1. Answer “True, False or Uncertain” and defend/explain if not true.

   a) All fixed costs are sunk cost.
   b) All variable costs are sunk costs.
   c) In the short-run, to profit maximize, firms should always produce the output at which the marginal revenue equals the marginal cost.
   d) If the market demand curve is completely price inelastic, then consumers’ surplus is zero at the competitive price and quantity.
   e) Under a linear and downward sloping market demand curve, total revenue is maximized where the own price elasticity of demand is zero and the marginal revenue is one.
   f) If an entrepreneur’s firm is earning positive accounting profit, then it must be earning nonnegative economics profit.
   g) Knowing the firm's cost functions is all the information one needs to know to determine the profit maximizing level of output which the firm should produce.
   h) Since firms must always pay their fixed costs in the short-run, they should always produce a positive amount of output in the short-run.
   i) If a producer is minimizing the costs to produce a given level of output, then he/she is maximizing profits by producing that level of output.
   j) Economists are silly to say that profits are competed away in the long-run in perfectly competitive firms because no one would bother to stay in the industry if it is not profitable for them to do so.

2. The Manager for the ABC-Company is worried that the firm is not a cost-minimizer. The company uses capital and labor in their production process. Both capital and labor are purchased in competitive markets and are variable inputs. Given the current allocation of labor and capital, the marginal product of labor is 49 and the marginal product of capital is 45. The price of capital is 10 and the price of labor (wages) is 7. Analyze the ABC-Company's situation. Is the firm cost-minimizing? If not, in what direction should they move vis a vis capital and labor usage?

3. As chief economist of Beta Books Publishing Co., (a firm in a perfectly competitive industry) you have been asked to present the company's profit/loss situation at the Annual General Meeting of stock holders. Show, using graphs, the three alternative short-run scenarios described below. Clearly label the areas denoting profit/loss. When should the firm shut-down in the short-run?
   a) the firm making positive profits
   b) the firm making losses but continuing to produce.
   c) the firm making zero economic profit.

4. The data below pertain to the first year of operation of a Collegetown cafe.
   Total revenue - $350,000
   Labor expenses - $125,000
   Maintenance - $50,000
   Electricity - $5,000
   Capital invested - $100,000
   Market interest rate 10%
   a) What is the cafe's accounting profit?
   b) The cafe's owner could have earned $60,000 as a professor in the hotel school if he had not opened the cafe. The $100,000 of capital invested in the cafe came from his savings. The capital invested was used to buy machinery that does not depreciate at all. What is the cafe's economic profit?
   c) Did the cafe owner make the right decision to open the cafe? Explain.
d) At what salary as a hotel school professor would the cafe owner have been indifferent between opening the cafe and being a professor? Explain.

5. Fly-By-Night Airlines has regular flights to Iran. The airline is asked to add a Nicaraguan flight to its route for which it will receive an additional $700,000 in revenue. Cost information is as follows: Fixed Costs = $1,000,000; Average Total Costs (with 1 flight to Iran) = $1,500,000; Average Total Costs (with 1 flight to Iran and 1 flight to Nicaragua) = $1,050,000. An unnamed source at Fly-By-Night claims the Nicaraguan route would be unprofitable since the additional revenue would not cover costs. Do you agree or disagree. Explain.

6. You are advising a firm named ZicroSoft that makes and sells recordable CDs. ZicroSoft operates in a perfectly competitive market and wants to maximize profits (or minimize loss) by selling its CD's. ZicroSoft's chief-executive-officer gives you the following information. (He's helpful, but not all that helpful.) He tells you that ZicroSoft's cost curves are all well behaved and typically shaped. He also gives you a table with the following current revenue and cost values.

Current Information for ZicroSoft

Total revenue: $2,000,000  
Fixed cost: $150,000  
Variable cost: $1,500,000  
Average total cost: $55  
Average variable cost: $50  
Marginal cost: $55

a) What must be ZicroSoft's current level of output?  
b) What price must ZicroSoft currently be getting for the CDs it sells?  
c) Given its current situation, would you advise this firm to increase output, decrease output, not change output, or shut down entirely? Justify your answer.  
d) Illustrate ZicroSoft's current position in a diagram that includes ZicroSoft's marginal revenue, marginal cost, average total cost and average variable cost.

7. Assume that the taxi industry in Ithaca satisfies the following set of assumptions:
   - The industry is perfectly competitive.  
   - The industry is presently in long-run equilibrium.  
   - The industry is a constant-cost industry, that is to say, the cost of inputs and/or the technology do not change when taxis enter and/or exit the industry.  
   - Each taxi driver has a set of "typically" shaped cost curves. In particular this means that short-run supply curve for the individual taxi driver and the industry is typically shaped (due possibly to "dilly-dallying" on the part of taxi drivers).  
   - All taxi drivers are the identical with respect to their cost structures.  
   - Demand for taxi rides is typically shaped.

   a) Graph the present long-run equilibrium situation for both a typical taxi driver and the entire taxi industry.

Suppose now that the mayor decides to license taxi drivers and issues a limited number of licenses, less than the number of taxis currently in operation. The licenses are freely given to existing taxi drivers on a
random basis. For example they put names into a hat and draw out the lucky drivers to decide who will, and who will not, be given a license. Assume that you must have a license to operate a taxi and the government does not collect a fee for the license. HINT: THE TOTAL NUMBER OF “TAXI-FIRMS” WILL NOW BE LESS.

b) Explain and indicate on the graphs for the previous part what will happen to price, quantity, and profit in the short-run and long-run once the licenses have been issued. Be sure to discuss and graphically point out both the effect on the individual taxi driver and the entire taxi market.

c) If any taxi driver with a license can sell the license to an ex-taxi driver who did not get a license, what will be the maximum amount the ex-taxi driver will be willing to pay for the license? (I’m not looking for an exact number.)

d) What would happen to Ithaca's taxi market if someone purchased all the taxi licenses at once? Would it make sense for someone purchasing all the licenses at once to be willing to pay more than the total number of licenses times your answer to part (c) of this question? Explain.

8. In the very short run, practically all costs are fixed. Does that mean that marginal cost is zero?

9. Suppose there are a wide range of plant sizes in an industry. What do you conclude about the shape of the average cost curve if the plants are in the same area? Assume plants in the same area face similar costs. How does your answer change if the plants are located in different countries?

10. If the market demand curve is X = 100-P, what is the market own price elasticity of demand? If the supply curve of the individual firms is x = P and there are 50 identical firms in the market, draw the residual demand facing any one firm. What is the residual own price demand elasticity facing one firm at the competitive equilibrium?