Exam Prep Questions and Answers

Instructions: You will have 75 minutes for the exam. Do not cheat. Raise your hand if you have a question, but continue to work on the exam while waiting for your question to be answered. Allocate your time like an economist would - do the easy questions first. Short answer questions should not require more than two lines. Question values sum to 100.

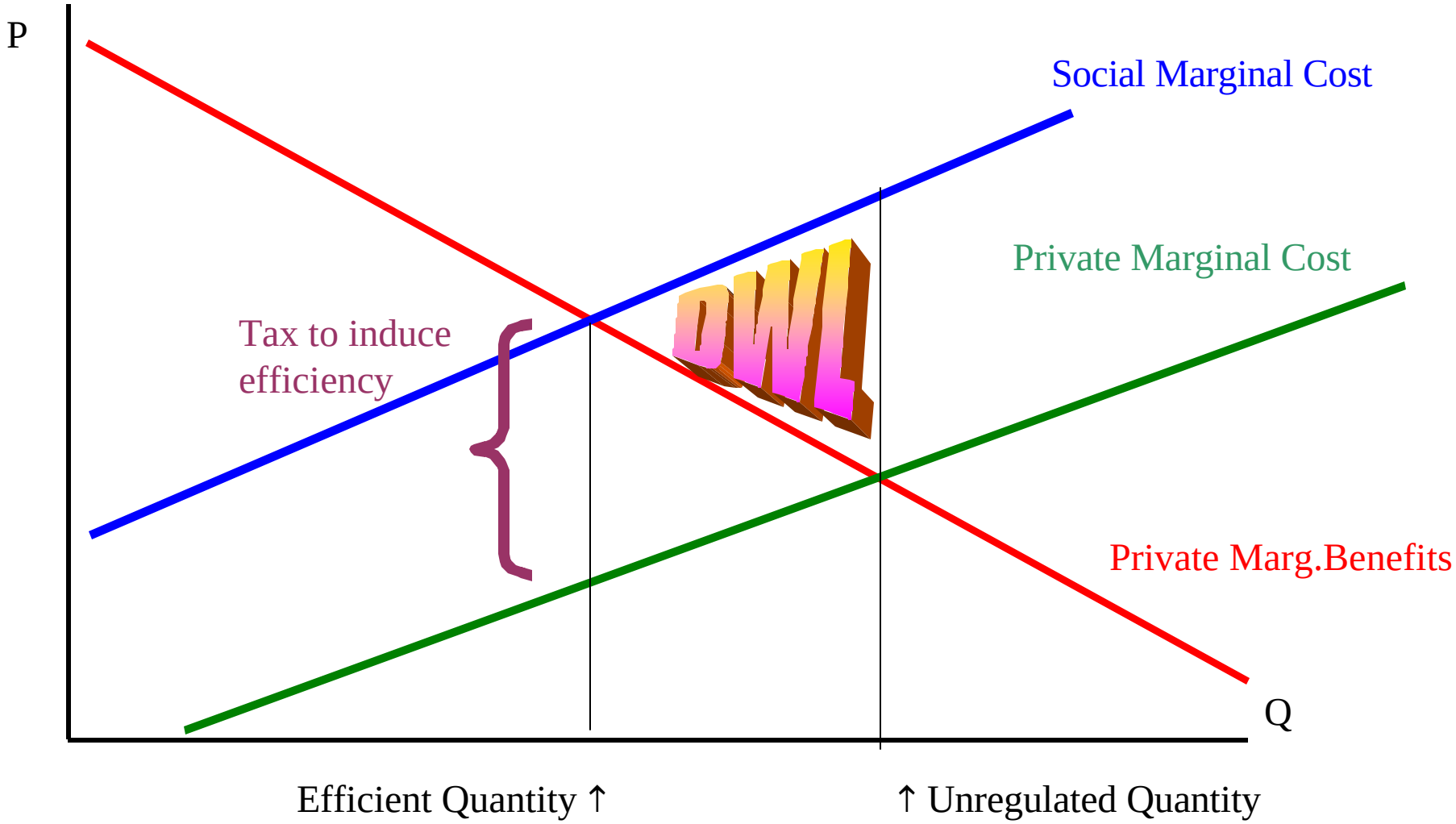
1. Fill in the following table.

Output	Total Cost	Variable Cost	Fixed Cost	Marginal Cost	Average Total Cost	Average Variable Cost	Average Fixed Cost
0	3	0					
1		3					
2						3½	
3					5		
4	21						
5				7			

Answer:

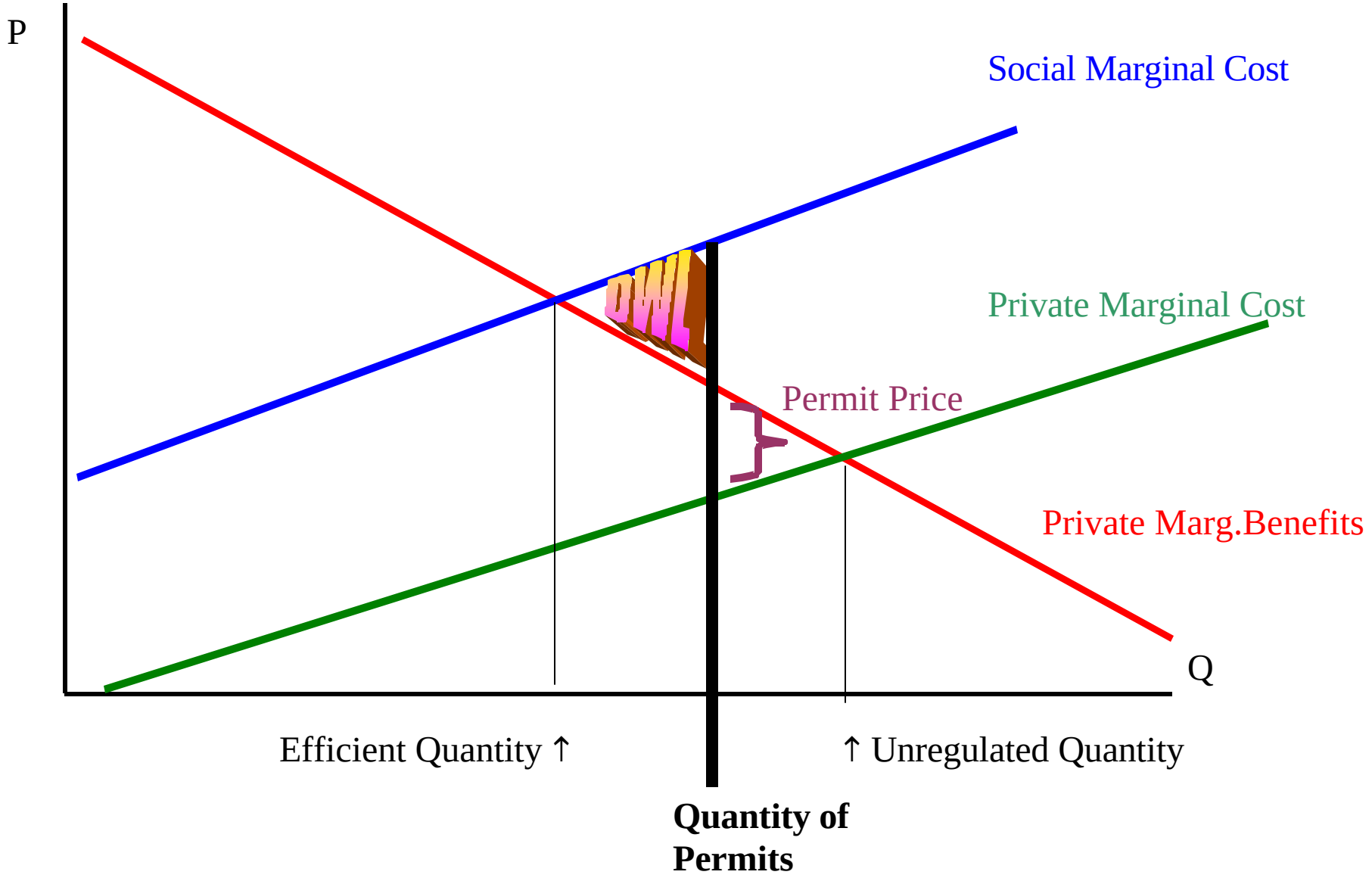
Output	Total Cost	Variable Cost	Fixed Cost	Marginal Cost	Average Total Cost	Average Variable Cost	Average Fixed Cost
0	3	0	3				
1	**6**	3	3	3	6	3	3
2	10	**7**	3	4	5	3½	1½
3	**15**	12	3	5	5	4	1
4	21	**18**	3	6	5.25	4½	3/4
5	28	**25**	3	7	5.6	5	0.6

2. The internet is clogged. Because of the high level of downloads, users may wait five or ten minutes to download from a site. There is an external effect of anyone's use - it slows the system down for all. Using a diagram or two, illustrate the private and social cost of internet use, and the benefits. Identify the unregulated equilibrium and the deadweight loss associated with this outcome. Identify the social optimum quantity, and the level of taxation necessary to achieve this optimum.


P
Social Marginal Cost
Private Marginal Cost
Tax to induce efficiency
DWL
Private Marg.Benefits
Q
Efficient Quantity ↑
↑ Unregulated Quantity

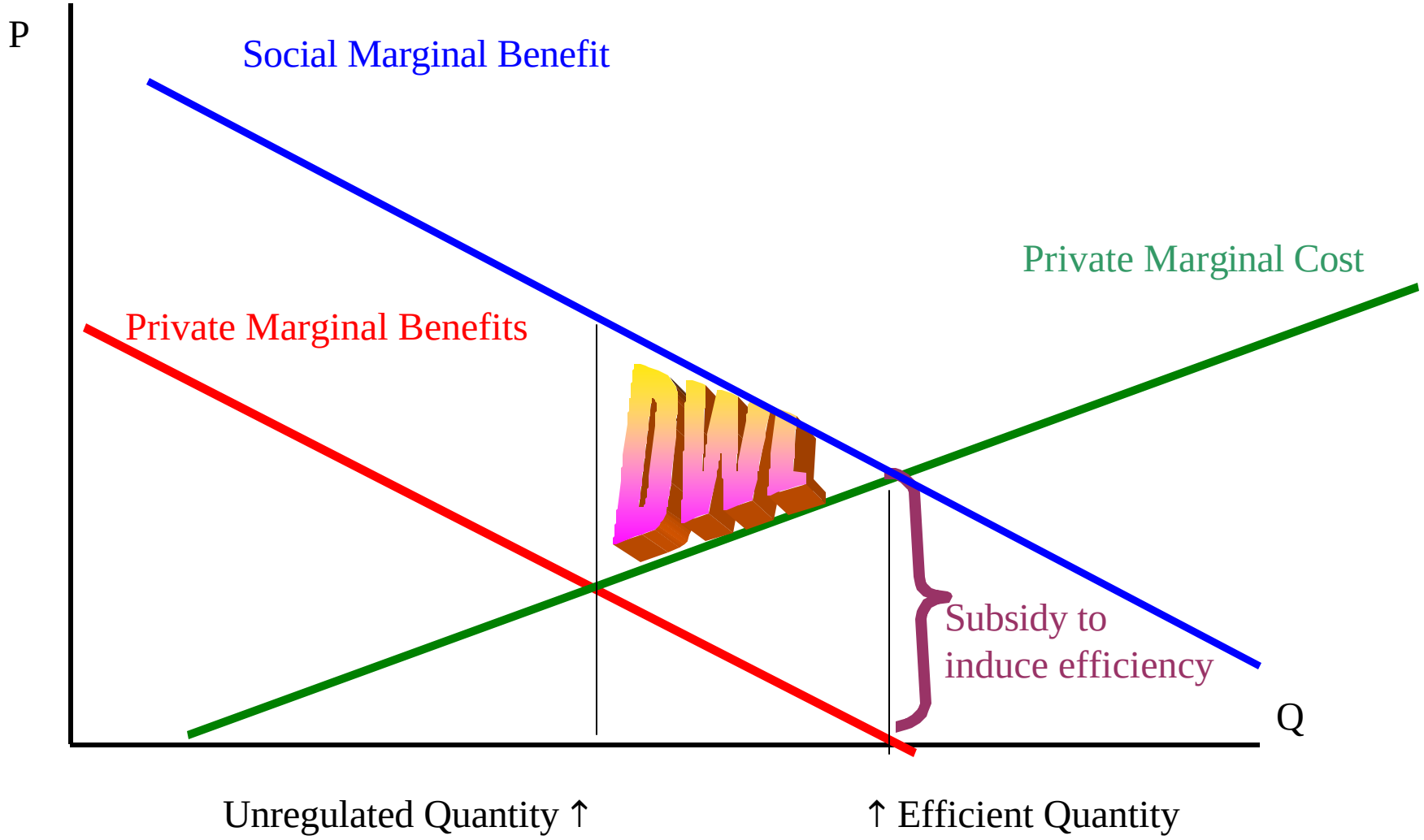
3. (10 points) California sells the right to pollute some effluents. Consider the right to release SO_2 into the atmosphere. Suppose the quantity of SO_2 has been fixed at a level below equilibrium that would prevail without regulation, *but above the socially optimal quantity*. Using a diagram, illustrate the dead weight loss, and identify the price of a permit to produce one unit. Without using a diagram, identify the advantages of creating a market for pollution permits, rather than having a government agency choose who gets to pollute?

A market for pollution permits insures that the permits are used for the highest value activity rather than wasted in a low value activity. The market can also raise revenue. Diagram below.


P
Social Marginal Cost
DWL
Private Marginal Cost
Permit Price
Private Marg.Benefits
Q
Efficient Quantity ↑
↑ Unregulated Quantity
Quantity of Permits

4. Most people consider it a good thing to have educated neighbors. Illustrate the dead-weight loss associated with unregulated education, and suggest two means of improving economic performance.

Either a minimum quantity or a subsidy can be used to improve economic performance.


P
Social Marginal Benefit
Private Marginal Cost
Private Marginal Benefits
DWL
Subsidy to
induce efficiency
Q
Unregulated Quantity ↑
↑ Efficient Quantity

5. (10 points) Roaches in apartment buildings easily move from apartment to apartment. Thus, if your neighbor leaves a lot of food around, and never sprays, you are more likely to get roaches in your apartment. Identify the problem faced by the society of apartment dwellers, and suggest two fixes for this problem. No diagrams are necessary.

Problem: Negative externality. Your neighbor does not face the full consequences of his sloppy actions. One fix: neighborhood or building association taxes the residents and then sprays all apartments at once. Second fix: Neighborhood association collects taxes and offer subsidized spraying. Third fix: People discuss and agree to all spray. (Last fix creates an enforcement problem.)

6. (10 points) How do coupons permit manufacturers to price discriminate?

People with low incomes often value their time less than people with high incomes, and thus are more willing to spend time cutting out and collecting coupons, permitting a selective discount to those with a low value of time.

OPEC members tend to produce more than their cartel allocation. What economic force induces them to do so?

The *free-rider* problem faces every cartel – the cartel would like to set price above marginal cost, to maximize profits, but this provides an incentive to undercut the cartel agreement.

7. Consider a monopoly seller of computer software. This seller sells only over the internet, and pays a fixed charge for the creation of a web page, but has no variable costs. Explain why the seller will set a price so that the elasticity of demand equals one. Illustrate with a diagram, including the dead weight loss (excess burden).

The seller would like to maximize revenue, which occurs when the elasticity of demand is one.

8. (5 points) In experiment 7, 1/3 of non-students valued the good at ★21, while the other nonstudents valued the good at ★16. 1/3 of the students valued the good at ★16, with the other 2/3 of the students valued the good at ★11. Half were students. Seller costs were ★5. What prices (for students and non-students) maximize the seller's profit? You may assume that a buyer will buy if the buyer gets a profit of one.

A price of 15 (or 16) for nonstudents and a price of 10 for the students. At a price of 10, students buy 1 each, for a profit of 15 for each 3 students; at a price of 15, only one of three students buys, for a profit of 10. Similarly, with non-students, at a price of 20, only one buys, for a profit of 15 for each group of three nonstudents, while with a price of 15, all three buy, for a profit of 30.

9. (10 points) Suppose non-students value a good supplied by a monopoly at ★10, 1/3 of students value the good at ★10 and the other 2/3 value the good at ★6, and costs are ★0. Half the population are students. Is society better off if price discrimination is forbidden?

Absent price discrimination, the monopolist would price at 10, because this brings profits of ★40 for every 6 people. (Three sales to nonstudents and one sale to students.) Profits of ★40 exceed the profits at a price of ★6, which get 6 sales for six individuals. If price discrimination is permitted, the optimal prices are ★10 for non-students and ★6 for students (because this brings ★18, versus ★10 at a price of ★10). Thus, permitting price discrimination increases the total sales, reducing the dead-weight loss of monopoly.

10. The Pristine River has two polluting firms on its banks. Acme Industrial and Creative Chemicals each dump 100 tons of glop into the river each year. The cost of reducing glop emissions per ton equals $10 for Acme and $100 for Creative. The local government wants to reduce overall pollution from 200 tons to 50 tons.

a) If the government decided to reach its overall goal by imposing uniform reductions on the firms, calculate the reduction made by each firm, the cost to each firm, and the total cost to the firms together.

Acme:	**75 tons × $10 =**	**$ 750**
Creative:	**75 tons × $100 =**	**$7500**
	150 tons	**$8250**

b) Suppose the government auctions off pollution permits that would allow only 50 tons of pollution. Calculate the reduction made by each firm, the cost to each firm, and the total cost of the firms together.

Acme:	**100 tons × $10 = $1000**	
Creative:	**50 tons × $100 = $5000**	
	150 tons	**$6000**