



AMERICAN UNIVERSITY of BEIRUT
SCHOOL of BUSINESS
BUSS. 230
FINAL EXAM
Saturday, January 24, 2004

C.1

NAME: _____ ID: _____
SECTION: _____ INSTRUCTOR: _____

ANSWER ALL QUESTIONS. TOTAL TIME ALLOWED: 2 hours

I. Multiple choice (20 points total). Circle the correct answer in each of the following 20 questions – (1 point for each correct answer)

1. If automobile manufacturers are producing cars faster than consumers want to buy them:
 - a. There will be an excess supply of cars and car prices can be expected to decrease.
 - b. There will be an excess supply of cars and car prices can be expected to increase.
 - c. There will be an excess demand for cars and car prices can be expected to decrease.
 - d. There will be an excess demand for cars and car prices can be expected to increase.
 - e. Increased consumer income will ensure that production will be absorbed by the market at the existing prices.

2. Assuming that a firm is producing 10 units of a product. At that level of output the marginal cost is equal to
 - a. The slope of the tangent to the total cost curve at that level of output.
 - b. The total cost of 10 units of output divided by 10.
 - c. The average cost of 10 units of output.
 - d. The slope of a ray drawn from the origin to the point on the total cost curve where output = 10.
 - e. The variable cost of producing 10 units of output.

3. An increase in the price of hot dogs from \$1.60 to \$2.00 per unit increased the average number of hamburgers demanded per capita per week from 1 to 1.4. Assuming that all other economic variables were unchanged, the arc cross price elasticity of demand between hot dogs and hamburgers is
 - a. -1.5, which indicates that the two goods are substitutes.
 - b. -1.5, which indicates that the two goods are complements.
 - c. +1.5, which indicates that the two goods are substitutes.
 - d. +1.5, which indicates that the two goods are complements.
 - e. There is not enough information to determine the answer.



4. If the price elasticity of demand for a firm's product is categorized as being **ELASTIC**, then the firm's marginal revenue is
 - a. Positive, and an increase in price will increase total revenue.
 - b. Positive, and an increase in price will decrease total revenue.
 - c. Negative, and an increase in price will increase total revenue.
 - d. Positive, and an increase in price will decrease total revenue.
 - e. Zero, and an increase in price will not change total revenue.

5. The application of multiple regression analysis to a time-series data set yielded a "Durbin-Watson statistic" calculated value of 2.00. From this it can be concluded that:
 - a. Multicollinearity is present.
 - b. Multicollinearity is absent.
 - c. Autocorrelation is present.
 - d. Autocorrelation is absent.
 - e. The coefficients of the independent variables are significant.

6. One advantage of estimating a function in which all the variables have been transformed into their natural logarithms is that
 - a. Problems with multicollinearity will be eliminated
 - b. Problems with heteroskedasticity will be eliminated.
 - c. The estimated coefficients are more likely to be significant.
 - d. The estimated coefficients are all elasticities.
 - e. The estimated coefficients will be unbiased estimators of the true coefficients.

7. In time-series analysis, which type of variation can be estimated by the "ratio-to-trend" method?
 - a. Secular Trend.
 - b. Cyclical.
 - c. Seasonal.
 - d. Random.
 - e. Irregular.

8. The Law of Diminishing Returns
 - a. Is reflected in the negatively sloped portion of the marginal product curve.
 - b. Is the result of specialization and division of labor.
 - c. Applies in both the short run and the long run.
 - d. Causes the marginal product of the variable factor to diminish continuously.
 - e. None of the above.

9. Breakeven analysis identifies the
 - a. Profit maximizing level of output.
 - b. Level of output at which economic profit is zero.
 - c. Level of output where marginal revenue is equal to marginal cost.
 - d. Level of output at which fixed costs are minimized.
 - e. All of the above are correct.

10. The survival technique
- Can be used to estimate short-run variable cost functions.
 - Is based on a technical knowledge of a firm's production function.
 - Uses regression analysis in combination with time-series or cross-sectional data.
 - Utilizes engineering methods to estimate relations between cost and output.
 - None of the above is correct.
11. If **Isoquants** are plotted on a graph with capital measured on the vertical axis and labor on the horizontal axis, then an increase in the wage rate will cause the **Isocost** line
- To become steeper and the optimal utilization of labor will decrease.
 - To become steeper and the optimal utilization of labor will increase.
 - To become flatter and the optimal utilization of labor will decrease.
 - To become flatter and the optimal utilization of labor will increase.
 - To move in a parallel manner and the optimal utilization of labor will decrease.
12. A perfectly competitive firm is selling 150 units of output per week at a price of 10. Average cost is 11, average variable cost is 8, and marginal cost is 12. From this information, it is clear that the firm
- Can increase profits by increasing output.
 - Can increase profit by reducing output.
 - Can increase profit by raising its price.
 - Can increase profit by lowering its price.
 - Can increase profit by shutting down.
13. Which of the following is a characteristic of both monopolistic competition and monopoly?
- Firms face significant barriers to entry.
 - A firm's marginal revenue is below its demand curve.
 - In the long run, a firm will earn zero economic profit.
 - In the long run, a firm will produce a level of output that corresponds to the minimum point of their average total cost curve.
 - Firms produce standardized products.
14. The demand curve facing a monopolistically competitive firm is
- Perfectly elastic.
 - Perfectly inelastic.
 - Elastic.
 - Inelastic.
 - Unitary elastic.

15. A cartel that operates like a multi-plant monopolist is a:
- Market-sharing cartel.
 - Centralized cartel.
 - Price leadership cartel.
 - Falling average cost cartel.
 - Low marginal revenue cartel.
16. Under the dominant-firm price leadership model,
- All firms but the dominant firm are price takers.
 - The dominant firm acts as the residual supplier.
 - The demand curve faced by the dominant firm is flatter than the market demand curve.
 - All firms charge the same price to consumers.
 - All of the above are correct.
17. An oligopolist may engage in short-run behavior that leads to a decline in profits if
- It leads to a **NASH** equilibrium.
 - It is implied by his dominant strategy.
 - It results in the elimination of dominated strategies.
 - It lends credibility to the firm's threats.
 - None of the above is correct.
18. The optimal output of joint products that are produced in fixed proportions occurs where:
- The vertical sum of the marginal revenue from each product is equal to marginal cost.
 - The horizontal sum of the marginal revenue from each product is equal to marginal cost.
 - The marginal revenue from each product is equal to the marginal cost of each product.
 - The vertical sum of marginal revenues is equal to the marginal cost of each product.
 - The marginal cost is equal to the corresponding price of each product.
19. A movie theatre that charges a lower price for afternoon showings than for evening showings is engaging in:
- First-degree price discrimination.
 - Second-degree price discrimination.
 - Third-degree price discrimination.
 - Dominant-strategy pricing.
 - Kinked demand curve pricing.
20. If the external market for an intermediate product is perfectly competitive, then the transfer price should be set equal to:
- The market price of the final product.
 - The competitive market price of the intermediate product.
 - The marginal cost of the final product.
 - The average cost of the intermediate product.
 - The fully-allocated cost of the final product.

II. **TRUE or FALSE (20 points total).** On your exam blue book, label your answers to the following 10 statements with either a T or an F and briefly justify your answer. (Each answer is worth 2 points: 1 point for accuracy of answer and 1 point for the justification provided).

1. A firm's total profit is at a maximum when its total revenue is at a maximum.
2. If a good is classified as "normal", then a decrease in its price will cause the demand curve for the good to shift to the right.
3. The coefficient of determination in a regression is calculated as the ratio of the explained variation in the dependent variable to the unexplained variation in the dependent variable.
4. Output elasticity is measured as the marginal product of an input divided by the average product of the input.
5. The point at which the marginal product of a variable input is at a maximum corresponds to the point at which the marginal cost also is at a maximum.
6. If profit maximizing firms in a perfectly competitive industry are producing 14,000 units a day, but can sell only 12,000 units a day at the current market price of \$23, then the market equilibrium price must be higher than \$23.
7. The short-run supply curve for a monopolistically competitive firm is that part of the upward-sloping portion of the firm's marginal cost curve above the average variable cost curve.
8. The sales maximization model assumes that firms will continue to increase sales until marginal revenue is equal to zero.
9. A firm that sells on two markets and engages in third-degree price discrimination will adjust the quantity sold on each market until the total revenues are equalized in the two markets.
10. A firm that is selling a product at a lower price on foreign markets for the purpose of driving foreign producers out of business is engaging in persistent dumping.

PROBLEMS – 60 points total for problems III, IV, V, and VI Please show clearly on your blue book the methodology and procedure you used to derive your answers. You will not receive credit for answers not indicating the derivation process.

- III. **15 points for correctly answering parts a, b, c, d, and e.** → A market has only two sellers (**Firm A and Firm B**) who are trying to determine their optimal pricing strategies. If both firms charge a high price, then each will experience a 5% increase in profits. If both charge a low price, then each will experience a 3% decrease in profits. If Firm A charges a high price while the other charges a low price, then Firm A will experience a 4% decrease in profits while its competitor will experience a 6% increase in profits. If Firm B charges a high price while its competitor charges a low price, then Firm B will experience a 5% decrease in profits while its competitor will experience a 7% increase in profits.
- a. **For 3 points.** Construct a payoff matrix of the outcomes.
 - b. **For 3 points.** Determine whether each of the firms has a dominant strategy and, if it does, identify the strategy.

- c. **For 3 points.** Determine the optimal strategy for each firm.
- d. **For 3 points.** Determine the NASH equilibrium.
- e. **For 3 points.** Is this a prisoners' dilemma situation involving a worse joint outcome than available? Explain your reasoning?

- IV. **15 points for correctly answering parts a, b, and c.** The market demand for a product is estimated at $Q_d = 50 - 0.5 P$
- a. **For 6 points.** Assuming that the market is supplied by a monopolist with a constant marginal cost of 40, calculate the optimum output and price.
 - b. **For 6 points.** Now assume that the market is supplied by numerous perfectly competitive firms with the same unit cost structure as the monopolist in the previous part. Calculate the equilibrium price and quantity for the entire market.
 - c. **For 3 points.** What is the amount of social gain or loss from converting a market operated by a monopolist into a perfectly competitive market?
- V. **15 points for correctly answering parts a, b, and c.** A firm uses a basic input to produce two by-products products: X and Y. The production process yields amounts of X and Y in a 1:1 fixed proportion. The manager estimated the demand functions for the separate products as follows:
 $P_x = 40 - 0.5 Q_x$, and $P_y = 50 - 2 Q_y$, while
the marginal cost of the production operation was: $MC = 30 + Q$
- a. **For 5 points.** Calculate optimal output of X and Y.
 - b. **For 5 points.** Calculate the optimal selling prices of X and Y.
 - c. **For 5 points.** Calculate the profit earned from the combined production of X and Y.
- VI. **15 points for correctly answering parts a, b, and c.** BEST engine, a division of LEBANESE HOME APPLIANCES produces refrigerator motors. These motors are used by the refrigerator assembly and marketing division of the company. The production and marketing cost and price structures of refrigerators and motors are as follows:
- (i) market demand for refrigerators: $D \rightarrow Q = 1,000,000 - 1000 P$,
 - (ii) total cost of assembly by the assembly and marketing division (excluding cost of motors) $\rightarrow TC_m = 500,000 + 625 Q_m$,
 - (iii) total cost of BEST Division $\rightarrow TC_p = 1,000,000 + 275 Q_p + 0.00025 Q_p^2$
- Assuming that no external market exists for the motors produced by BEST Division:
- a. **For 5 points.** Determine the profit maximizing output and price of refrigerators.
 - b. **For 5 points.** Determine the appropriate transfer price for the motors.
 - c. **For 5 points.** How much profits will be made on the sale of refrigerators.