2. Analysis:

(a)

3. Theory:

(a) State three ways in which the peer-to-peer file sharing game of the BitTorrent network is different from a repeated Prisoner’s dilemma.

1) BitTorrent network has more than 2 players (peers).

2) BitTorrent peers have more than just two actions. They can decide how much upload bandwidth to make available to each peer. In Prisoner’s dilemma, the decisions are only sharing (cooperate) and not sharing (defect).

3) In BitTorrent, one player (peer) might quit the game after they finish downloading while other peers are still in the game downloading. Also one peer’s payoff (any bandwidth that received) depends on both the seeder and the actions of other peers in that seeder’s neighborhood. While in Prisoner’s dilemma, player’s payoff only depends on the other player’s action.

(b) State three ways in which the BitTorrent reference client is different from the tit-for-tat strategy in a repeated Prisoner’s Dilemma.

1) Besides rewarding a certain number of peers that give most download to the user, that user would also give an additional optimistic unchoking slot to a random peer from its neighborhood and let that random selected peer to download.

2)

(c) Explain two reasons why just having a BitTorrent client that is a best response to itself is insufficient for this client to form an equilibrium in a peer-to-peer system.