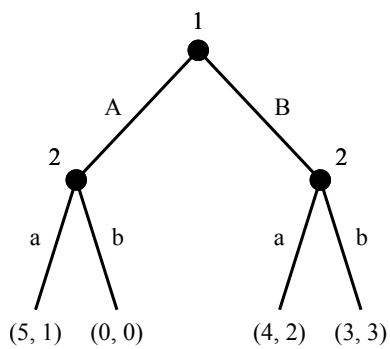


Exam solutions 2018–01–26

ENM140, Game theory and rationality 2017

Question 1

Consider the two-player game depicted below.



1.1

Player 1 has exactly 2 pure strategies.

True

1.2

Player 2 has exactly 2 pure strategies.

False

Player 2 has exactly 4 pure strategies (aa, ab, ba, bb).

1.3

The game has exactly 8 pure strategy profiles.

True

1.4

The game has exactly two pure-strategy Nash equilibria.

False

There are three: (A, aa), (A, ab), (B, bb).

1.5

The game has exactly two subgame perfect Nash equilibria.

False

No, only (A, ab) is subgame perfect.

1.6

The game has exactly one subgame perfect Nash equilibrium.

True

1.7

All pure-strategy Nash equilibria in this game are Pareto optimal.

True

1.8

For player 1, the pure strategy A strictly dominates the pure strategy B.

False

Question 2

Consider the infinitely repeated game with average payoffs where the where the stage game (one-round game) is the game in Question 1 above.

2.1

There is a strategy profile for the repeated game that has average payoff profile (3, 3) and is a Nash equilibrium.

True

Use the Folk theorem.

2.2

There is a strategy profile for the repeated game that has average payoff profile (4, 2) and is a Nash equilibrium.

True

Use the Folk theorem.

2.3

There is a strategy profile for the repeated game that has average payoff profile (5, 1) and is a Nash equilibrium.

True

Use the Folk theorem.

Question 3

Consider a two-player simultaneous action game, where player I has actions A , B , and C , and player II has actions d , e , and f . The payoffs are given by

	d	e	f
A	(2, 10)	(2, 12)	(8, 14)
B	(3, 0)	(5, 5)	(2, 2)
C	(1, 7)	(3, 9)	(3, 3)

3.1

All Nash equilibria in this game are Pareto optimal.

False

3.2

This game has two pure strategy Nash equilibria and at least one mixed strategy equilibrium.

True

3.3

This game has more than one mixed strategy equilibrium.

False

There is exactly one mixed strategy equilibrium.

3.4

The pure strategy where player II always plays d is strictly dominated.

True

3.5

The pure strategy where player I always plays C is strictly dominated.

True

3.6

This is a game of imperfect information.

True

3.7

The game has exactly 9 strategy profiles.

False