

Advice for Tests, 6 October 2006

These are a revision of some notes I wrote for PhD students in Industrial Organization after a midterm one year.

1. Try to write something on every question. Start with your intuitive guess as to the answer. Later, cross that out if you decide it is a wrong guess. Answer each question as best you can. If you get lost in solving equations, write down in words what you are trying to do and what you think would come out of the mathematical analysis.

You can also sketch out your mathematical approach, saying something like, “I will start by figuring out the expected payoff function and then differentiate with respect to effort to get a first-order condition that I can solve for effort, then go back and calculate the expected payoff using that optimal effort.”

2. Budget your time. In particular, do not spend too much time on the easy questions, or get stalled in one part of a hard question. I try to break my hard questions into parts so you can skip to the second part if you can't figure out the solution to the first.

3. Understand the basic principle of working back from the end of the game.

4. Understand the basic principle of expected utility— that if there is a 70-30 gamble between X and Y, expected utility is $0.7EU(x) + 0.3 EU(y)$, not $U(0.7X + 0.3Y)$.

5. Understand the basic principle of maximizing the utility of a series of cash flows over time. In particular, note two ideas:

(a) Induction. If your utility at the start of period 1 is U_1 , then $U_1 = V(x) + \frac{1}{1+r}U_2$, where $V(x)$ is the flow value of utility from consumption x and U_2 is utility viewed at the start of period 2.

(b) Perpetuities. The value of x per period at the end of each period from now onwards is x/r , where r is the discount rate. (The value of x each period at the start of a period from now till infinity is $x + x/r$)