Print your name: _____

Final Examination — Spring 2008
Microeconomics II — Page Total = 2

DIRECTIONS: Obey page limits. If a question has multiple parts, indicate exactly where you answer each part. This exam has three (3) sections; be sure to follow the directions for each section.

1. SHORT ANSWERS (20 points each)

DO ANY **THREE (3)** OF THE FOLLOWING QUESTIONS. ALL QUESTIONS ARE EQUALLY WEIGHTED.
A page limit of four (4) pages per question will be strictly enforced.

SA1. Probably the most accepted prediction of consumer theory is that (Slutsky) compensated demand curves are downward sloping.
a. Prove this algebraically and interpret graphically. [You may assume Marshallian demand to be single valued, but do NOT assume differentiability.
b. Indicated how we might add restrictions to an abstract characterization of choice behavior in order to produce the "law of demand" as a prediction.

SA2. Show that a consumer who follows the minimax-regret rule can pose problems for empirical consumer theory. What lessons should the applied economist draw from this example?

SA3. What is a dominant strategy? What is a Nash equilibrium? What is a social-dilemma game? Show how to use the concepts of dominance and Nash equilibrium to solve three social dilemma games. (Pure strategies only.)

SA4. What is the Generalized Axiom of Revealed Preference? What is GARP's significance for consumer theory? How might you go about testing GARP with consumer data? (Outlining an algorithm will be helpful here.)

SA5. Describe and critique the Schelling model of segregation. In what sense does this model suggest the usefulness of agent-based simulation and the fruitfulness of concepts of emergence?

2. LONGER ANSWERS (30 points each)

ALL STUDENTS MUST ANSWER **TWO (2)** OF THE FOLLOWING QUESTIONS:

LA1. This problem is an application of choice under uncertainty to tax cheating. Let π = probability of audit, c = the income not reported (so $y - c$ is reported), τ = tax *rate* on reported income, and f = penalty *rate* on unreported income if audited. Assume audits always discover unreported income. Provide **algebra, graphs, and detailed intuition** showing that tax cheating will occur if it is profitable (to the taxpayer) on average.

LA2. Consider a simple idealized consumer problem:

$$\max_{\{c_t\}} E_0 \sum_{t=0}^{\infty} \beta^t U(c_t) \qquad \text{s.t. } A_{t+1} = R_t(A_t + y_t - c_t)$$

with $U(c_t) = -(\bar{c} - c_t)^2/2$. Interpret this as a consumer problem and explain why we might adopt such a setup. (**Comment:** An "interpretation" gives the economic reasoning behind these conditions; do not just restate the math in words.) For the moment, let real income and the gross interest rate be constants. Set up the associated Bellman equation and carefully interpret.

Now add that $R_t = R(1 - \omega) + Z_t\omega$, where R is a risk free rate of return and Z_t is a risky rate of return.

(a) Derive the first order and envelope conditions and carefully interpret.

(b) Set up the associated Bellman equation and carefully interpret. What (if anything) changes?

(c) In this setting, can you derive the Hall (1978, JPE) result that consumption follows a martingale with drift?

(d) What relationship can you derive between the return on the risk asset and the risk free rate of return? (Give a *detailed* interpretation!)

LA3. Describe an "evolutionary iterated prisoner's dilemma" and discuss its implementations. What can simulations of the "evolutionary prisoner's dilemma" teach economists? Be very careful and specific. (This is a *long answer* question!)

END OF EXAM