

SAMPLE ONLY

DEPARTMENT OF ECONOMICS
SAN JOSE STATE UNIVERSITY
MASTER'S COMPREHENSIVE EXAMINATION

DECEMBER 2, 2005
6:30 P.M. TO 9:30 P.M.
PROCTOR: ORTEGA

INSTRUCTIONS:

1. Answer ONLY the specified number of questions from the options provided in each section. Do not answer more than the required number of questions. Each section takes one hour.
2. Your answers must be on the paper provided. No more than one answer per page. Do not answer two questions on the same sheet of paper.
3. If you use more than one sheet of paper for a question, write "Page 1 of 2" and "Page 2 of 2."
4. Write ONLY on one side of each sheet. Use only pen. Answers in pencil will be disqualified.
5. Write ----- **END** ----- at the end of each answer.
6. Write your SJSU identification number in the upper right-hand corner of each sheet of paper.
7. Write the question number in the upper right hand corner of each sheet of paper.

Section 1: Microeconomics—Answer Any Two Questions.

1A. John's indifference curves are smooth and convex. Given prices $p_1 = \$2$ and $p_2 = \$4$, John buys consumption bundles ($x_1 = 100$, $x_2 = 50$). *Use indifference curves and the budget line to show John's optimal choice graphically. Explain your answer verbally.* Suppose the government wants to raise certain amount of revenue. It can impose either a \$1 quantity tax in good 1 (i.e., John has to pay \$1 to the government for each unit of the good 1 that he purchases) or an income tax that raises the same amount of revenue. *Is it better to raise this revenue via a quantity tax or an income tax? Use indifference curves and the budget line to show your answer graphically. Explain your answer verbally.*

1B. A newspaper in Chicago reports that "The market demand curve for heroin is said to be highly inelastic and heroin supply is monopolized by the profit-maximizing mafia." Do you agree with this report? If yes, why? If no, why? Please present your answer verbally and graphically.

1C. The market demand for a pair of duopolists is given as $P = 36 - 3Q$, where $Q = Q_1 + Q_2$. Total costs equal $36Q$ ($MC = \$18/\text{unit}$) for each firm. Determine the equilibrium price, each firm's output and profit for **three out of four** of the following models:

- a. Shared Monopoly
- b. Cournot Duopolists (each rival assumes output is fixed)
- c. Bertrand Duopolists (competitive case)
- d. Stackelberg Duopolists (assume firm one is the leader)

1D. (a) Find critical points for the following function. Determine for each point whether it is a maximum or a minimum, or neither. $Y = f(X_1, X_2) = 8X_1^3 + 2X_1X_2 - 3X_1^2 + X_2^2 + 1$

(b) Given a utility function, $U = U(X_1, X_2) = X_1 X_2$ and a budget constraint, $100 = 10X_1 + 5X_2$. Find the optimal levels of X_1 and X_2 that can maximize the utility level subject to the budget constraint. (Must use the Lagrange Method, and you do not need to check the second order conditions.)

(c) Use the substitution method to solve part "b" again. Explain the advantage and disadvantage of using the substitution method.