end of the game, when at least one player only have one piece left, and when in a state one step away from terminating state.

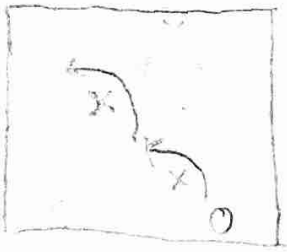
Question 5.

state 1



$V(X,2) = 1 = 2-1$

state 2



but O wins in the following turn.

Question 6: From one perspective it is better because it looks at forward steps but it might still be misleading since it assumes that the opponent plays randomly. The opponent might only be able to win in one future state, but that state could be just one step in the future.