

Here are few simple questions on game theory.

1. In a one-shot game, if you advertise and your rival advertises, you will each earn \$5 million in profits. If neither of you advertise, your rival will make \$4 million and you will make \$2 million. If you advertise and your rival does not, you will make \$10 million and your rival will make \$3 million. If your rival advertises and you do not, you will make \$1 million and your rival will make \$3 million.

- a. Write the above game in normal form.
- b. Do you have a dominant strategy?
- c. Does your rival have a dominant strategy?
- d. What is the Nash equilibrium for the one-shot game?
- e. How much would you be willing to bribe your rival not to advertise?

2. You are considering entering a market serviced by a monopolist. You currently earn \$0 economic profits, while the monopolist earns \$5. If you enter the market and the monopolist engages in a price war, you will lose \$5 and the monopolist will earn \$1. If the monopolist doesn't engage in a price war, you will each earn profits of \$2.

- a. Write out the extensive form of the above game.
- b. There are two Nash equilibria for the game. What are they?
- c. Is there a subgame perfect equilibrium? Explain.
- d. If you were the potential entrant, would you enter? Explain why or why not.

3. You are the manager of Copies Are Us. The only other copy store in town, the Carbon Copy, recently got bids on adding a color copier. You must decide whether to obtain a color copier, but you can base decision on what your rival does. If your rival adds a color copier and you don't, you expect your profits to fall by \$1,000 per week and its profits to rise by \$1,500 per week. Conversely, if you add the color copier and your rival does not, your profits will increase by \$1,500 per week and your rival's profits will fall by \$1,000 per week. However, if you both do the same thing (add color copies or not), you each expect profits to stay at their current level. Show the extensive form of this game, and find the Nash equilibrium (or equilibria). Is there a subgame perfect equilibrium?