Final   Name: _____
PPA 723, Fall 2010

The total final is worth 30 points. Each question is worth 2 points, and each sub question is worth an equal share of the 2 points.

1) A food stamp policy is put in place in a state. For our representative consumer impacted by this policy, their initial income of Y is supplemented by food stamps worth $100. The initial budget constraint is $y = p_f \cdot f + p_o \cdot o$, where f is food, o is all other goods, and the two prices are subscripted by their commodity.

        a. Draw the original budget line and the budget line after the food stamp policy is implemented.

        b.   Reproduce your graph for (a), and then place on the graph indifference curves for a consumer who is made **equally well off** if we give the consumer $100 in food stamps or $100 in cash.

2) If $p_1 = 10$, $p_2=50$, and Y=500
   a. Draw the budget constraint.

   b. Show how you can derive the price consumption curve for a given consumer's preferences (drawn as you like so long as they obey the properties of indifference curves discussed in class) using the example of the budget line from (a) with $p_1 = 10$, a budget line if $p_1 = 5$ all else constant, and a budget line of $p_1 = 20$ all else constant.

   c. Show how to derive the individual's demand curve from the graph in (b).

3) Market structure and externalities. The inverse demand curve is given as p=116-4q. The supply curve is p=20+4q.

    a. What is the equilibrium price quantity pair if the market structure is perfectly competitive?

    b. If there is a marginal externality generated by production of the good equal to 4*q $(MC^E=4*q)$, what is the socially optimal price quantity pair?

    c. If the market structure is a monopoly, what is the equilibrium price quantity pair chosen by the monopolist (who does not include MC^E in her decision)?

4) Syracuse University is considering raising the price for a season's ticket for all men's basketball home games next year from $420 to $440. This year, at a price of $420, they sold 21,000 season's tickets.   The best available information suggests that the price elasticity of demand for season's tickets is -0.5.

a. What is the predicted number of season's tickets sold next year if the price is raised?

b. Compare total revenue for the two prices. Which is higher?

c. How many season tickets will be sold next year if the elasticity is not -0.5 as assumed above, but is in fact -1.5?

5) Circle the correct answer

Condition A	Condition B	What type of condition is B for establishing A?
MC is above AC at q	AC is upward sloping at q	N, NS S, NN N,S
The good is homogeneous	The market is perfectly competitive	N, NS S, NN N,S
The market is perfectly competitive	The good is homogeneous	N, NS S, NN N,S
Consumption of the good is characterized by rivalry.	The good is a private good	N, NS S, NN N,S
You can get to NYC from Syracuse in less than six hours.	There is a bus to NYC from Syracuse that makes the trip in less than six hours.	N, NS S, NN N,S
The good is a public good.	The good is characterized by non-exclusion	N, NS S, NN N,S
A quantity is the profit maximizing quantity	The quantity is produced in a technologically efficient way.	N, NS S, NN N,S
The last dollar rule is satisfied at a bundle	MRS=MRT at a bundle	N, NS S, NN N,S

N,NS :   Necessary, not sufficient
S, NN: Sufficient, not necessary
N, S: Necessary and sufficient.

6) The average price of a Christmas trees has gone up in Central New York since this time last year. Assume each explanation listed below is hypothesized to be the sole cause of this price increase. Which of the following explanations can you rule out, and which can you not rule out.

Explanation	Rule out	Not Rule Out (circle)
Incomes in Central New York have increased since last year.	Rule out	Not Rule Out
Consumer preferences have shifted away from cut trees towards artificial trees.	Rule out	Not Rule Out
The price of fuel used to transport the trees to market has increased.	Rule out	Not Rule Out
New environmental regulations make it more costly to raise and sell Christmas trees.	Rule out	Not Rule Out
A study was released proving that the fresh cut tree smell reduces the likelihood of post-holiday depression.	Rule out	Not Rule Out
A new faster growing variety of Christmas tree was developed, reducing the time required for a tree to reach maturity by 23%.	Rule out	Not Rule Out

7) Types of Goods.

a) What type of good goes in which blank?

	Rival	Non Rival
Exclusion		
Non Exclusion		

b) Illustrate how deriving the demand curve for a public good differs from deriving the demand curve for a private good, and explain how this difference relates to your answers to (a).

8) Cost.
a. Complete the following table.

Total Output	Fixed Cost	Total Cost	Variable Cost	Average Variable Cost	Average Fixed Cost	Average Cost	Marginal Cost
0		10	-------	------	-----	------	---------
1							15
2		39					
3			44				
4						18	
5							22

b. Is this short run or long run cost information? Why?

c. If market price for the output produced is 15, what level of output is profit maximizing for a firm if the market structure is perfectly competitive?

9) Public goods. There are three people who live in a town. They are trying to decide the number of strings of lights that should go up on the Christmas tree in the downtown square. Cindy Loo really likes lots of lights and has a marginal willingness to pay curve defined by $2.00-$0.10*q, where q is measured in number of strings of lights. Max also likes lights, and has a marginal willingness to pay curve defined by $0.65-$0.05q. Mr. Grinch, though his heart has grown, is still a Grinch and has a marginal willingness to pay curve of $0.25-$0.05*q.

a.)Draw these individual demand curves and the societal demand curve for this public good.

b.)If the marginal cost of a string of lights is constant at $1.60 per string and no effort is made to avoid the free rider problem, how many strings will be put on the tree and who will be paying for them?

c.)How many strings of light would there be a cost of $1.60 per string in the socially optimal outcome (remembering negative WTP values should not be included)?

10) The demand curve is given to you as q=30-5*p.

a. Fill out the following table (use the relatively higher price / relatively lower quantity pair for the denominator in the elasticity calculation)

Price	Quantity	Elasticity
1		-----------------------
2		
3		
4		
5		

b. Draw this demand curve with price on the y-axis and quantity on the x – axis. Identify the range over which this curve is elastic or inelastic.

11) Tax policy.

   a. Illustrate on a supply and demand graph a specific tax of size τ placed on consumers.

   b. Illustrate on a supply and demand graph a specific tax of size τ placed on producers.

   c. Illustrate on a supply and demand graph the impact of an ad valorem tax rate of α placed on consumers.

12) Benefit Cost. We are developing a program to pay people in developing countries to change herd management practices to lead to greater potential for greenhouse grass sequestration. If herders adopt the practices, carbon will be rendered harmless as it will be locked up in soil. Each ton of carbon sequestered is worth $30 per year in environmental benefits to society.   Currently markets are offering payments of about $15 per ton to those who take actions that sequester carbon. The three-year long (t=0,t=1,t=2) management plan we are considering will require rangelands currently used in livestock production to be taken out of production in order to sequester carbon. The loss to livestock production of not using these lands is estimated to be equivalent to 0.7 million USD ($700,000) per year for each of the three years. The carbon that will be sequestered as a result is predicted to be 50,000 tons in year t=0 (worth $30*50,000, costing $15*30,000), 55,000 tons in t=1, and 35,000 tons in year t=2.

a. Do the benefits to society of sequestration outweigh the costs in NPV terms using a discount rate of 10%?

	Benefits	Costs
T=0		
T=1		
T=2		

b. Is the answer the same if we use a discount rate of 5%?

	Benefits	Costs
T=0		
T=1		
T=2		

c) Why is your answer the same / why is your answer different for parts (a) and (b)?

13) Syracuse is considering opening a sewage treatment plant that will release treated water into Onondaga Lake. The Onondaga Yacht club members sail yachts in this lake. The Yacht club is trying to decide on the membership fee they should charge this year. The Onondaga Yacht club can charge nothing, have no members and make no profit, set a fee of $100 per person and have the profits listed in the table, or a $200 per person fee and have the profit listed in the table. The payoffs to Syracuse are cost reductions from the current level for sewage treatment. Syracuse can choose no plant, a small plant, or a large plant.

		Onondaga Yacht Club					
		No fee		$100 fee		$200 fee	
Syracuse	No plant	0	0	0	14,000	0	15,000
sewage	Small plant	10,000	0	10,000	10,000	10,000	5,000
treatment	Large plant	15,000	0	15,000	2,000	15,000	-3,000

    a) Describe the full set of best response strategies and the Nash Equilibrium outcome of this game.

A court has passed a judgment that Onondaga Yacht club must be compensated by Syracuse by $7,000 if the small plant is built and $14,000 if the large plant is built. The following payoffs result.

		Onondaga Yacht Club					
		No fee		$100 fee		$200 fee	
Syracuse	No plant	0	0	0	14,000	0	15,000
sewage	Small plant	3,000	7,000	3,000	17,000	3,000	12,000
treatment	Large plant	1,000	14,000	1,000	16,000	1,000	11,000

    b) Describe the full set of best response strategies and the Nash Equilibrium outcome of this game.

    c) Contrast these outcomes to the two players in terms of Pareto optimality and using concept of Pareto improvement.

14) Circle the correct answer.

Statement	The statement is (circle the correct answer)	
The slope of the budget line is called the marginal rate of technical substitution.	True	False
Consumer surplus is calculated as the area under the demand curve and above price line.	True	False
In a perfectly competitive market the firm chooses q such that AC(q)=AVC(q).	True	False
The slope of the isoquant is defined by the negative ratio of the prices of the goods.	True	False
Marginal cost = cost of the input / marginal product.	True	False
The bisection rule allows us to derive the marginal cost curve from a linear demand curve.	True	False
The income elasticity for a normal good is positive.	True	False
A cross price elasticity for a substitute is positive.	True	False

15) You know that the demand curve is defined by the following function: P=28-2Q.

    a. If total cost is defined by 4*Q, then MC= 4 for all possible levels of Q. What level should the monopolist produce at and what price per unit should they charge?

    b. What would be the price quantity pair if the competitive market had identical cost structures to the monopoly firm (MC=4) and the demand curve was unchanged?

    c. Show the competitive case in comparison to the monopoly case on a single graph.

    d. Calculate the area in numbers of consumer surplus, producer surplus, and total social welfare under the competitive and the monopoly structure.

	Competitive Market Structure	Monopoly Market Structure
Consumer Surplus		
Producer Surplus		
Total Social Welfare		

Work Page