

**MICROECONOMICS COMPREHENSIVE EXAM REVIEW**  
**January 2009**

- Understand and be able to explain/compute/show the following terms/concepts from consumer theory: quasi-concavity, diminishing marginal rate of substitution, diminishing marginal utility, homogeneity, homotheticity, perfect substitutes or complements, gross substitutes vs. complements, net substitutes vs. complements, normal vs. inferior, and elasticity.
- For a given utility function, derive the ordinary demand function for  $X$  and  $Y$ , the indirect utility function, the compensated demand function, and the expenditure function. Explain the meaning of each of these functions. Finally, explain how the compensated demand function for  $X$  is different than the ordinary demand function for  $X$ .
- Given an individual's utility function, income, and the prices she faces for two goods,  $X$  and  $Y$ , determine the utility maximizing consumption bundle and illustrate with a diagram.
- Diagram and compute the income and substitution effects of a discrete price change. Also state and explain the Slutsky equation that decomposes the total effect of a price change on consumption into a substitution effect and an income effect. What is the difference between these two ways of representing the substitution and income effects of a price change?
- Explain and illustrate the concepts of compensating variation and equivalent variation using indifference curves and budget lines. Also be able to compute and compare each for a given discrete price change.
- Understand and be able to explain/compute/show the following terms/concepts from firm theory: quasi-concavity, diminishing marginal rate of technical substitution, diminishing marginal product, perfect substitutes or fixed proportions, returns to scale, and elasticity of substitution.
- For a given production function and input prices: (1) explain how a firm chooses its cost minimizing input combination for a given output level and (2) illustrate your answer using an isocost line and an isoquant. In addition, for a given output level derive a firm's cost function,  $C(w,r,Q_0)$ , and contingent input demand functions,  $L^C(w,r,Q_0)$  and  $K^C(r,w,Q_0)$ .
- For a given production function and input prices derive (1) the firm's short-run total cost function,  $C(w,r,q)$ ; (2) the firm's short-run labor demand function,  $L(P,w,r)$ ; (3) the firm's short-run profit function,  $\Pi(P,w,r)$ ; and (4) the firm's short-run supply function,  $q(P,w,r)$ .
- Use marginal analysis to show/explain how a price-taking firm determines its profit maximizing output level. How do you derive the firm's supply function? How do you derive the market supply function? Understand the mechanisms by which a perfectly competitive market transitions from short-run to long-run equilibrium.
- For a perfectly competitive market, understand the welfare consequences of price floors, price ceilings, production quotas, taxes, subsidies, and trade policy.
- State and briefly explain the First Welfare Theorem of Economics. Explain the intuitive proof of the First Welfare Theorem.