ECO 300 – MICROECONOMIC THEORY
Fall Term 2005
SAMPLE MIDTERM EXAMINATION

INSTRUCTIONS

[1] This is a closed-book examination. Put away your books, handouts, notes, computers, calculators, cellular phones, … now.

[2] The exam has FOUR pages. Make sure you have them all.

[3] PRINT your name clearly, and write your precept day and time, on the first page of EACH answer book you use.

[4] Do not start writing answers until you are told you can. From that point, you have 80 minutes. Therefore you should plan to spend roughly 20 minutes on each question. At the end of the 80 minutes, time will be called. After that, extra time can be "purchased" at the rate of FOUR points per MINUTE or fraction thereof.

[5] Write clearly, succinctly, and legibly. We prefer you to use a ball-point pen or ink. Writing in pencil may get smudged or unclear; any such unclear answers will be interpreted as wrong. If you change your mind about an answer, make your erasures and corrections VERY CLEARLY and NOT IN PENCIL; any ambiguity will be interpreted as an incorrect answer.

[6] Write out and sign the honor pledge using its precise wording "I pledge my honor that I have not violated the honor code during this examination" on the front page of the first answer book you use.

QUESTION 1: (25 points; 3 each, plus 1 bonus if you get all 8 correct)

MULTIPLE CHOICE. Merely write the question number followed by the letter for the best answers, in the order of the question.

1.   Which of the following will NOT cause a shift to the right in the demand curve for beer?
a.   A change in the price of beer.
b.   A health study indicating positive health benefits of moderate beer consumption.
c.   An increase in the price of French wine (a substitute).
d.   A decrease in the price of potato chips (a complement).
e.   none of the above.

2.   The demand function for books is: $Q_d = 120 - P$, and the supply function for books is $Q_s = 5 P$. If P=$15, which of the following is true?
a.   There is an excess supply equal to 30.
b.   There is an excess demand equal to 30.
c.   There is an excess supply, but it is impossible to determine how large.
d.   There is an excess demand, but it is impossible to determine how large.

3.   If indifference curves are concave to the origin, which assumption on preferences is violated?
a.   Diminishing marginal utility
b.   More is preferred to less
c.   Diminishing marginal rates of substitution.
d.   Transitivity of preferences.
e.   Completeness of preferences.

4.   The price of a glass of lemonade is $0.50; the price of a bag of popcorn is $1.00. If Fred has maximized his utility by purchasing lemonade and popcorn, his marginal rate of substitution will be:
a.   2 glasses of lemonade for each bag of popcorn.
b.   1 glass of lemonade for each bag of popcorn.
c.   1/2 glass of lemonade for each bag of popcorn.
d.   indeterminate unless more information on Fred's marginal utilities is provided.

5.   Suppose that a consumer regards two types of soap as perfect substitutes for one another. The two types of soap have unequal prices. The income consumption curve
a.   is always upward sloping
b.   is always horizontal
c.   is always vertical
d.   overlaps the axes corresponding to the cheaper soap
e.   overlaps the axes corresponding to the more expensive soap

6.   Smith just bought a house for $250,000. Earthquake insurance, which would pay $250,000 in the event of a major earthquake, is available for $25,000. Smith estimates that the probability of a major earthquake in the coming year is 10 percent, and that in the event of such a quake, the property would be worth nothing. The utility (U) that Smith gets from income (I) is given as follows: $U(I) = I^{1/2}$. Should Smith buy the insurance?
a.   Yes.
b.   No.
c.   Smith is indifferent.
d.   We need more information on Smith's attitude toward risk.

7.   When the average product of an input is decreasing, its marginal product
a.   equals average product.
b.   is increasing.
c.   exceeds average product.
d.   is decreasing.
e.   is less than average product.

8.   For any given level of output:
a.   marginal cost must be greater than average cost.
b.   average variable cost must be greater than average fixed cost.
c.   average fixed cost must be greater than average variable cost.
d.   fixed cost must be greater than variable cost.
e.   none of the above is necessarily correct.

QUESTION 2: (25 points)

        Granny Smith gets utility from taking bus trips to the local mall, and from
phoning her grandchildren. X is the number of her mall trips per month, and Y the
number of hours per month of her phone use. These are continuous variables, fractional
trips being interpreted as averages over several months. She has $500 per month of
discretionary income to spend on these activities. Her utility function is $U(X,Y) = X\,Y$,
and you should use without proof the standard results for the maximization of this
function subject to a budget constraint.

        Initially the prices are $P_X = 10$ (this includes the bus rides and some small
purchases) and $P_Y = 5$. Find her quantity choices and the resulting utility.

        The prices change to $P_X = 16$ and $P_Y = 2$. What change in income will allow her to
(1) continue consuming the same quantities, (2) get the same utility?

QUESTION 3: (25 points)

        Give an example of the Allais Paradox. Why is it called a paradox?

QUESTION 4: (25 points)

Complete the following table. In the columns headed $MP_K =$ and $MP_L =$, you should fill in the algebraic expressions for the marginal products of capital and labor. In the columns headed Returns to scale, and Marginal product of capital, and Marginal product of labor, you should merely state whether the entity in question is increasing, constant, diminishing, or indeterminate.

Production function	$MP_K =$	$MP_L =$	Returns to Scale	Marginal product of Capital	Marginal product of Labor
$6 K^{0.3} L^{0.7}$					
$K + 3 L$					
$K^{0.5} + 3 L^{0.5}$					
$K^{0.5} + 3 L^{2}$					