Final Name: _____
PPA 897, Fall 2018
Professor John McPeak

The total exam is worth 30 points. Each numbered question is worth 2 points, and each sub question within a numbered question is worth an equal share of the 2 points.

1) Taxes.
    a. Show the impact of a specific tax of size τ placed on producers. Note the price paid by consumers, the price received by producers, the equilibrium quantity and the tax revenue, and contrast this to the pre-tax price quantity pair.

    b. Show the impact of an ad valorem tax rate α placed on consumers. Note the price paid by consumers, the price received by producers, the equilibrium quantity and the tax revenue, and contrast this to the pre-tax price quantity pair.

    c. Explain the concept of consumer incidence in reference to your answer to part b of this question

2) Monopoly

a. Illustrate on a graph the difference between a monopoly outcome and a perfectly competitive market outcome. Identify areas corresponding to producer surplus, consumer surplus, and deadweight loss.

b. Illustrate a policy that could regulate a monopoly to replicate the perfectly competitive market outcome.

c. Why might this not work as a policy response to a natural monopoly?

3) The demand curve is given to you as q=500-50*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		
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.

4) Circle the correct answer.

Statement	**The statement is (circle the correct answer)**
Coase's solution to the problem of negative externalities is to reduce emission quantity to where the marginal social cost of the emission equals the marginal cost of abatement.	True False
A Gini coefficient for the distribution of income increases from 0.5 to 0.6 over a ten-year period. This indicates income inequality is increasing over the ten-year period.	True False
Economic efficiency is a necessary but not sufficient condition for technological efficiency.	True False
The societal demand curve for a public good is derived by horizontal summation of the quantity each individual demands at a given price.	True False
The internal rate of return is the value of r at which present value benefits equal present value costs for a project.	True False
Economic efficiency is achieved when a market arrives at a Pareto optimal outcome.	True False
The cross price elasticity for a substitute is a negative number.	True False
A club good is excludable and non-rival.	True False
The free rider problem leads to under provision of a public good.	True False
A necessary but not sufficient condition for economic efficiency is profit maximization.	True False

5) Budget Constraints. There are two goods, food (f) and other (o). The price of food is p_f, the price of other is p_o. Income is Y. Hence the budget constraint is $p_f*f+p_o*o=Y$.

a. Draw the budget constraint and indifference curves for a consumer showing the optimal bundle with the original budget line and after the consumer has received food stamps of cash value FS.

b. Draw the budget constraint and indifference curves for a consumer showing the optimal bundle with the original budget line and after the consumer has received a matching grant of size S for each unit of food purchased at price p_f.

6) Briefly describe first how each of the following can justify government policy response, and then identify a potential policy response that addresses the problem.

a. Information asymmetry in the real estate market.

b. The moral hazard problem created by selling people fire insurance.

c. The positive externality conferred to citizens of a country by implementing a clean air act.

d. The negative externality of fertilizer and animal waste run-off into the City of Syracuse's water supply, which is from Skaneateles Lake.

7) Production functions.

a) Draw the production function Q=f($L, \overline{K}$) noting areas that are not feasible, not efficient and at the frontier of technological efficiency.

b) Show what technological progress looks like on a production function such as the one you drew for (a)

c) Draw an isoquant of the production function Q=f(L, K) noting areas that are not feasible, not efficient and at the frontier of technological efficiency for producing a target production level Q'.

8) Market structure and externalities. The inverse demand curve is given as p=84-q. The inverse supply curve is p=20+q.

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 2*q (MC^E=2*q), what is the socially optimal price quantity pair?

c. What size specific tax τ placed on producers can be used to replicate the socially optimal outcome?

d. On a single graph, draw the outcomes for parts a, b, and c of this problem.

9) Public goods. There are three people who live in a town. They each have a demand curve / WTP for the number of strands of LED lights to be put on the Christmas tree in the town square (q is the # of LED light strands). Dasher's demand is $12.00-$1.00*q. Dancer's demand is $36.00-$2.00*q. Prancer's is $24.00-$1.00*q.

a. If the marginal cost of an LED light strand is constant at $28.00 and no effort is made to avoid the free rider problem, what number of LED light strands will be planted and who will provide these strands of lights?

b. How much less is this than the socially optimal number of LED light strands if the cost of strands is $28.00 per strand?

c. Describe why public good provision is different from private good provision using the characteristics of rivalry and excludability.

10) 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		8	-------	------	-----	------	---------
1							15
2		37					
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 14, what level of output is profit maximizing for a firm if the market structure is perfectly competitive?

11) Game Theory.
United Airlines and American Airlines compete for flights on the Syracuse (SYR) to Washington National (DCA) route. They can choose to run 2 per day (14 per week) or 3 per day (21 per week) for the 7 day week. The payoffs to each are represented in the following table.

		United Airlines	
		21 per week	14 per week
American Airlines	21 per week	82,000 82,000	102,000 76,000
	14 per week	76,000 102,000	92,000 92,000

a) Describe the full set of best responses and identify the Nash Equilibrium.

b) Target and Old Navy have entry points that are side by side in a strip mall. A guard costs $10 to hire and will sit between the two doors. The benefit of a guard at the main door is $8 to each store in avoided losses. Baseline is no guard for either, no benefits (0).

		Old Navy	
		Hire	Don't hire
Target	Hire	-2 -2	-2 8
	Don't Hire	8 -2	0 0

b) Describe the full set of best responses and identify the Nash Equilibrium.

c) Can they arrive at a Pareto improving outcome if they agree to split the cost of the guard ($5 each) so the payoffs are as follows?

		Old Navy	
		Hire and split cost	Don't hire
Target	Hire and split cost	3 3	-2 8
	Don't Hire	8 -2	0 0

12) Heifer Project is distributing milking goats to women in Mali. The cost to the project to buy the goats to distribute is $250,000 in t=0. Women will be trained in zero grazing and stable building for these goats. Training will take place in t=0 and t=1 and costs Heifer Project $100,000 in each year. The women will bear a cost of $100,000 in t=0 to build the stables and $50,000 in t=1, t=2, and t=3 to feed the goats. The added value of the milk that will be produced by these goats compared to without them is $250,000 in years t=1, t=2, and t=3.

a) If the discount rate is 10%, should this project be implemented or not according to an evaluation of NPV?

b) If we use a lower discount rate will this make the project more or less attractive in NPV terms? Why?

c) If the value added of the milk produced by these goats turns out to be $300,000 instead of $250,000 in years 1,2 and 3 do you still have the same answer as you found for part (a)?

13) Syracuse University is considering raising the price for a season's ticket for all men's basketball home games at the lowest level from $710 this season to $760 next season. This season, at a price of $710, they sold 25,000 season's tickets. The best available information suggests that the price elasticity of demand for season tickets is -0.89.

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 and number of tickets sold. Which is higher?

c. How many season tickets will be sold next year if the elasticity is not -0.89 as assumed above, but is in fact -1.25?

14) The average nominal price of a gallon of gas has come down in Central New York since 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 or not rule out (Circle one)
Hydrofracking has increased US production levels of crude oil dramatically over the past year.	Rule out Not Rule Out
New environmental regulations make it less costly to refine oil into gasoline	Rule out Not Rule Out
Sanctions on Iran and Russia have limited their access to global oil markets.	Rule out Not Rule Out
Incomes of consumers are increasing due to the continued economic expansion.	Rule out Not Rule Out
Global warming has made Arctic oil reserves more accessible and production has begun in this area	Rule out Not Rule Out
Consumers are adopting hybrids and electric vehicles and moving away from gasoline fueled vehicles	Rule out Not Rule Out
Oil production in Libya and Iraq has begun to return to production levels last seen in the late 1990s after a long period of disruption.	Rule out Not Rule Out
Technological innovations in batteries is making electric and solar increasingly reliable and lower cost fuel sources for vehicles.	Rule out Not Rule Out

15) Types of Goods.
a) What type of good goes in which blank?

	Rival	Non Rival
Exclusion		
Non Exclusion		

b) Illustrate how deriving the aggregate 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).

Aggregate demand for a private good:

Aggregate demand for a public good:

Work Page: