YORK UNIVERSITY

Faculty of Arts

Final Examination

April 16, 2007

Economics 2300 3.0GW : Intermediate Microeconomic Theory I

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time=2 hours

This exam consists of two sections. Part A counts for 40 percent of the grade, part B for 60.

Part A : Define any **8** of the following 10 terms. (40 % : 5 % per question)

1. perfect complements

2. marginal rate of substitution

3. Paasche (current–period–weighted) quantity index

4. substitution effect of a price increase

5. present value of a perpetuity (or "consol")

6. risk averse

7. equivalent variation to a price increase

8. own price elasticity of demand

9. deadweight loss (excess burden) of a tax

10. "Dutch" (descending bid) auction

Part B: Do any **6** of the following 10 questions. Answers should be brief and specific. (60 % : 10 % per question)

1. Sketch the budget set for the following person, who has $200 per week to spend on food, and on local cell telephone calls.

Food is available for this person at a price of $1 per kilo.

To consume any cell phone calls at all, she must pay a fee to her telephone company. The telephone company's fee is $100 per week : if she does not pay this fee, then she cannot make any cell phone calls at all.

If she chooses to pay the phone company's fee of $100 per week, she can make up to 100 local phone calls per week (at no additional cost). If she chooses to make more than 100 calls per week, she is charged $2 for each additional call she makes (in excess of the 100 free calls).

2. What is a person's demand function for subway trips, if his pereferences over food (F) and subway trips (T) can be represented by the utility function

$$U(F,T) = F - \frac{1}{T} \qquad ?$$

3. Is the compensated demand curve for a good always more steeply sloped than the ordinary ("standard": holding income constant) demand curve? Explain briefly.

4. Suppose that a person's preferences over consumption (C) and leisure (R) could be represented by the utility function

$$U(C,R) = C + f(R)$$

where $f'(R) > 0$ and $f''(R) < 0$.

Describe as precisely as possible the person's supply curve for labour, if she were free to work as many hours as she wished, at a wage of w per hour.

5. How much would a person choose to save, as a function of her income Y, and the rate of return r that she gets on her saving, if she earned an income Y when young, and earned no income when old, and had preferences over consumption when young (C_Y) and consumption when old (C_O) which could be represented by the utility function

$$U(C_Y, C_O) = C_Y C_O \qquad ?$$

6. If a person's preferences over shelter (S) and entertainment (E) could be represented by the utility function

$$U(S, E) = S + 2\sqrt{E}$$

what would be the compensating variation to an increase in the price of entertainment from \$1 to \$16, if the price of shelter were \$16, and if the person had \$100 per week to spend on shelter and entertainment?

7. If the market price of a t–year–old bottle of wine was $v(t)$, where $v'(t) > 0$ and $v''(t) < 0$, find an expression for the most profitable time to sell the wine.

8. How much fire insurance should the following person choose to buy?

The probability of a fire is 1%.

Her initial wealth is \$403,000 ; the damage done by a fire would be \$300,000.

She can buy as much or as little insurance as she wants : it costs her \$10 to buy \$1000 worth of insurance coverage.

She is a risk averse expected utility maximizer, with utility–of–wealth function

$$U(W) = \sqrt{W}$$

9. There are 1000 identical buyers in a market. Each buyer's demand function for the good is

$$q = 10 - 2p$$

where q is the quantity demanded by the buyer, and p is the price she has to pay.

What is the own–price elasticity of the aggregate market demand for the good, at a price of \$2?

10. Two people are bidding for an object in an online auction. The rules of the auction are that each person submits a bid ; the person submitting the highest bid gets the object, and the price she pays is the losing bidder's bid. If both bidders submit the same bid, then the object is allocated by the toss of a coin, and the winner pays the amount that each person bid.

The amount each person values the object is independent of the other person's value. Each person's value is \$10 with probability 0.5, and \$20 with probability 0.5. Each person knows her own value, but not the other person's value.

(a) What should each person bid?

(b) What is the expected value of the price that the winner pays?

the end