
PRINT NAME

FIRST EXAM

Managerial Economics, ECON 3800-001 Spring 2002

maximum of **15%** of course grade**Chapters 1 and 2 and Appendix A****INSTRUCTIONS:**

1. There are 21 multiple choice questions, but the exam will be graded as if there only are 20 questions.
2. As with all multiple choice tests, you should select the best answer, which may be the "wrong" answer. For example, the "correct" answer may be 2.2; however your exam may only offer the answer options of 2.0 and 3.0; in which case the best answer is 2.0.
3. Because this is a multiple-choice exam, there is no partial credit for your math work.
4. Each student is encouraged to challenge any single question or group of questions as having a mathematically incorrect answer on the answer key. Challenges of mathematically incorrect must be done before the end of class on Tuesday, February 5 and may be done orally.
5. With respect to questions a student believes are **ambiguous**, because there is a built in curve of one extra question, a student **must appeal two or more questions** as being ambiguous. Appeals are due before the end of class on Tuesday, February 5. Appeals must be in writing and signed. Appeals must direct the instructor to specific textbook pages and/or handout pages that support the student's version of the challenged ambiguity.
6. **Commitment** to a forensic research project is due prior to the end of class on **Tuesday**, February 5. **However**, the **Outline is not due until Thursday**, February 7. To **commit** to a forensic economics research paper, choose **in writing** the value of this First Exam, the Midterm Exam, and the Final Exam. You may either **choose** to assign:
 - [A] zero value to this First Exam and the Midterm Exam, and assign 45% value to both the Final Exam and the research project;
 - or
 - [B] 15% value to this First Exam and the Midterm Exam, and assign 30% value to both Final Exam and the research project.

QUESTIONS:

- 1. The Major Forces of Change are best listed as:**
 - a. Around 2000, fission, one world, computer, urban, and labor surplus.
 - b. Around 2000, gun powder, new world, printing press, rural, and labor shortage.
 - c. Around 1500, fission, one world, printing press, urban, and labor surplus.
 - d. Around 1500, gun powder, new world, printing press, urban, and labor surplus.

- 2. The Elements of Capitalism are best described as:**
 - a. a "large" number of buyers and sellers with free entry and exit.
 - b. private property, prices, markets, competition, and government.
 - c. no profit motive, special interests, vote trading, and clear benefits with hidden costs.
 - d. embody, measure, coordinate, regulate, and facilitate self interest.

- 3. The Functions of Capitalism are best described as:**
 - a. embody, measure, coordinate, regulate, and facilitate self-interest.
 - b. private property, prices, markets, competition, and government.
 - c. the ends sought, as distinguished from the means used to achieve the ends.
 - d. a "large" number of buyers and sellers with free entry and exit.

- 4. The History of Capitalism displays:**
 - a. different stages (e.g., Free Capitalism, Industrial Capitalism), with every stage having a distinct focal point that is a self-sufficient entity.
 - b. a continuous increase in the size of the self-sufficient entity that is the focal point of each stage.
 - c. how large changes in technology cause small changes in history.
 - d. how changes in the economic environment cause change the social environment.

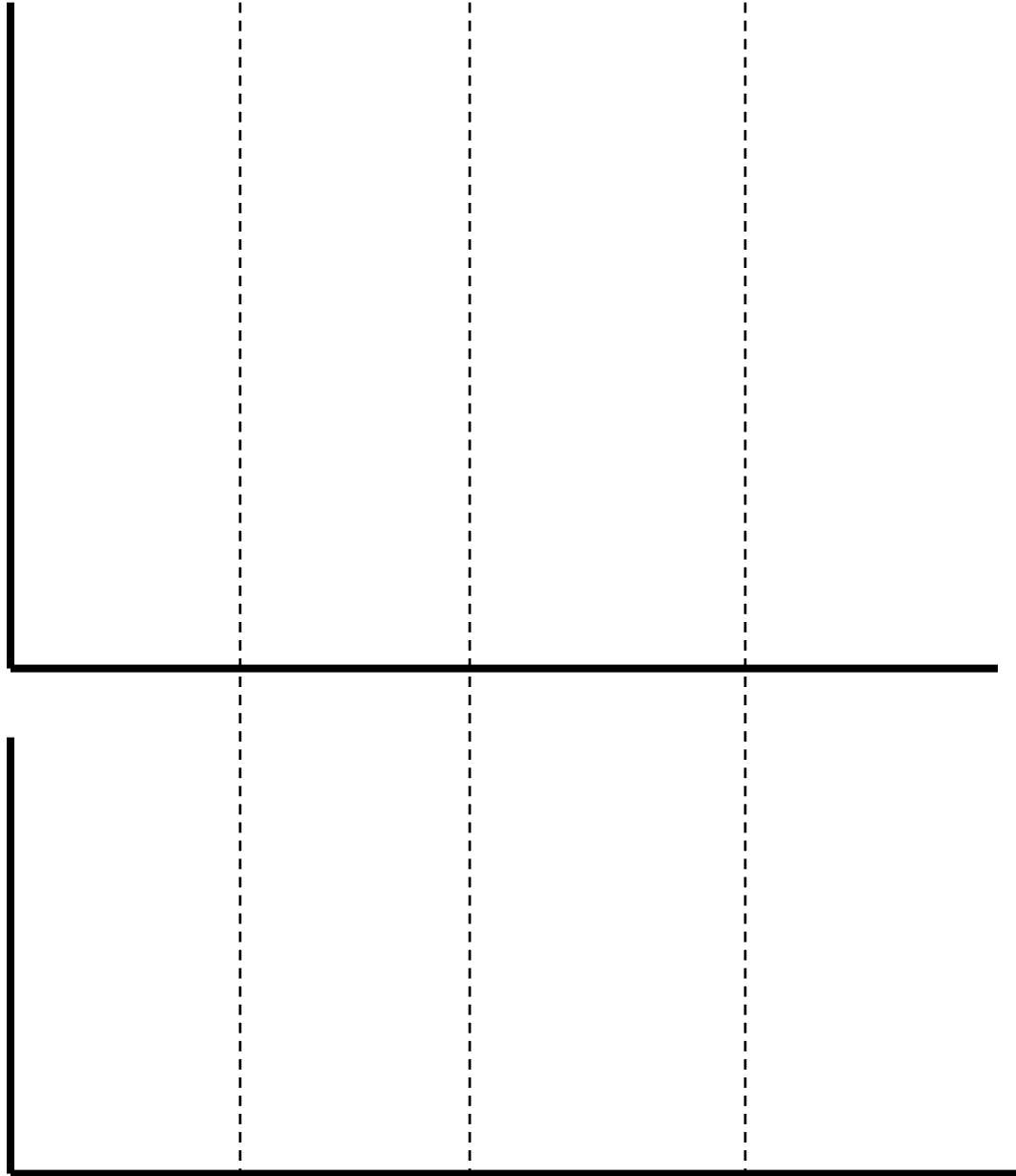
- 5. The non-price determinants of SUPPLY include:**
- number and size of sellers, income, taxes, and expectations.
 - prices of related goods, taxes, technology, and expectations.
 - number and size of sellers, income, technology, and expectations.
 - number and size of buyers, cost of inputs, tastes, and expectations.
- 6. The non-price determinants of DEMAND include:**
- number and size of buyers, income, tastes, and expectations.
 - cost of inputs, prices of related goods, taxes, and expectations.
 - income, prices of related goods, technology, and expectations.
 - income, tastes, taxes, technology, and expectations.
- 7. Spillover costs and spillover benefits:**
- respectively,
are why education is subsidized and
why pollution is regulated and/or taxed.
 - usually
are of a magnitude that
government can improve the efficiency of the transaction
by setting transaction costs.
 - are present in all transactions.
 - rarely are present and
rarer still are of sufficient magnitude that
government can improve the efficiency of the transaction
by setting transaction costs.
- 8. Normal profit:**
- will equal zero under competition.
 - is equal to accounting profit.
 - to an economist
is the same as "normal profit" is to financial analyst.
 - is subjective.

- 9. The principal-agent problem of satisficing:**
- only is present in governments because government employees do not have a profit motive.
 - is eliminated when a firm adopts salary structures with long-term incentives.
 - is an example of an employee pursuing profit maximization for the employee rather than for the employer.
 - results in a firm achieving shareholder wealth maximization.
- 10. Surplus and shortage:**
- all of the below.
 - are equal to zero at equilibrium.
 - typically, are continuously entering and leaving the market.
 - cause prices, respectively, to move down and up.
- 11. Discounted present value (DPV) must be calculated with different formulas in different contexts. Which of the below correctly pair a formula with its use?**
- $1/(1 + i)^n$ is best used to calculate DPV of **unequal** payments (e.g., \$5 and \$100 payments) at **unequal** time intervals (e.g., months and years).
 - $\Sigma[1/(1 + i)^t]$ is best used to calculate DPV of equal payments (e.g., all \$100 payments) at **unequal** time intervals (e.g., months and years).
 - $R\{ \Sigma[1/(1 + i)^t] \}$ is best used to calculate DPV of **unequal** payments (e.g., \$5 and \$100 payments) at equal time intervals (e.g., all years).
 - Rule of 70 (i.e., $70/i$) roughly calculates the number of periods required to double (if earning interest) or to halve (if paying interest) a PV.

12. Constrained optimization:

- a. applies to revenues, but not to costs, because costs are minimized.
- b. forces the optimized solution to be within the feasible range of inputs and outputs.
- c. $\Pi = TR - TC$ is an example of a constrained optimization function.
- d. can be solved for one constraint, but not more than one.

draw graphs below to help you answer questions #13, #14, and #15



- 13. The maximum of the TOTAL profit curve exists at the quantity where:**
- a. a ray to the total profit curve has a slope of zero.
 - b. average profit equals marginal profit.
 - c. marginal revenue and marginal cost both equal zero.
 - d. marginal profit equals zero.
- 14. The maximum of the MARGINAL profit curve exists at the quantity where:**
- a. marginal profit equals zero.
 - b. average profit equals marginal profit.
 - c. a tangent to the total profit curve switches from under the total profit curve to over the total profit curve (i.e., inflection point).
 - d. a ray to the total profit curve has a slope of zero.
- 15. The maximum of the AVERAGE profit curve exists at the quantity where:**
- a. a ray to the total profit curve has a slope equal to the slope of the tangent to the total profit curve at that quantity.
 - b. a ray to the total profit curve has a slope of zero.
 - c. a tangent to the total profit curve switches from under the total profit curve to over the total profit curve (i.e., inflection point).
 - d. a tangent to the total profit curve has a slope of zero.
- 16. Marginal Cost equals Marginal Revenue**
- a. and always equals zero.
 - b. is the first derivative of the total profit function.
 - c. is a criteria for profit maximization.
 - d. only when average revenue equals marginal cost.

17. Which of the following is the correct pairing of function with its first derivative?

a. $Y = a + bX$
 $dY/dX = baX^{(b-1)}$

b. $Y = 10 + 20X + 40X^2$
 $dY/dX = 20X + 80X$

c. $Y = 2 - 4X^2 - 8X^4$
 $dY/dX = -8X(1 + 4X^2)$

d. $Y = 1 - 3X - 6X^3$
 $dY/dX = 3 + 18X$

- 18. Select the correct second derivative and the correct interpretation of the function $Y = 3 + 12X + 3X^2$ from the following choices.**
- a. + 6: maximized.
 - b. + 6: minimized.
 - c. - 2: maximized.
 - d. - 2: minimized.
- 19. Select the correct optimization with respect to X when using the Chain Rule when $Y = 1 + 2W + W^2$ and when $W = -X^2$**
- a. $-4X + 4X^3$ or $-4X(1 - X^2)$.
 - b. $-3X^2 + X^4$ or $-X^2(3 - X^2)$.
 - c. $-2X + 8X^3 + 8X^5$ or $-2X(1 - 4X^2 - 4X^4)$.
 - d. $-X^2 - 2WX^2 - W^2X^2$.
- 20. Select the correct partial derivative for the function $TC = 200 + W + X - XW - X^2W^2$**
- a. $\delta TC / \delta W = 1 - 2X^2$
 - b. $\delta TC / \delta W = 1 - 2W^2$
 - c. $\delta TC / \delta X = 1 - W - 2XW^2$
 - d. $\delta TC / \delta X = 1 - 2X$

21. Your firm sells dinner plates in two colors: blue and red.

Your total profits function is:

$$\Pi = 6B + 8R - B^2 - R^2$$

However, you are subject to the production constraint that your total plates made can not exceed:

$$11 = B + R$$

The units of B and R are in 1,000s of plates.

Using the Lagrangian Multiplier method, which of the following is TRUE of your optimized results?

- a. Your firm should shut down so as to maximize profits by minimizing your losses.
- b. Relaxing the constraint by one unit so that you could produce a maximum of 12 instead of 11 would increase your profits by \$12,000.
- c. Your optimum output is at $B^* = 4$ and $R^* = 7$.
- d. Your firm's profit at maximum is \$17,000.

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$B^* = \underline{\hspace{2cm}}$ $R^* = \underline{\hspace{2cm}}$ $\lambda^* = \underline{\hspace{2cm}}$ $\Pi^* = \underline{\hspace{2cm}}$