**Principles of Economics**

**PROBLEM SET NO 4**

**ASSESSMENT:**

**Answer all questions. Each question in part A and sub-question in part B is worth the same. For detailed assessment criteria see the subject outline.**

**PART A (INTRODUCTION TO THE KEY CONCEPTS)**

1. Over the past 40 years, technological advances have reduced the cost of computer chips. Explain how this affected the market for computers and the market for typewriters (provide a diagram in each case) (*hint:* realize that a computer chip is an input into the production of computers, which makes supplying the computer cheaper… and also realize what typewriter is to computers.)
2. Headphones and mobile phones are complements because they are often enjoyed together. When the price of mobile phones rises, what happens to the supply, demand, quantity supplied, quantity demanded and the price in the market for headphones?
3. Indicate whether the following statement is TRUE or FALSE and *explain your answer*: An increase in the price of electric cars will lead, other things equal, to a decrease in the equilibrium price of cars using petrol.
4. MULTIPLE CHOICE (identify the one **best answer** below and *explain your reasoning for* ***each*** *option*): If the economy experiences a boom and incomes rise substantially, what happens in the markets for *both normal and inferior* goods?
   1. In both markets, prices fall, quantities rise.
   2. In both markets, prices and quantities both fall.
   3. In both markets, prices rise, quantities fall.
   4. In one market both prices and quantities rise, in the other both prices and quantities fall.
   5. None of the above.

**PART B (INDEPENDENT THINKING AND APPLICATION)**

1. *(KEY QUESTION)* Suppose that a consumer spends a fixed amount of income per month on the following pairs of goods:
2. tortilla chips and salsa
3. tortilla chips and potato chips
4. movie tickets and gourmet coffee
5. travel by bus and travel by subway

If the price of one of the goods increases, explain the effect on the quantity demanded of each of the goods. In each pair, which are likely to be complements and which are likely to be substitutes?

1. ***(KEY QUESTION)*** Consider the market for station wagons. For each of the events listed below, identify which of the determinants of demand or supply are affected. Also indicate whether demand or supply is increased or decreased.
2. People decide to have more children.
3. The price of mini-vans rises.
4. A strike by steelworkers raises steel prices.
5. Engineers develop new automated machinery for the production of station wagons.
6. A stock market crash lowers people's wealth.
7. IMPORTANT: In all the above cases, is the change in equilibrium quantity less, more, or equal to the initial change in demand or supply? Why is this? (recall our discussion in the lectures, you can check slides 3-6 from week 5 or the lecture recordings.
8. IMPORTANT: Now assume the changes in parts a. and c. happen simultaneously. Show them on the diagram and explain what will/may happen to the equilibrium price and quantity (I encourage you to try this for combinations of the other changes too).
9. **An optional question to give you more practice solving games.** Consider the following one-shot simultaneous game:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | *David* | | |
| K | L | M |
| *Susan* | X | 4, 0 | 3, 1 | 2, 0 |
| Y | 3, 2 | 0, 0 | 1, 1 |
| Z | 1, 2 | 2, 8 | 2, 2 |

1. Before solving the game, put yourself in the position of Susan and write down your action. Then independent of that, put yourself in the position of David and write down your action.
2. State all the dominated strategies in the full game, by which strategy they are dominated, and whether weakly or strictly.
3. Solve the game by dominance, what is the equilibrium outcome by dominance, if any?
4. What are the pure strategy Nash equilibria of this game?
5. Argue which NE is more likely and why. You can then relate this argument to your play in part a.
6. Assume David is the leader and Susan the follower. Solve the game by backwards induction. What is the equilibrium outcome? Explain your steps. Is David’s leadership and advantage to him compared to the simultaneous game? Is David’s leadership advantage to Susan?