Microeconomics Modules 7 and 8: competition non-mathematical, practice problems

** Exercise 8.1: Supply and Demand Curves

An industry is perfectly competitive.

A. Which is steeper: the long-run supply curve or the short run supply curve?
B. Which is steeper: the long-run demand curve or the short run demand curve?

Part A: The short-run supply curve is steeper. In the short run, the size of factories and firms is fixed. If the industry wants to produce more, factories must work at more than capacity. Employees work overtime and earn higher wages and some work is outsourced at high cost. To produce more in the long run, more firms enter the industry or firms build larger plants. Many industries have constant costs in the long run, and the supply curve is flat. Some industries have declining costs in the long run as quantity increases.

Part B: The short-run demand curve is steeper. In the short run, consumers may have little choice. Even if prices rise sharply, many consumers still buy the good. In the long run, consumers change their activities and seek other sources for the good, making the demand curve flatter.

Illustration: If the short run, if gas prices increase from $1 a gallon to $3 a gallon, most consumers continue to buy roughly the same quantity of gas. In the long run, consumers buy smaller autos or hybrid cars, and they change their schedules to car pool, take public transportation, or walk to work.

** Exercise 8.2: Auto Insurance Industry

Explain whether each of the following indicates that the personal auto insurance industry is competitive.

A. Auto insurers make low profits; most competitive firms make zero accounting profits.
B. Auto insurers have a high diversity of prices; monopolists all charge the same price.
C. Auto insurers have recurrent underwriting cycles; monopolists have no business cycles.
D. Policyholders have high loyalty to their auto insurers; monopolists have no consumer loyalty.
E. Entry into and exit from the auto insurance industry is relatively easy; monopolists have high barriers to entry.

Only statement E is correct.

Statement A: Low profits may be caused by a variety of factors. Low risk industries have low expected profits. Monopolized industries often have high profits, but low profits is not necessarily a sign of competition.

Statement B: If an industry is perfectly competitive, all suppliers adopt the market price, with little diversity. If a supplier charges more than the market price, it should not be able to sell its output.

Statement C: Underwriting cycles suggest co-ordination of prices among suppliers; this is characteristic of oligopoly, not competition. In truth, industry pricing (rating bureaus or other co-ordinated activities) is now rare in personal auto insurance, so underwriting cycles suggest neither competition nor lack of competition.

Statement D: In a perfectly competitive industry, consumers shift their purchases to the supplier with the lowest prices. Consumer loyalty to a particular supplier is not a sign of competition.

Statement E: Low barriers to entry (easy entry into and exit from the industry) are characteristic of competition. Monopolies price above the competitive price and produce below the competitive quantity because other firms are prevented from entering the market.

Question: Is the auto insurance industry competitive, or is it not competitive?

Answer: The auto insurance industry is more competitive than most other industries in the United States. But few industries are perfectly competitive. Even efficient capital markets, like those for common stocks, have had cartels enforcing broker commissions are other instances of monopolistic behavior. Some agricultural products are sold in competitive markets, but the size of farm subsidies, the money spent on lobbying for farm subsidies, and the agricultural subsidies in the European Common Market show how uncompetitive some of these markets are. Auto insurance is highly competitive, but it is not perfect.

** Exercise 8.3: Cost Curves

Suppose all firms in a competitive industry are identical and have both variable costs and fixed costs, and the industry is in long-run equilibrium. The questions below refer to long-run equilibrium.

Let MC = marginal cost, ATV = average total cost, AVC = average variable cost, and P = price.

A. What is the relation of price and marginal revenue?
B. What is the relation of marginal cost and marginal revenue?
C. What is the relation of marginal cost and average total cost?
D. What is the relation of average variable cost and average total cost?
E. Which relations do not hold in the short run?

Part A: A competitive firm faces a horizontal demand curve, so the market price is its marginal revenue. For firm facing downward sloping demand curves, such as monopolists, marginal revenue is less than the price.

Part B: At equilibrium, marginal revenue equals marginal cost for both competitive firms and monopolies. If marginal revenue were greater, the firm would produce more, and if it were less, the firm would produce less.

Part C: In the long-run, the firm changes its production capacity so that average total cost equals its marginal cost. If average cost is less than marginal cost, it can raise its profits by producing more; if average cost is more than marginal cost, it can raise its profits by producing less.

Part D: Since the firm has some fixed costs, average variable cost is less than average total cost.

Putting these effects together gives: AVC < MC = P = ATC

Part E: In the *short-run*, fixed costs do not affect prices. It is still true that

marginal cost = price = marginal revenue and AVC < ATC.

But it is not true that ATC = marginal cost.

** Exercise 8.4: Shutdown Price

A competitive firm has total fixed costs of 10 and the following variable costs:

Quantity	*Variable Cost*
1	9
2	14
3	18
4	21
5	25
6	33
7	42
8	52

A. What is the firm's short-run shutdown price?
B. What is the firm's total profit at its short-run shutdown price?

Part A: The shutdown price is the *minimum average variable* cost.

Quantity	*Variable Cost*	*Fixed Cost*	*Average Variable Cost*
1	9	10	9.00
2	14	10	7.00
3	18	10	6.00
4	21	10	5.25
5	25	10	5.00
6	33	10	5.50
7	42	10	6.00
8	52	10	6.50

The *minimum average variable* cost is 5.00 per unit. If the price falls below 5.00, the firm shuts down and does not produce any units.

Part B: If the firm shuts down, it have no revenue and no variable costs. Its profit is revenue – variable costs – fixed costs = 0 – 0 – 10 = –10.

Question: The firm has income of –10? Shouldn't it exit the industry?

Answer: If the firm believes profits will remain negative, it exits the industry. If the firm believes profits will rise next year, it shuts down and loses money temporarily but resumes production if prices rise or costs decline.

** Exercise 8.5: Accounting and economic profits

Identical firms operate at long-run equilibrium in a perfectly competitive market.

A. Are the firms' economic profits positive, negative, or zero?
B. Are the firms' accounting profits positive, negative, or zero?

Part A: The firms' economic profits are zero.

If firms earned positive economic profits, some firms would reduce prices to increase their market share and earn more income. If firms earned negative economic profits, their owners would take their capital and invest it in other industries.

Part B: Accounting profits are positive. Accounting profit is economic profit + capital × the cost of capital.

Question: If firms make zero economic profit, why do they continue to operate?

Answer: Economic profit subtracts the opportunity cost of capital and the opportunity cost of capital of one's time and effort. Zero economic profit means that employees are earning regular salaries and the firms are making a normal return on capital.

Zero accounting profits is negative economic profits. The firm is losing money, so it will exit the industry. It produces at minimum average cost, so changing quantity increases costs. It faces a horizontal demand curve, so it can't increase prices.

Question: If the firm expects zero accounting profits in the *short run*, will it shut down?

Answer: A firm continues producing in the short run as long as marginal revenue exceeds variables costs, even if accounting profits are negative. Accounting income include fixed costs, which don't affect the decision to shut down in the short run.

Question: If one firm in a competitive industry expects negative economic profits, don't all firms expect negative economic profits? And if all firms expect negative economic profits, won't the price increase?

Answer: Wheat farming is a competitive industry. A farmer may have economic losses if his land is not suitable for wheat farming. The farmer should exit the industry, and use the land for another purpose, such as grazing.