Name: **Key**

Econ 280—Bethany College

**Exam 03**

* There are 110 possible points on this exam. The test is out of 100.
* You have one hour to complete this exam, but you should be able to complete it in less than that
* Please turn off all cell phones and other electronic equipment.
* You are allowed a calculator for the exam. This calculator cannot be capable of storing equations. This calculator cannot double as a cell phone or other device.
* Be sure to read all instructions and questions carefully.
* Remember to show all your work.
* Recall basic logic. “Water is wet” is a true statement. “Water is wet and leopards have stripes” is a false statement.
* *Please print clearly and neatly.*

**Part I: Multiple Choice.** *Choose the best answer to the following.*

5 points each.

1. Under which auction would you have an incentive to reduce the amount you bid?
   1. English
   2. Nash
   3. 2nd price sealed bid auction
   4. A & C
   5. **None of the above**

*No incentive to shave your bid under either English or 2nd price. “Nash” isn’t a type of auction.*

1. Which of the following is required for revenue equivalence?
   1. Bidders are risk neutral
   2. Values are independent and private
   3. The distribution of the values follows a normal distribution
   4. **A & B**
   5. None of the above

*Distribution doesn’t matter but these do.*

1. Which of the following is an example of the prisoner’s dilemma?
   1. An arms race
   2. Two people walking towards each other
   3. An agreement between competitors to keep prices high
   4. **A & C**
   5. None of the above

*Option B is a chicken game. The other two, as we discussed, are prisoner’s dilemma since in both cases, there is little incentive to cooperate.*

1. If values are correlated, which auction will generate the most revenue?
   1. Dutch
   2. 1st price sealed bid
   3. **English**
   4. A & B
   5. None of the above

*As each bidder hears the others’ bids, the winner’s curse becomes less of a concern so they continue to bid higher.*

1. In the following game, describe the Dodge strategy for Ben.

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Ben | |
| Dodge | Straight |
| Alfred | Dodge | 0 , 0 | -1 , 1 |
| Straight | 1 , -1 | -3 , -3 |

* 1. Weakly Dominate
  2. Strictly Dominate
  3. Dominated by Straight
  4. Nash Equilibrium
  5. **None of the above**

*No strategy is dominant here: sometimes Ben wants to Dodge and sometimes he wants to go straight.*

1. Even though the \_\_\_\_\_ has a dominant strategy, Nash Equilibrium can persistently change if the game is \_\_\_\_ repeated
   1. Chicken Game; infinitely
   2. **Prisoner’s Dilemma; infinitely**
   3. Chicken Game; finitely
   4. Prisoner’s Dilemma; finitely
   5. None of the above

*Recall cooperation in prisoner’s dilemma can persist if the players don’t know when they will play their last game (or they never stop playing).*

1. In the following game, what could X be to ensure there is no Nash Equilibrium?

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Player 2 | |
| In | Out |
| Player 1 | Up | 1 , X | -1 , 2 |
| Down | -1 , 2 | 1 , -1 |

* 1. -2
  2. 1
  3. 3
  4. **A & B**
  5. None of the above

*Either will work since that will encourage Player 2 to switch strategies when Player 1 plays Up.*

1. Night clubs are an example of a platform good, connecting men and women together. How does the night club encourage this connection?
   1. Men often pay for a woman’s drink.
   2. Women often arrive in groups with their friends.
   3. Women get in free while men must pay.
   4. Anyone may use the bathroom for free.
   5. None of the above.

*Here we see another example of cross subsidization: men are effectively paying the cover charge for women. The first two examples have nothing to do with club policy and option D is the same for everyone.*

1. Seventy-nine percent of U.S. households watched the series finale of *M\*A\*S\*H*, on February 28, 1983. While this television event was an experience made slightly more valuable because it was commonly shared, it is unlikely to be repeated on the same scale due to the expansion of cable television and now the internet. If *M\*A\*S\*H* was a network good, based on the information provided, which of the following has the most explanatory power for why TV shows lose so much of its networking power?
   1. **Consumers were now able to be entertained by competitive goods**
   2. There are now few legal barriers to entry
   3. The incumbents lost their hard to replicate resource
   4. The benefits of the network became less than benefit of watching something a person truly enjoyed
   5. None of the above

*The only thing that changed is the introduction of competition. One could reason that people watched the same thing because it was the best available to them, even if they would have wanted to watch something else. Thanks to cable, that something else now exists.*

1. Which of the following is an example of a coordination game?
   1. Choosing a dress for a wedding while making sure no one is wearing the same thing.
   2. Divvying up the parts of a group project so you don’t have to do as much and everyone can work cohesively together.
   3. **You’re not sure where your study group is supposed to meet but the library is the most likely place so you go there.**
   4. Getting the roast beef at a restaurant—the same everyone else gets—because it is the best deal on the menu.
   5. None of the above

*In this simultaneous move game, you want to choose what everyone else chose simply BECAUSE everyone else chose it.*

**Part II: True/False.** *Answer true or false, and justify your answer.*

10 points each.

1. A platform good is a type of network good.

*True. A platform good becomes more valuable as another group uses it. A network good operates the same way except it is more general: it does not consider types of groups.*

1. An example of the winner’s curse is paying to see a movie which turned out to be quite bad.

*False. The winner’s curse requires a bidding scenario. In other words, you win precisely because you are wrong. You could argue this is true, however, since on an abstract level you outbid other customers which is why the price is what it is and not lower.*

1. If a product for a network good is slightly better than another, the nature of network goods will ensure that only the slightly better product will be around.

*False. As we discussed, the best product in a network competition doesn’t have to win. It is easy to get locked into a technically inferior product.*

**Part III: Short Answer.** *Answer the following.*

15 points each.

1. Below describes a possible game considering the Northwest Passage. (Due to climate change the Arctic Sea is covered with less ice, making it more navigable.) Two countries, Canada and Russia, are fighting over the mineral rights, minerals which can now be reached by ship. Find Nash Equilibrium. Indicate which, if any, strategy is dominant. Justify your answer.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | Russia | | |
| Claim Sovereignty | Compromise | Cede Rights |
| Canada | Claim Sovereignty | ***2,2*** | 5,1 | 6,0 |
| Compromise | 1,5 | 3,3 | 5,1 |
| Cede Rights | 0,6 | 1,5 | 0,0 |

*The only Nash Equilibrium (Claim Sovereignty/Claim Sovereignty) is also a dominate strategy. No matter what the other player does, each player is better off claiming sovereignty. Only if they agree to compromise can they be better off, but even if they compromise, they have an incentive to switch to something more hard-line. You might also notice this is a prisoner’s dilemma game, even though there are three strategies rather than two.*

1. Consider the game below. Find rollback equilibrium. Then determine if there is a first or second mover advantage. Be sure to justify your answer.

Alpha

Beta

Beta

0,0

3,1

2,5

5,2

Run

Run

Don’t Run

Many Ads

Don’t Run

No Ads

Beta

1,4

4,3

Run

Don’t Run

Few Ads

*The rollback equilibrium here is Many Ads/Don’t Run. Beta wouldn’t Run, Don’t Run, and Run for Many Ads, Few Ads, No Ads, respectively. That means Alpha chooses between 3, 1, and 2. Three is best so she has Many Ads.*

*For mover advantage, we swap the order:*

Alpha

Beta

0,0

4,1

3,4

2,5

Run

Many Ads

Don’t Run

No Ads

5,2

1,3

Few Ads

Alpha

Many Ads

No Ads

Few Ads

*And then we prune (indicated by the dotted line).*

Alpha

Beta

0,0

4,1

3,4

2,5

Run

Many Ads

Don’t Run

No Ads

5,2

1,3

Few Ads

Alpha

Many Ads

No Ads

Few Ads

*And then we prune once more.*

Alpha

Beta

0,0

4,1

3,4

2,5

Run

Many Ads

Don’t Run

No Ads

5,2

1,3

Few Ads

Alpha

Many Ads

No Ads

Few Ads

*The new rollback equilibrium is Run/No Ads. Beta now has a payoff of 5 when before she had only 1. Alpha’s payoff, in contrast, has fallen from 3 to 2. There is a first-mover advantage (because Beta’s payoff increased when she went first and Alpha’s decreased when he went second).*