

Game Theory Study Questions (Answers on subsequent pages)

1. Two firms must each simultaneously decide which strategy to employ—strategy zoop or strategy jop. Expected profits of each firm are expressed in this payoff matrix:

| | | | |
|--------|------|--------|--------|
| | | Firm X | |
| | | zoop | jop |
| Firm Y | zoop | 50,30 | 60,10 |
| | jop | 12, 36 | 200, 5 |

- Does either firm have a dominant strategy ?
- What is the maximin equilibrium, if any?
- What is/are the Nash equilibrium/equilibria?
- What is the cooperative equilibrium, if any?

2. Two firms must each simultaneously decide which strategy to employ—strategy banff or strategy toro or strategy bingo . Expected profits of each firm are expressed in this payoff matrix:

| | | | | |
|--------|-------|---------|---------|---------|
| | | Firm 1 | | |
| | | banff | toro | bingo |
| Firm 2 | banff | 100,200 | 300,400 | 500,100 |
| | toro | 300,100 | 400,300 | 600,500 |
| | bingo | 200,200 | 300,300 | 500,500 |

- Does either firm have a dominant strategy ?
- What is the maximin equilibrium, if any?
- What is/are the Nash equilibrium/equilibria?
- What is the cooperative equilibrium, if any?

Answers to Game Theory Study Questions

1. Two firms must each simultaneously decide which strategy to employ—strategy zoop or strategy jop. Expected profits of each firm are expressed in this payoff matrix:

| | | | |
|--------|------|--------|--------|
| | | Firm X | |
| | | zoop | jop |
| Firm Y | zoop | 50,30 | 60,10 |
| | jop | 12, 36 | 200, 5 |

- a) Does either firm have a dominant strategy ?
 Strategy Zoop is dominant for firm X
- b) What is the maximin equilibrium, if any?
 Firm X does Zoop and firm Y does Zoop
- c) What is/are the Nash equilibrium/equilibria?
 Firm X does Zoop and firm Y does Zoop
- d) What is the cooperative equilibrium, if any?
 Firm X does Jop and firm Y does Jop (and firm Y shares some profits with firm X)

2. Two firms must each simultaneously decide which strategy to employ—strategy banff or strategy toro or strategy bingo . Expected profits of each firm are expressed in this payoff matrix:

| | | | | |
|--------|-------|---------|---------|---------|
| | | Firm 1 | | |
| | | banff | toro | bingo |
| Firm 2 | banff | 100,200 | 300,400 | 500,100 |
| | toro | 300,100 | 400,300 | 600,500 |
| | bingo | 200,200 | 300,300 | 500,500 |

- a) Does either firm have a dominant strategy ?
 toro is dominant for firm 2
- b) What is the maximin equilibrium, if any?
 Toro for firm 1 and toro for firm 2
- c) What is/are the Nash equilibrium/equilibria?
 Bingo for firm 1 and toro for firm 2
- d) What is the cooperative equilibrium, if any?
 None exist