

Name: KEY

Student number: _____

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ECO1104B: INTRODUCTION TO MICROECONOMICS

SECOND MIDTERM EXAMINATION

Professor: David Gray

Fall 2014

INSTRUCTIONS

- a) The allotted time is 40 minutes. There are a total of 40 points, or one point per minute.
- b) Turn off all cellular telephones.
- c) You may not consult with any written materials whatsoever, including other students' papers, and no conversation is permitted while the examination is in progress. The only electronic devices that are permitted are non-programmable calculators and dictionaries for students whose native tongue is not English. Any contravention of these rules will be treated as a case of academic fraud.
- d) Good luck. I anticipate that some of you will be pressed for time. Please pace yourself accordingly, and respond carefully. **DO NOT SPEND TOO MUCH TIME ON ANY ONE QUESTION.**
- e) All of the questions which follow are very straightforward, and can be answered in a few sentences. The responses that I hope to elicit have been repeated by me several times in class. Please take a minute to concentrate on the question being asked, as opposed to writing down everything which comes to your mind about a certain topic. I have tried to pose the questions in such a way that you focus correctly.

PART I – SHORT ANSWER, CONCEPTUAL QUESTIONS (22 points)

1) (4 points) Explain in words the relationship between the price elasticity of demand and:

a. the availability of substitute goods that are available to the consumer

THE GREATER THE AVAILABILITY OF SUBSTITUTE GOODS, THE HIGHER IS THE PRICE ELASTICITY OF DEMAND. IF A PRICE RISES (FALLS) BY EVEN A SMALL AMOUNT, CONSUMERS CAN EASILY SHIFT THEIR PURCHASES TOWARDS (AWAY FROM) SUBSTITUTE GOODS.

b. the importance of expenditures on that good in consumers' budgets

THE HIGHER THE SHARE OF THE BUDGET THAT IS ALLOCATED TO A PARTICULAR GOOD OR SERVICE, THE HIGHER IS THE PRICE ELASTICITY OF DEMAND. THIS IS BECAUSE BOTH PRICE INCREASES AND DECREASES ARE FELT MORE BY THE CONSUMER, WHICH STRENGTHENS THEIR RESPONSE.

c. whether the good/service in question is a luxury or a necessity

ALMOST BY DEFINITION, LUXURIES HAVE A HIGH PRICE ELASTICITY OF DEMAND, AND NECESSITIES HAVE A LOW PRICE ELASTICITY OF DEMAND. LUXURIES ARE NOT NEEDED, WHILE NECESSITIES ARE, WHICH GOES A LONG WAY IN EXPLAINING THIS ECONOMIC FACT.

d. the price elasticity of supply

THERE IS ABSOLUTELY NO RELATIONSHIP BETWEEN THE TWO FOR ANY GIVEN GOOD OR SERVICE. THE PRICE ELASTICITY OF DEMAND FOR A GOOD IS TOTALLY INDEPENDENT OF ITS PRICE ELASTICITY OF SUPPLY.

2) (3 points) Suppose that the Ontario government accedes to (i.e. gives its consent to) the request of the "fair-wage" movement and raises the minimum wage in Ontario to \$ 15 per hour, which is doubtlessly well above the equilibrium wage for unskilled labour offered by inexperienced workers. Do not provide any graphical analysis.

a. This policy measure is most likely to meet the government's objective of making this group of workers better off if the price (or wage) elasticity of demand for labour is inelastic. Explain why this is so.

EMPLOYERS WILL NOT RESPOND AS MUCH TO THE WAGE INCREASE, AND THUS EMPLOYMENT WILL ONLY FALL BY A LITTLE. AS THE WAGE

INCREASES, THE TOTAL PAYROLL, OR EMPLOYMENT EXPENDITURES, WILL RISE.

- b. We would expect some type of market imbalance to arise. Under what conditions would the magnitude be the largest?

WE WOULD EXPECT A SITUATION OF EXCESS QUANTITY SUPPLIED OF LABOUR, OR A SURPLUS. THE HIGHER THE PRICE ELASTICITY OF DEMAND AND THE HIGHER THE PRICE ELASTICITY OF SUPPLY, THE GREATER OF MAGNITUDE OF THE SURPLUS. WHEN BOTH OF THESE QUANTITIES ARE ELASTIC, BOTH SIDES OF THE MARKET ARE RESPONSIVE TO THE WAGE INCREASE IN A FASHION THAT CONTRAVENES (WORKS AGAINST) THE OBJECTIVE OF THE POLICY.

- 3) (5 points) Consider the content of chapter seven, whose title is “Consumers, producers, and the efficiency of markets.”

- a. Define what is meant by an efficient, or optimal, allocation of resources.

AT THAT LEVEL OF OUTPUT, TOTAL SURPLUS IS MAXIMIZED. ANY OTHER LEVEL OF OUTPUT YIELD A LOWER LEVEL OF SOCIAL SURPLUS.

- b. What is this level of output? Explain intuitively why this is the case. Hint: what is it about the last, or marginal unit produced, that is so special. I went over this in class thoroughly.

IT OCCURS AT THE MARKET EQUILIBRIUM QUANTITY WHERE QUANTITY DEMANDED = QUANTITY SUPPLIED. AT THE MARGIN, THE CONSUMERS’ VALUATION OF THE BENEFIT ON THE DEMAND SIDE = THE PRODUCERS’ VALUATION OF THE COST ON THE SUPPLY SIDE.

- c. Define briefly what is meant by the term market failure.

IT IS ANY SITUATION WHERE THE PREVAILING LEVEL OF OUTPUT IS NOT THE SAME AS THE SOCIALLY EFFICIENT LEVEL OF OUTPUT. IT COULD BE THAT THE FREE MARKET IS EITHER OVER-PRODUCING OR UNDERPRODUCING RELATIVE TO THE SOCIALLY EFFICIENT LEVEL OF OUTPUT.

- 4) (3 points) About a week ago the major credit card companies, Visa, MasterCard, and American Express, announced that they would lower the fees that they charge to retailers who accept credit card payments from their customers. Under the former system, which is still in effect now, consumers like you and me do not explicitly pay these charges, but the retail merchants and vendors certainly do – to the tune of about 3.5 % of the retail

price. One can interpret this reduction in charges like a tax cut (the retailers no longer have to remit as much for each dollar spent for a credit card charge). Consumers are hoping that some of this reduction in fees will be passed on to them in the form of lower retail prices. Under what conditions will consumers benefit the most in the form of lower prices paid at the check-out line? (Hint: apply the model for tax incidence)

THIS WILL OCCUR WHEN THE PRICE ELASTICITY OF SUPPLY IS ELASTIC AND THE PRICE ELASTICITY OF DEMAND IS INELASTIC. UNDER THOSE CIRCUMSTANCES, IT IS CONSUMERS WHO BEAR MOST OF THE BURDEN OF A TAX. THEREFORE, IT IS CONSUMERS WHO WOULD BENEFIT THE MOST FROM WHAT AMOUNTS TO A TAX CUT. THINK OF THE CASE OF A TAX INCREASE. FIRMS WILL WANT TO PASS ON ALL OF THE BURDEN TO CONSUMERS IN THE FORM OF HIGHER PRICES, AND THEY ARE BEST POSITIONED TO DO SO WHEN THE FIRMS ARE PRICE-RESPONSIVE (ELASTIC), AND THE CONSUMERS ARE PRICE-UNRESPONSIVE (INELASTIC)

I DID NOT ASK FOR ANY GRAPH IN THIS CASE.

- 5) (4 points) I mentioned in class that economists were dead set against cutting the GST, and most of them are against raising corporate income taxes. Explain why this is the case. The answer to this question is also contained in three of the news articles that I asked you to read, which I labelled: "Tax Increase for Ontario", "Cutting the GST", and "Environmental Tax Policy".

I HOPE THAT YOU READ THESE ARTICLES. I HAVE ASKED THE GRADERS TO GIVE AT LEAST PARTIAL CREDIT IF THEY HAVE THE IMPRESSION THAT YOU READ THEM. BASIC PRINCIPLE # 5 IS THAT PEOPLE RESPOND TO INCENTIVES. WHATEVER WE TAX, ALL OTHER FACTORS HELD CONSTANT, WE WILL GET LESS OF. THEY WOULD HAVE PREFERRED THAT INCOME TAXES BE CUT INSTEAD OF THE GST, AS THE INCOME TAXES APPLY TO THE FACTORS OF PRODUCTION. WHILE THE CUT IN CONSUMPTION TAXES STIMULATES CONSUMPTION, A CUT IN INCOME TAXES WOULD HAVE STIMULATED PRODUCTION ACTIVITIES, WHICH IS A SUPERIOR OUTCOME.

- 6) (3 points) Why do economists favour the imposition of effluent charges (or corrective taxes) or tradable permits as opposed to command and control measures? I went over this in class, and it is also emphasized in the textbook.

WITH THE COMMAND AND CONTROL MEASURES, NO PRODUCER, WHETHER CLEAN OR DIRTY, HAS ANY INCENTIVE TO REDUCE THE POLLUTION THAT THEY EMIT TO A LEVEL THAT IS LOWER THAN THE SPECIFIED QUOTA. IN THE CASE OF THOSE OTHER TWO MARKET-ORIENTED MEASURES, THEY DO HAVE AN INCENTIVE TO POLLUTE LESS.

PART II – PROBLEMS (18 points)

7. (8 points) The demand schedule for DVDs is as follows:

price (\$ per unit)	Quantity demanded (units per year)
8	40
10	32
12	24
14	16
16	8

- a) Calculate the price elasticity of demand between the prices of \$ 8 and \$ 10. Is this elastic or inelastic demand? Show your work. (3 points)

$ped = (\% \text{ change in } Qd) / (\% \text{ change in } P) = (\text{change in } Qd / Qd) / (\text{change in } P / P) = (\text{change in } Qd / Qd) * (P / \text{change in } P) = [8 / (40 + 32)] * [(10 + 8) / - 2] = - 1$ (by applying the midpoint method, the factor of 1 / 2, which is multiplied by both P and Qd, cancels out. This is unitary price elasticity of demand.

- b) Calculate the gain or loss in total revenue as the price is raised from \$ 8 to \$ 10. Based on this approach, is this elastic or inelastic demand? (3 points)

**at the new price, TR = \$ 10*32 = \$ 320
at the old price, TR = \$ 8*40 = \$ 320**

Since there is no change in response to the price change, this is unitary price elasticity of demand.

- c) What can we say about the equilibrium quantity that will prevail in this market? (2 points)

NOTHING, AS NO INFORMATION IS GIVEN REGARDING THE SUPPLY SCHEDULE.

8. (6 points) This problem is borrowed heavily from the textbook.

Ernie owns a water pump. Because pumping large amounts of water is harder than pumping small amounts, the cost of producing a bottle of water rises as he pumps more. Here is the cost that he incurs to produce each bottle of water. The time frame is one day.

Cost of the fourth bottle \$ 7

Cost of the third bottle	\$ 5
Cost of the second bottle	\$ 3
Cost of the first bottle	\$ 1

- a) From this information, derive his supply schedule. Graph his supply curve for bottled water per day on the axes below.

SEE THE DIAGRAM BELOW

- b) Suppose that the transactions price for a bottle of water is \$ 4. How many bottles will be produce and sell?

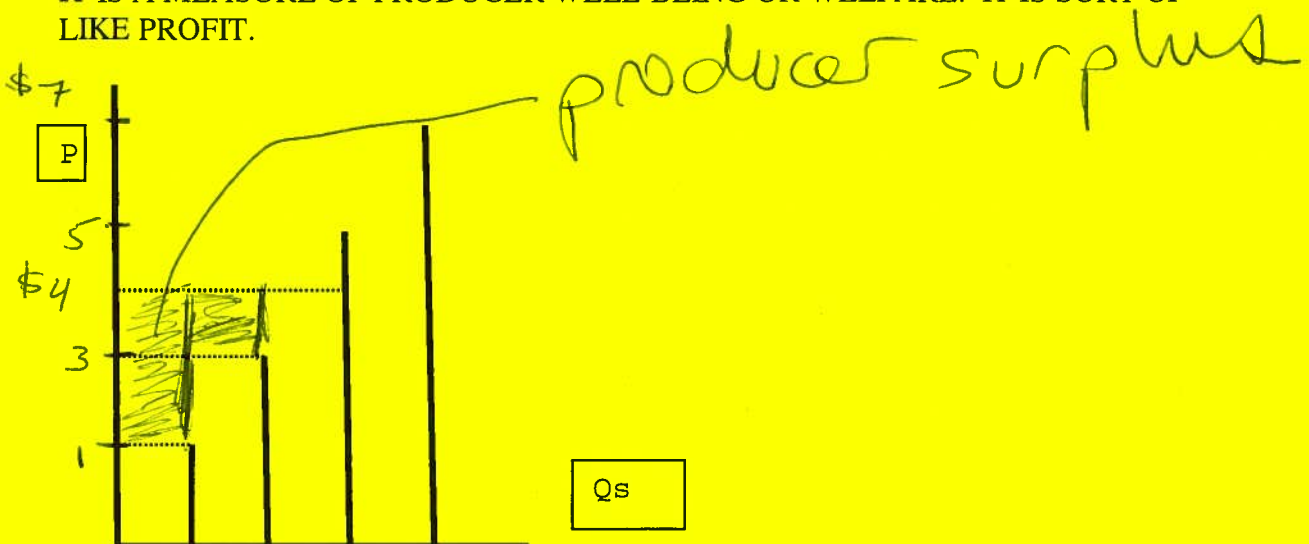
2 BOTTLES – THE FIRST AND THE SECOND ONE PRODUCED, BOTH OF WHICH ARE VALUED AT UNDER \$ 4.

- c) How much producer surplus does he reap? Show Ernie's producer surplus on the graph.

THE PRODUCER SURPLUS FOR THE FIRST BOTTLE = $\$ 4 - \$ 1 = \$ 3$. THE PRODUCER SURPLUS FOR THE SECOND BOTTLE = $\$ 4 - \$ 3 = \$ 1$. THE TOTAL VALUE OF PRODUCER SURPLUS = $\$ 4$. IT IS THE DIFFERENCE BETWEEN THE PRICE RECEIVED AND THE VALUATION OF THAT PARTICULAR UNIT FROM THE PRODUCER'S PERSPECTIVE.

- d) How do we interpret producer surplus? In other words, why do we both studying it at all? In other words, what is its purpose? In other words, what is its significance?

IT IS A MEASURE OF PRODUCER WELL-BEING OR WELFARE. IT IS SORT OF LIKE PROFIT.



9. (4 points) This problem is lifted straight out of the textbook. Greater consumption of alcoholic beverages leads to more motor vehicle accidents, and thus imposes costs on people who do not drink and drive. This is therefore a negative externality.

- Illustrate the market for alcohol using the supply and demand framework, labeling the demand curve, the social value curve, the supply curve, and the social-cost curve, the market level of output, and the socially optimal, or efficient, level of output. Use the axes below, and explain your work. (Hint: one of those aforementioned curves does not apply in this context.)
- Assume that the government wants to rectify this case of market failure. Explain how it could do so in this framework.

THERE ARE TWO WAYS TO ANSWER THIS PROBLEM CORRECTLY. IN BOTH CASES, OVERPRODUCTION IS OCCURING, AND THE REMEDY IS TO TAX ALCOHOL.

FIRST, WE CAN MODEL IT AS A NEGATIVE EXTERNALITY IN PRODUCTION, WHEREBY DRIVERS ARE PRODUCERS (SUCH AS DELIVERY PEOPLE), AND DRUNK DRIVERS ARE IMPOSING A NEGATIVE EXTERNALITY ON SOCIETY. IN THIS CASE, THE SOCIAL COST CURVE LIES ABOVE THE PRIVATE COST CURVE (SUPPLY CURVE), AND THE DRIVERS ARE OVERPRODUCING FROM A SOCIAL POINT OF VIEW. THE MARKET EQUILIBRIUM OUTPUT LEVEL > SOCIALLY EFFICIENT OUTPUT LEVEL. BY TAXING THE USE OF ALCOHOL, DRIVERS HAVE A STRONGER INCENTIVE NOT TO DRINK AND DRIVE, WHICH WILL ALIGN SOCIAL COSTS WITH PRIVATE COSTS.

SECOND, WE CAN MODEL IT AS A NEGATIVE EXTERNALITY IN CONSUMPTION, WHEREBY DRIVERS ARE CONSUMERS, AND DRUNK DRIVERS ARE IMPOSING A NEGATIVE EXTERNALITY ON SOCIETY. IN THIS CASE, THE SOCIAL BENEFIT CURVE LIES BELOW THE PRIVATE BENEFIT CURVE (DEMAND CURVE), AND THE DRIVERS ARE OVERCONSUMING FROM A SOCIAL POINT OF VIEW. THE MARKET EQUILIBRIUM OUTPUT LEVEL > SOCIALLY EFFICIENT OUTPUT LEVEL. BY TAXING THE USE OF ALCOHOL, DRIVERS HAVE A STRONGER INCENTIVE NOT TO DRINK AND DRIVE, WHICH WILL ALIGN SOCIAL BENEFITS WITH PRIVATE BENEFITS.

