I. Multiple Choice Questions

(For each of the following questions, choose the best answer and explain clearly why you chose that answer over the other choices)

1. At present output levels, a perfectly competitive firm is producing 4000 units of output, selling for $2 each. Fixed costs are $4000, as are total variable costs. If marginal cost is $1, then in order to profit maximize, this firm should
   a) shut down immediately
   b) reduce output, but stay in business in the short run
   c) increase output
   d) continue to produce 4000 units in the short run

2. and 3. Initially, a purely competitive, decreasing cost industry is in long run equilibrium. The industry demand curve shifts out and remains permanently at the new position.

2. In the short-run industry equilibrium following this increase in demand
   a) both price and quantity are higher than they were initially.
   b) both price and quantity are lower than they were initially.
   c) price is higher than it was initially, but the quantity sold is lower.
   d) price is lower than it was initially, and the quantity sold is higher.

3. When long-run industry equilibrium is restored following this increase in demand
   a) both price and quantity are higher than they were initially.
   b) both price and quantity are lower than they were initially.
   c) price is higher than it was initially, but the quantity sold is lower.
   d) price is lower than it was initially, and the quantity sold is higher.

4. Suppose a perfectly competitive firm is producing 5000 units of output and has total revenues of $5000. If this is a long run equilibrium, which of the following will be true
   a) total cost is $5000
   b) marginal cost is $1
   c) minimum average total cost is $1
   d) all of the above

5. Suppose a firm has two variable inputs, labor and capital. Now the price of labor falls. The scale (or output) effect implies that
   a) less labor will be demanded
   b) more labor will be demanded
   c) output will fall
   d) fewer of all factors will be demanded

II. Short Answer Question

Soys ‘R’ Us produces tofu in a perfectly competitive increasing cost industry, and is in short run equilibrium with a current price of $3 per pound. Based on this price, Soys ‘R’ Us decides to exit the industry as soon as the lease on its soybean processing plant is up, but they will continue producing in the short run. Using this information, complete each statement below by entering either

Problem Set 3
(due at the beginning of class May 3, 1999)
(greater than), < (less than), = (equal to), or ? (cannot be determined)
in each of the blanks.

a) At current output levels, the firm's marginal cost is $3.
b) At current output levels, the firm's average total cost is $3.
c) At current output levels, the firm's average variable cost is $3.
d) When long run equilibrium is established, then price will be $3.

III. In-Depth Problem

Suppose that sugar is produced in a perfectly competitive constant cost industry.
The diagrams below show short-run supply and demand for the industry as a whole, and marginal cost
for a typical sugar producer.

a) To the firm diagram, add the demand and MR curves faced by the firm. Assuming that this is a long
run equilibrium, add the long run industry supply curve to the industry diagram. How many tons of
sugar is each firm producing? What is average total cost at this quantity? Briefly explain how you
obtained your answers.

b) Suppose that consumers decide to cut back on sugar consumption for health reasons, and will buy 20
less 100,000's of tons of sugar at any given price than before. Assuming that this firm wants to continue
producing in the short run, how many tons of sugar will the firm produce, and at what price? Briefly
explain how you obtained your answers.

c) Briefly describe how the sugar industry will move to a new long run equilibrium. Pay particular
attention to exit and entry of firms, change in quantity produced by the firm, movements of firms' cost
curves and demand curves and movements of industry supply curves. Be sure to indicate how many tons
of sugar the industry will produce and at what price it will be sold in the new LR equilibrium?