Name:

NetEcon final exam

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For each question, check all boxes corresponding to correct answers. There may be zero, one or several.

Advice: Read the questions carefully!

1. Consider the following two-players game:

		P2: A	P2: B
P1	A	5, 2	-1, -1
	B	-1, -1	2, 5

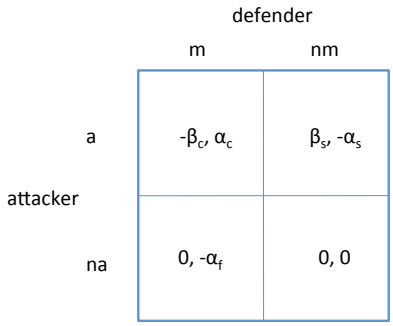
- ☐ It is a potential game with potential f such that f(a, a)=6, f(a, b)=3, f(b, b)=6, f(b, a)=0.
- ☐ It is not a congestion game.
- ☐ It is a potential game with potential f such that f(a, a)=0, f(a, b)=-6, f(b, b)=0, f(b, a)=-3.
- ☐ It has a Nash equilibrium in pure strategy.

2. Consider the following simplified model of a P2P system where the two players can either cooperate (C) or defect (D):

		P2: C	P2: D
P1	C	2, 2	-1, 3
	D	3, -1	0, 0

- ☐ This is a prisoner dilemma.
- ☐ If the game is played once (i.e., one-shot game), both players will cooperate at Nash equilibrium.
- ☐ If the game is played infinitely many times without a discount factor (which is equivalent to a discount factor $\delta=1$), there exists a Nash equilibrium which maximizes the social welfare.
- ☐ If the game is played infinitely many times with a discount factor δ, there exists a Nash equilibrium which maximizes the social welfare for any value of δ.

3. Consider a 2-players attacker defender game. The attacker has 2 actions, attack (a) or not-attack (na) and the defender has 2 actions, monitor (m) or not monitor (nm). The payoffs are (with $\alpha_c>0$, $\alpha_f>0$, $\alpha_s>0$, $\beta_c>0$, $\beta_s>0$):



   - ☐ There exists no Nash equilibrium.
   - ☐ All Nash equilibria are in mixed strategy.
   - ☐ If $\alpha_s>\alpha_f$, the maxmin strategy (or safe strategy) for the defender is m.
   - ☐ At the Nash equilibrium, the probability that the defender monitors depends only on the payoff parameters of the defender α_c, α_f, α_s.

4. Auctions. We consider auctions with a single item, where there is one seller and there are n buyers with independent identically distributed private value.
   - ☐ A second-price auction is equivalent to an open ascending auction.
   - ☐ In a second-price auction, bidding truthfully is weakly dominant.
   - ☐ The revenue for the seller is always the same in a first-price auction and in a second price auction.
   - ☐ In a first-price auction, bidding truthfully is weakly dominated.