Final Name: _____
PPA 723, Spring 2009

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) Market structure, externalities, and taxation. The inverse demand curve is given as p=120-4q. The supply curve is p=10+6q.

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 1*q (MC^E=1*q), what is the socially optimal price quantity pair?

c. A specific tax of size τ could be placed on producers to arrive at the socially optimal price quantity pair. What value of τ should we choose?

2) The own price demand elasticity for cat toys in the Syracuse area is -1.1.

   a. Is the own price demand elasticity for cat toys infinitely inelastic, inelastic, perfectly inelastic, elastic, unit elastic, or infinitely elastic?

   b. Currently we sell 2000 cat toys per day in Syracuse at $1.00 per toy. If the Chinese revalue their currency, the price of cat toys is expected to increase 14%. (All cat toys sold in Syracuse are made in China.) What number of cat toys should we expect people to buy per day after revaluation?

   c. Would such a raise increase, decease, or leave unchanged our total revenue? Why?

3) 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	11		-------	------	-----	------	---------
1		26					
2						20	
3			44				
4		72					
5							20

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?

4) Deriving demand.

a) Illustrate how you derive a price consumption curve.

b) Illustrate how you derive an individual’s demand curve from the graph you drew in (a).

5) The demand curve is given to you as q=150-15*p.

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

Price	Quantity	Elasticity
1		----------
2		
3		
4		
5		
6		

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.

6) The price of a gallon of milk dropped by almost 50% from this time last year. Assume each explanation listed below is hypothesized to be the sole cause of this price decrease. Which of the following explanations can you rule out, and which can you not rule out.

Explanation	Rule out Not Rule Out (circle)
Consumers' income in this area has gone up significantly since last year.	Rule out Not Rule Out
Feed grains for livestock that produce the milk have decreased in price dramatically.	Rule out Not Rule Out
The introduction over the past year of a new breed of cattle that is a much more productive milk producer than the old breed.	Rule out Not Rule Out
A health scare where unsafe milk was consumed in Ohio last month has made people more nervous about drinking milk.	Rule out Not Rule Out
Innovations in the soy milk production process have dramatically lowered the price of soy milk.	Rule out Not Rule Out
A specific tax on producers has been introduced for milk in the past year.	Rule out Not Rule Out

7) Circle the correct answer.

Statement	**The statement is (circle the correct answer)**
The expansion path traces out all points that maximize profits.	True False
Consumer surplus is calculated as the area below the demand curve and above the price line.	True False
The slope of an indifference curve is called the marginal rate of substitution.	True False
The income elasticity of demand for an inferior good is a positive number.	True False
MRS=MRT at the optimal bundle for an interior solution.	True False
Increasing the discount rate increases the present value of future costs and benefits.	True False
A monopolist is a single supplier of a good for which there is no close substitute.	True False
The free rider problem leads to overprovision of a public good.	True False

8) Public goods.

a. We are considering the demand for the number of butterfly houses to put in the city parks in the city of Syracuse this spring. Here q is the number of butterfly houses put in the parks that will be accessible to the three residents of Syracuse (urban flight has gotten out of control). Francis has a willingness to pay for butterfly houses defined by 30-q. Gloria has a WTP defined by 40-4*q. Otto has a WTP defined by 80-5*q. What is total marginal willingness to pay on the societal demand curve for the provision of the 5^{th} butterfly house?

b. If the marginal cost of butterfly house provision is constant at 60 per house and no effort is made to avoid the free rider problem, how many butterfly houses will we end up with and who will provide them?

c. Is the number of butterfly houses you found in part b more, equal to, or less than the socially optimal number of butterfly houses? If not equal, by how many butterfly houses different? If equal, why?

9) 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 the impact of an ad valorem tax rate α placed on consumers.

c. Explain the concept of consumer incidence based on your graph in part (b).

10) Syracuse University in considering expanding undergraduate housing on campus by building new dorms. If they build new dorms, there will be an impact on the apartment rental market in the university area. SU can build no dorms, 1 new dorm, or 2 new dorms. To compete, owners of rental property in the university area can keep rental rates at the current level, decrease them 5% or decrease them 10% to increase the attractiveness of their properties to students. The following payoff matrix results.

		Owners of Rental Property					
		No Reduction		5% reduction		10% reduction	
Syracuse University	No dorm	0	9,000	0	8,000	0	7,000
	1 dorm	10,000	2,000	8,000	6,000	6,000	5,000
	2 dorms	13,000	-1,000	11,000	2,000	10,000	3,000

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

b) From the point of view of maximizing total payoff given a set of resources, is the Nash Equilibrium the optimal outcome? Why or why not?

11) The demand curve is defined by the relationship p=40-2q. Marginal cost is constant for all levels of q at MC=12.

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

b. What is the price quantity equilibrium if the market structure is monopolistic?

c. Identify the magnitude of consumer surplus, producer surplus and total social welfare for cases (a) and (b).

	Consumer Surplus	Producer Surplus	Total Social Welfare
Perfect Competition			
Monopoly			

12) Benefit cost.

We are trying to figure out whether introduction of a fodder crop that can be used to fatten sheep before marketing them makes sense in rural Mali. The fodder will be grown in fields that are currently producing millet, which is valued at 2.5 million dollars a year. If the fodder is grown the millet can not be grown in the field. Training farmers in the production and use of this fodder will cost 0.5 million dollars over the first two years (t=0,t=1) of a three year project. In t=0 and t=1 it is estimated that the increased revenue from fattening is worth 2 million. In t=2, after farmers have some experience, it is anticipated this will increase to 4.5 million. All values are nominal values.

a) If the nominal discount rate is 10%, does the fodder project pass a benefit cost test over the time horizon t=0,t=1, and t=2?

b. If there is a t=3 year of the project included in the calculation, where the costs and benefits in t=3 are the same as t=2, will that lead to a different evaluation about whether the fodder project should be undertaken or not?

c. If someone asked you which was the more defensible approach to the time horizon, that taken in part a or part b, what would you respond?

13) A food stamp policy is put in place in a state. For our representative consumer impacted by this policy, their initial income of $1500 is supplemented by food stamps worth $200 of food. The price of food is $20 per unit, the price of the composite other good which cannot be purchased using food stamps is $10 per unit.

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

b. Reproduce the graph you drew for (a) below. Illustrate on this graph a consumer who has preferences such that they will consume more of both goods, food and other, after they are given the food stamps.

14) Types of Goods.

a) The categories are public goods, private goods, club goods, and open access goods. What type of good goes in which blank?

	Rival	Non Rival
Exclusion		
Non-Exclusion		

b)Illustrate how to derive the aggregate demand curve for a private good.

c) Illustrate how to derive the aggregate demand curve for a public good.

15) Necessary and Sufficient conditions.

Condition A	Condition B	What kind of condition is B for establishing the truth of A?
The firm is a price taker	The market is perfectly competitive.	N, NS S, NN N,S
The market is perfectly competitive	The firm is a price taker	N, NS S, NN N,S
The consumption bundle is the optimal bundle for an interior solution	The consumption bundle satisfies the last dollar rule for an interior solution	N, NS S, NN N,S
A project will be approved in a referendum where each voter gets one vote.	The median voter's WTP for a project is greater than the cost to that voter of the project	N, NS S, NN N,S
The input is bundle is profit maximizing.	The input bundle is cost minimizing.	N, NS S, NN N,S
The profit maximizing quantity is q*	P=MC(q*) in a perfectly competitive market	N, NS S, NN N,S

N, NS is necessary not sufficient
S, NN is sufficient but not necessary
N, S is necessary and sufficient