Quiz 3 Study Questions

3.1. Give short, concise definitions of the following:
   a. profit
   b. normal profit
   c. abnormal profit
   d. marginal revenue product, value of the marginal product
   e. decreasing cost industry
   f. increasing cost industry
   g. constant cost industry
   h. producer surplus
   i. economics rent
   j. demand curve facing the firm

3.2. Why, under conditions of perfect competition, does the marginal revenue of the firm equal its output price?

3.3. List all of the assumptions made to construct our model of the perfectly competitive firm. Do not include the assumptions that define the perfectly competitive market.

3.4. Explain why in the long or short run, the perfectly competitive, profit-maximizing firm always produces and supplies that output for which long- or, respectively, short-run marginal cost equals price. (Ignore the possibility that the maximum profit might be negative.)

3.5. Think of a firm in a perfectly competitive market without free entry or exit:
   a. Does profit maximization in the long- or short-run guarantee by itself that the firm produces an output at the minimum point its long- or short-run average cost curves? Why or why not?
   b. Does profit maximization in the long- or short-run imply that the firm produces an output for which revenue is maximized? Why or why not?
   c. If the firm hires inputs so as to minimize the cost of producing each output, it is necessarily producing the profit-maximizing output? Why or why not?

3.6a. Draw a pair of diagrams, one above the other, illustrating the short-run, profit-maximizing output for the perfectly competitive firm with abnormal profit. The top diagram should contain short-run total cost, total variable cost, total revenue, and profit curves; the bottom diagram should contain short-run average cost, average variable cost, short-run marginal cost, and marginal revenue curves. In the bottom diagram shade in the area that represents abnormal profit. Make your diagrams large and label all curves, axes, and points.
   b. How would your diagrams change if the firm were losing money, i.e., had negative profit?
3.7a. Give a step-by-step argument to show how the perfectly competitive firm's input demand and output supply functions are derived from the assumptions of our long-run model of that firm. (In your answer, start with the production function and include ridge lines, cost minimization, the expansion path, and cost and revenue functions.)

b. How is this argument changed when focusing on the firm's short run input demand and output supply functions?

3.8. Explain how a change in
   (a) the price of labor alone, or
   (b) the price of output alone,
works its way through the long-run model of the perfectly competitive firm (i.e., through such elements as isocost curves, expansion paths, cost curves, and profit-maximizing isoquants) to affect input quantities demanded and output quantities supplied. How is your answer altered when focusing on the short run?

3.9a. Explain how long-run profit maximization by a perfectly competitive firm leads to the selection of a particular plant (or firm) scale and the short-run profit maximization within that plant scale.

b. Draw a diagram containing long-run average and marginal cost curves, the marginal revenue curve, and the short-run average and marginal cost curves for the plant size that a perfectly competitive, profit-maximizing firm uses to produce its profit-maximizing output.

3.10a. In the short run, under what conditions relating to its output price and average variable cost should a perfectly competitive, profit-maximizing firm continue to produce and sell output when it is losing money (i.e., has negative profit)? Why?

b. Why in the short run, can it not go out of business?

3.11. Explain why the short-run output supply curve of the perfectly competitive, profit-maximizing firm is the firm's short-run marginal cost curve above minimum average variable cost.

3.12. Explain why abnormal profits earned and losses incurred by perfectly competitive, profit-maximizing firms cannot be present at long-run equilibrium.

3.13. Explain why the perfectly competitive firm at long-run equilibrium produces an output for which long-run average cost is minimized. Is this output profit maximizing? Why or why not?

3.14. In a perfectly competitive market, what is the difference between the way market price is determined in the short run and the long run?
3.15. Think of a decreasing cost, perfectly competitive industry and a representative firm in that industry at long-run equilibrium. Suppose the demand for that industry's output increases. Describe the steps by which the industry and representative firm adjust to a new long-run equilibrium. How does the new equilibrium compare with the old? Please include diagrams of the industry and representative firm in your answer.

3.16. Explain why, in the short run, the perfectly competitive, profit-maximizing firm should hire labor up to the point at which its marginal revenue product (or value of marginal product) equals the price of labor (wage).

3.17. Explain why the short-run labor demand curve of the perfectly competitive, profit-maximizing firm is that firm's marginal revenue product (or value of marginal product) curve.

3.18. Draw a diagram showing the perfectly competitive, profit-maximizing firm's long-run demand curve for labor in relation to its marginal revenue product (or value of marginal product) curves. Make your diagram large and label all curves, axes, and points. Explain why the long-run demand curve for labor is related to more than one marginal revenue product curve.