Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

1) (10 points) Answer EITHER Part A OR Part B.
A) What is meant by the "substitution effect"? Explain how it relates to the demand curve.
B) Explain why it may be more profitable to own a franchise even though it will cost you money to get the franchise.

2) (10 points) Answer EITHER Part A OR Part B.
A) Explain why optimization means MB = MC.
B) Define a regressive tax.

3) (12 points) For EITHER new cars and used cars OR pencils and paper, give me number which you think would be the cross price elasticity. Explain how you chose the number.

4) (12 points) For EITHER lack of competition positive externalities OR public goods, explain what that means and why it means we need government intervention in the market.

5) (18 points) Answer EITHER Part A OR Part B. There are six possible pairs of rows in the table to the right. However, each part has only one pair which will work for it. (A different pair for each part of the question.) For ONE part, tell me which pair of rows can be used for that calculation. Explain how you reached that conclusion. Calculate that elasticity showing all work. What does that number tell us? Explain your logic.
A) Income elasticity using the point formula.
B) Cross-price elasticity using the arc elasticity formula.

Income	P_{apples}	P_{grapes}	Q_{apples}
$1000	$2/lb	$3/lb	8 lbs
$2000	$4/lb	$3/lb	8 lbs
$1000	$4/lb	$3/lb	6 lbs
$1000	$2/lb	$1/lb	12 lbs

6) (16 points) Answer EITHER Part A OR Part B.
A) Use the table to the right to determine the marginal tax rate, total taxes paid, and average tax rate for a person earning $50,000. Show all work. If there is no work then state what you did.
B) Explain the general reason why increasing any tax could result in less tax revenue. Give a numerical example of an excise tax which illustrates your principle.

Tax Bracket	Tax Rate
$0-20,000	15%
$20,000-$60,000	25%
$60,000-$90,000	30%
$90,000-$120,000	40%
>$120,000	50%

7) (22 points) Answer EITHER Part A OR Part B.
A) Draw a supply and demand diagram for a product like electricity which creates a negative externality. Prove the market will not produce the optimal amount. Find the consumer surplus, producer surplus, damage from the negative externality, and the dead weight loss. Briefly explain how you found them. Do NOT illustrate the government correcting the problem. **Hint:** The damage from the externality is going to equal what the government would get in tax revenue if there was a tax because the government is trying make the consumer pay the cost others incurred.
B) Draw a supply and demand for a good which has a price ceiling. Find the consumer surplus, producer surplus, black market profits, and the dead weight loss. Briefly explain how you found each.