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

   a) Testing for short-run losses is a sure fire way to test for the act of predatory pricing.
      **ANS:** False: Testing for short-run losses really tells you very little about predatory pricing.
       Sure, a firm that is practicing predatory pricing will have losses in the short-run, however there
       are a number of other perfectly benign reasons why a firm will suffer losses in the short-run.
   
   b) The U.S. Antitrust laws make monopoly, per se, illegal.
      **ANS:** False. Section 2 of the Sherman Act of 1890 states, “Every person who shall monopolize,
       or attempt to monopolize, or combine and conspire with any other person or persons, to
       monopolize any part of the trade or commerce among several States, or with foreign nations,
       shall be deemed guilty of a felony.” Our antitrust laws as currently interpreted do not make
       monopoly, per se, illegal. What is often judged to be illegal are actions that lead to
       monopolization and consequently substantially lessen competition. However, there have been
       periods in the history of antitrust litigation and particular cases where scholars have concluded
       that the law was being interpreted to mean that just being big, i.e., a monopoly, was bad and
       therefore illegal. Notable along these lines is the 1945 Alocoa case in which the Court held that,
       even though a firm’s behavior might be legal (Alcoa had acquired legal control over bauxite
       reserves, the raw material needed for make aluminum), mere possession of monopoly power
       (90% of the aluminum market) violated antitrust laws.
   
   c) It always pays for an upstream monopolist to monopolize the downstream market, thereby
      extending his monopoly power to the retail level.
      **ANS:** False. It does not always pay for an upstream monopolist to monopolize the downstream
      market. If the downstream firm has a fixed proportions technology, then vertical integration will
      not lead to higher profits and therefore is not recommended unless there are other circumstances
      involved. However, if the downstream firm uses a variable proportions technology, then the
      upstream firm can earn higher profits from integrating, thought he or she must still weigh the
      costs of vertically integrating against these higher profits before concluding that integration will
      increase net profit.
   
   d) According to U.S. Antitrust policy, any and all cooperative price and/or quantity agreements
      between horizontal firms are per se illegal. No exceptions.
      **ANS:** False. In special cases the government has concluded that there are competitive reasons
      for coordination and has allowed an agency or clearing house to operate on behalf of a number of
      economic agents. See the text’s discussion of the Chicago Board of Trade and ASCAP, in
      particular. Once can also note the courts waffling on the MIT case.

2. Graphically demonstrate why a firm that predates on an identical rival firm (i.e., identical with
   respect to cost structure) will typically incur significantly larger short-run losses.
   **ANS:** See page 354 in Carlton-Perloff text, Figure 11.1 and its discussion.

3. What are the necessary ingredients for successful predation that is damaging to competition?
   **ANS:** You need market power and the ability to erect entry barriers once the period of predation is
   over and you have driven out your rival. Basically what you need to be able to do is recoup your
   “investment” by guaranteeing for yourself monopoly power, pricing over costs and supernormal
   profitability at the expense of the consumer.
4. What is “war-chesting?”
ANS: The use of monopoly profits from one market to subsidize loses, for example due to predatory pricing, in another market.

5. Suppose you are a milk farmer and feel you are being exploited by a monopsonistic buyer of milk, namely Jennylea. Is there anything you can do about this? Could what you’re planning to do be interpreted as illegal? If so, how?
ANS: You may want to vertically integrate into the next stage of production and buy-out Jennylea. However, Jennylea may try to obtain the present discounted value of the future stream of profits from you in the price they would charge you to buy their firm, so your efforts may be thwarted. Also the action could be construed to be anticompetitive and a violation of the Clayton Act. You might consider an alternative which would be to form a co-op of milk farmers to confront Jennylea with higher milk prices. However, that would require getting a special exemption from the Sherman Act from the government, which by the way has been allowed here and there with respect to labor and agriculture markets.

6. Is there any incentive for a monopolist manufacturer to vertically integrate into distribution if the distributor charges competitive prices? Explain.
ANS: No. In our simple pure middle man model this change would imply that the monopolist determines the profit maximizing price and quantity by his choice of the price he charges the distributor. The distributor is only a middle man and has no effect on the monopolist’s profitability, absent any of the other wrinkles we introduced like retailer pre-purchase service, etc.

7. Describe two ways in which a manufacturer can “solve” the problem of double-markups without resorting to vertically integrating forward into the distribution market.
ANS: Use maximum resale price maintenance, or quantity forcing, or price at marginal cost and use a franchise fee. See Carlton and Perloff pages: 417-418.

8. What are the competitive and anticompetitive arguments with respect to resale price maintenance?
ANS: Resale price maintenance is an effective way to deal with free riding among competing distributors with respect to advertising, point of purchase services and promotional activities, especially in a world of imperfect information, monitoring difficulties and moral hazard. On the other hand, RPM is also a way in which competing distributors or manufacturers can agree and collude on monopolistic rice, or at least a price in excess of the competitive price.

9. Imagine you are an ice-cream vendor sharing the local beach with a vendor of a rival brand of ice-cream. One day you find out that the other vendor has started to undercut your prices. Because you are sure your prices are rock-bottom, you confront your rival and complain of predatory behavior. What (quite possibly legitimate) excuses might the rival give? Your answers should complete the sentence: “Moi? Stealing your business by pricing below cost? No way! I am just . . .”
ANS: Some possible answers are: getting rid of stock that is getting close to its sell-by date; trying to get customers interested in this new flavor that my manufacturer has just put on the market; trying not to lose all my customers to you, while I am waiting for my manufacturer to come out with the same popular new flavor that your manufacturer just introduced.

10. Alpha Airlines, the only carrier currently offering flights to and from Smalltown, has got wind of plans by Beta Airlines to enter its market. In an effort to deter Beta, Alpha threatens that it will respond to Beta’s entry with a price war. Suppose Beta believes the threat. In what ways can it minimize its losses from such a price war other than by giving up its plans altogether?
ANS: Beta Airlines can: offer to merge with Alpha Airlines; sign long-term contracts with travel agents offering tours to and from Smalltown at prices just below those currently charged by Alpha; reduce its flights to Smalltown as soon as Alpha cuts its prices and increase its flights as soon as Alpha raises its prices again.

11. Two firms with costs \( C(q) = 50 + q + 2q^2 \) share a market in which demand is perfectly inelastic at \( Q = 10 \). If Firm 1 preys on Firm 2 by lowering price to an amount \( x \) below minimum average cost, how large a loss does it incur itself compared to that inflicted on Firm 2? Is its own loss necessarily larger than that of Firm 2?

ANS: Setting \( mc = atc \) you find that minimum average cost is at \( q = 5 \). \( \min atc = 21 \). If Firm 1 lowers its price to \( 21 - x \), Firm 2 produces where its marginal cost, \( 1 + 4q \), equals the new price. Thus, Firm 2 reduces output to \( 5 - x/4 \) and incurs a loss of \( (atc - P)\cdot q = 5x - x^2/8 \). Firm 1, in order to maintain the lower price, has to meet the remaining demand of \( 5 + x/4 \) and incurs a loss of \( 5x + 3x^2/8 \) doing so. This loss is always larger than that of Firm 2.

12. Draw an extensive-form game showing that a firm expands output in Period 1 only because the resulting reduction in costs in Period 2 from “learning by doing” enables it to deter entry. In other words, the payoffs must be such that the firm would not expand output if it did not fear entry.

ANS: One example is where the incumbent’s payoffs are shown first in each payoff pair. Without threat of entry, the gain in profits from lower costs in Period 2 would not make up for the loss in profits from expanding output in Period 1 ($4 < $5). With such a threat, however, expanding output in Period 1 is optimal, because it lowers Period 2 costs enough to deter entry.

13. Limit pricing refers to prices set by firms below the profit maximizing one given by \( MR = MC \). If a monopolist faces a market demand of \( Q = 16 - P \), and has total costs of \( C(q) = 40q - 12q^2 + q^3 \), calculate the ‘normal’ (strategy-free) simple monopoly price and the limit price (assuming the potential entrant has identical costs).

ANS: The simple monopoly quantity and price are obtained in the usual way, by setting \( MR = MC \). In this case we have: \( MR = 16 - 2q \) and \( MC = 40 - 24q + 3q^2 \). So setting \( MR = MC \) and solving the quadratic equation and looking at the second-order condition to get the max, you get: \( Q_{sm} = 6 \) for the monopolist, which implies \( P_{sm} = 10 \).

An incumbent is ‘limit-pricing’ if he commits to producing output \( q_i \), to guarantee that an identical entrant would make at most zero profits. (See the “Limit Pricing with Identical Firms” section in the text, and Figure 11.2 in particular.) That quantity is chosen such that an entrant’s residual demand
curve (with slope equal to \(-1\) in this case) would be just tangent to its average total cost curve. Since the entrant also has average cost \(\text{atc} = 40 - 12q + q^2\), setting the slope of the atc curve, \(-12 + 2q\), equal to \(-1\) implies that an eventual entrant would choose to produce \(q_e = 5.5\). Since the entrant’s profits equal zero at the point, the potential limit price is given by:
\[
\text{atc at } q = 5.5 = 40 - (12)(5.5) + (5.5)^2 = P_{\text{bar}} = 4.25.
\]
To ensure that such a price would result from entry, the incumbent commits to the output \(q_i\) such that:
\[
P_{\text{bar}} = 16 - q = 16 - (q_i + q_e).
\]
Since \(P_{\text{bar}} = 4.25\) and \(q_e = 5.5\) are known, we must have \(q_i = 6.25\). With this output, of course, the monopolist would obtain a price \(P^* = 9.75\) in the absence of entry, slightly below its simple monopoly profit maximizing price. Why the incumbent is able to commit to this output rather than the (identical) entrant, however, is left unexplained by this model.

14. Which of the following activities do you think is more likely to be carried out in-house by a manufacturer than to be contracted out to another firm specializing in the activity, and why?
   a) keeping company books
   b) research & development of new products
   c) retailing
   d) advertising
   **ANS:** Bookkeeping, of all the above, is most likely to be done in-house, because bookkeepers develop company-specific human capital, which could give rise to opportunistic behavior if they were hired as outside contractors rather than as employees. The same might also be said about R&D, although there may be good reasons for manufacturers to contract out R&D activities in the short run. Retailing and advertising are less likely to result in the creation of specialized assets, and are therefore more likely to be contracted out.

15. A sugar-refining monopoly has three main markets: the catering industry, the confectionery industry, and the soft-drink industry. Of these, the soft-drink industry can most easily switch to alternative sweeteners. Why might it be profitable for the monopoly to vertically integrate into the soft-drink industry?
   **ANS:** Vertically integrating into the soft-drink industry allows the monopoly to price-discriminate. It can raise its sugar price to only catering and confectionery firms without having to worry about soft-drink firms reselling their cheaper supply of sugar.

16. The graph below depicts the annual market demand for aspartame. Suppose there are currently two companies, Searle Inc. and ADC Inc., producing aspartame and the aspartame produced by the two companies are identical. The competition between the two companies is such that each company is charging a price of $12. (Assume that when the companies charge the same price, half of the consumers buy from Searle and half buy from ADC.)
The following graph depicts Searle’s costs of producing aspartame.

Suppose that Searle is thinking about acquiring ADC Inc. Searle believes that if it acquires ADC, it will have a monopoly on aspartame for 3 years. After 3 years, Searle believes that other companies will enter the aspartame market and drive Searle’s profits to zero. If Searle does not acquire ADC, Searle believes that competition with ADC will result in both companies continuing to charge a price of $12 for the next 3 years. After 3 years, Searle believes that other companies will enter the aspartame market and drive Searle’s profits to zero.

Assume that Searle’s costs of producing aspartame do not change if Searle acquires ADC Inc. In addition, Searle estimates that it could sell ADC’s factory and equipment for $40. What is the maximum amount Searle is willing to pay to acquire ADC? (Assume that Searle cannot price discriminate after the acquisition. Also, assume that Searle’s profits are obtained at the start of each year and the annual interest rate is 10%.)

**ANS:** Annual profits if Searle doesn’t acquire ADC are: TR - TC = 12\( \times \)4 - 16\( \times \)4 = -16.

PDV of these annual profits are: 
-16 - (16/1.1) - (16/(1.1)^2) = -43.77.

Annual operating profits if Searle acquires ADC are TR-TC = 18\( \times \)5 - 14\( \times \)5 = 20.

PDV of total annual profits are: 
[20 + 40 - B] + (20/1.1) + (20/(1.1)^2) = 94.71 - B where B is the acquisition price/bid.

Therefore, Searle is willing to pay a maximum of B = 94.71 + 43.77 = 138.48