Repeated games

1. In an infinitely repeated game, the discount factor δ can be read as ...
   (a) the probability that the game continues to another round
   (b) the number of rounds already played
   (c) the number of players
   (d) the payoff from defecting
2. The Grudger strategy ...
   (a) copies the opponent's last move
   (b) always defects
   (c) cooperates until the opponent defects, then defects for ever
   (d) cooperates with probability 1/2
3. The Folk Theorem says that, for patient enough players, ...
   (a) cooperation is impossible
   (b) any individually rational payoff pair can be sustained in a subgame perfect equilibrium
   (c) the game must be zero sum
   (d) only the stage Nash equilibrium can occur
4. In the finitely repeated Prisoner's Dilemma with a known last round, ...
   (a) cooperation is sustained throughout
   (b) the players cooperate only in the last round
   (c) there is no subgame perfect equilibrium
   (d) backward induction forces defection in every round
5. The individually rational payoff of a player is ...
   (a) the largest payoff in the game
   (b) the most they can guarantee themselves whatever the opponent does (their minimax value)
   (c) always zero
   (d) the payoff from mutual cooperation
6. As the temptation payoff T increases, the discount factor needed to sustain cooperation ...
   (a) stays the same
   (b) decreases
   (c) becomes negative
   (d) increases (players must be more patient)

7. A strategy in a repeated game is ...
   (a) the payoff matrix
   (b) the discount factor
   (c) a single action played every round
   (d) a mapping from the history of play to an action in the stage game

8. The discounted value of receiving a payoff c every round is ...
   (a) $c\delta$
   (b) c/δ
   (c) $c/(1-\delta)$
   (d) $c(1-\delta)$

9. The average utility of a payoff stream is defined as ...
   (a) $(1-\delta)$ times the discounted total
   (b) the largest stage payoff
   (c) the discounted total
   (d) the payoff in the first round

10. Playing a Nash equilibrium of the stage game in every round is ...
    (a) always a subgame perfect equilibrium of the repeated game
    (b) impossible to compute
    (c) never an equilibrium
    (d) only a Nash equilibrium if the game is finite

11. Cooperation can be sustained in the infinitely repeated Prisoner's Dilemma because ...
    (a) the stage game has no Nash equilibrium
    (b) players cannot remember the past
    (c) defection is impossible
    (d) there is no last round, so future punishment can deter defection

12. The expected number of rounds when δ is the continuation probability is ...
    (a) infinite for any δ
    (b) $1-\delta$
    (c) $1/(1-\delta)$
    (d) δ

13. In Grudger, the punishment phase consists of ...

(a) returning to cooperation after one round

(b) alternating cooperation and defection

(c) both players playing the stage Nash equilibrium (mutual defection) for ever

(d) ending the game immediately

14. For cooperation to be sustainable, the cooperative payoff must exceed ...

(a) the number of rounds

(b) the gain from a one-off defection followed by punishment

(c) the discount factor

(d) the total of all stage payoffs

15. A larger discount factor δ means ...

(a) the future matters less

(b) the future matters more, making cooperation easier to sustain

(c) the game is shorter

(d) defection is always best

16. The utility of an infinitely repeated game with discount factor δ is ...

(a) $\max_i u(s_r(i), s_c(i))$

(b) $\sum_{i=0}^{\infty} \delta^i u(s_r(i), s_c(i))$

(c) $\sum_{i=0}^{\infty} u(s_r(i), s_c(i))$

(d) $\delta\, u(s_r(0), s_c(0))$

17. An individually rational payoff pair is one that ...

(a) equals the temptation payoff

(b) gives one player everything

(c) minimises both players' payoffs

(d) exceeds the stage-game Nash equilibrium payoffs for both players

18. For a patient enough population the Folk Theorem constructs a subgame perfect equilibrium achieving ...

(a) any feasible individually rational payoff pair

(b) no payoff at all

(c) only the stage Nash payoff

(d) only the cooperative payoff

19. In the Folk Theorem's trigger strategy, a deviation is punished by ...

(a) leaving the game

(b) forgiving after one round

(c) raising the discount factor

(d) reverting to the stage-game Nash equilibrium for all future rounds

20. Against a trigger strategy, the most tempting time to deviate is ...

(a) a randomly chosen stage

(b) the first stage, since later gains are discounted more heavily

(c) never, deviation always pays

(d) the last stage