Name: _____

Team: _____

AP Microeconomics Problem Set #9
Unit 9: Market Failures

1. **Public Goods**
   a. Identify and explain the two characteristics of public goods. Give and explain examples. (____/5)
   b. Explain why the public sector and not the private sector provides public goods. (____/5)

2. **Externalities**
   a. (____/10) Assume excessively large SUVs include spillover costs that are not borne by the initial consumer but rather society as a whole.
      i. Explain two negative externalities associated with SUVs. Who pays the external costs?
      ii. Use a supply and demand graph to illustrate a negative externality. Identify the current price and output and the socially optimal price and output.
      iii. Use MSB and MSC to explain if SUVs are being overproduced or underproduced by the free market. Explain why the free market failed?
      iv. Explain what the government must do to fix this negative externality. Draw on a new graph.
   b. (____/10) Assume the creation of city parks has spillover benefits that improve society as a whole.
      i. Explain two positive externalities associated with making more parks. Who receives the external benefits?
      ii. Use a supply and demand graph to illustrate a positive externality. Identify the current price and output and the socially optimal price and output.
      iii. Use MSB and MSC to explain if parks are being overproduced or underproduced by the free market. Explain why the free market failed?
      iv. Explain what the government must do to fix the positive externality. Draw on a new graph.

3. **Antitrust Laws**
   a. Explain the purpose of antitrust policies. In your response, explain why monopolies are inefficient compared to perfect competition (____/5)
   b. Explain if the government should tax or subsidize a monopoly to get them to produce the socially optimal quantity. Make sure your answer clearly explains why. (____/5)

4. **Redistribution of Income**
   a. Define and give examples of each type of tax: Progressive, Proportional, and Regressive. (____/5)
   b. The average family income in America in 2001 was $66,863. Identify why this is misleading and explain why the Lorenz Curve is an effective way to measure income distribution. Draw the curve to illustrate your point. (____/10)

   5. Define the term and give an example that clearly demonstrates your understanding of each concept.
      Derived Demand (____/5)
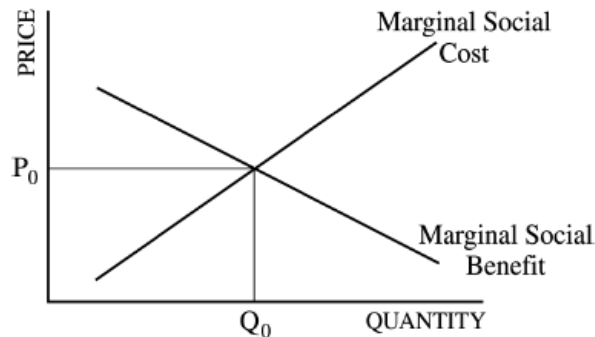   Marginal Revenue Product (MRP) and Marginal Resource Cost (MRC) (____/5)
      Monopsony (¬____/5)

6. (____/26) **Worksheets and Practice FRQs**:
   a. 2002 Practice FRQ #2 (____/6)
   b. 2002B Practice FRQ #2 (____/8)
   c. 2004 Practice FRQ#1 (____/12)
   d. FRQ #4 (____/7)   E. FRQ #5 (_____/12)

2. The graph below shows the price (P_0) and quantity (Q_0) at which there is an efficient allocation of resources.
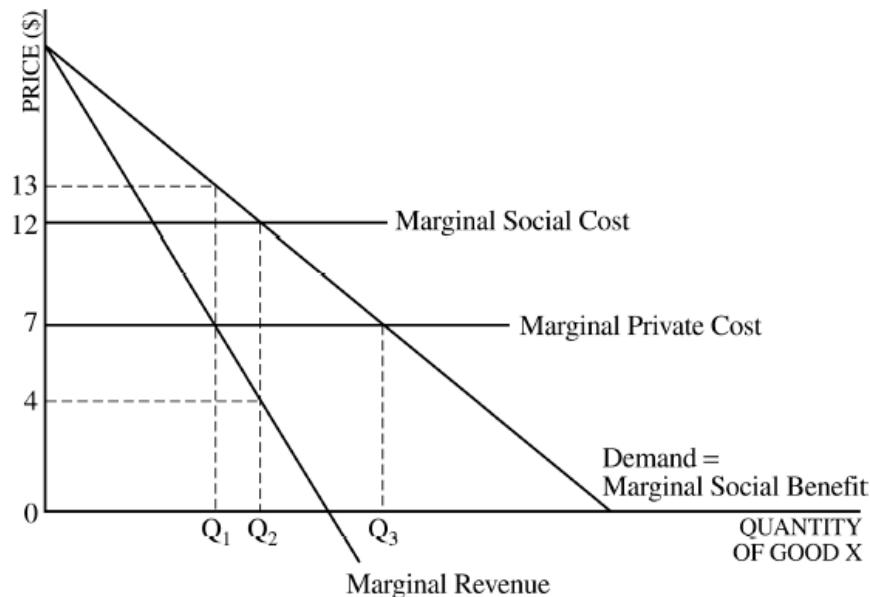

However, in some cases the market fails to allocate resources efficiently.

(a) Assume the chemical industry is polluting the air.

   (i)   Using marginal benefit and marginal cost analysis, explain how the chemical industry is misallocating resources.

   (ii) Identify one policy or action the government could take to correct this market failure.

(b) Assume it is difficult to exclude nonpayers from enjoying the benefits of national defense.

   (i)   Using marginal benefit and marginal cost analysis, explain how the private market will fail to produce the efficient level of national defense.

   (ii) Identify one policy or action the government could take to correct this market failure.

2002 AP® MICROECONOMICS FREE-RESPONSE QUESTIONS (Form B)

2. The government has decided to take action to reduce the pollution caused by the chemical industry. This industry is composed of profit-maximizing, perfectly competitive firms.

(a) Identify one policy that the government could implement to reduce pollution.

(b) Explain the effect the policy you identified in part (a) would have on each of the following for the firms in the chemical industry.

   (i) Marginal cost

   (ii) Output

   (iii) Price

(c) Explain the effect of the policy you identified in part (a) on the efficiency of the allocation of society's resources.

PRICE ($) vs QUANTITY OF GOOD X

13
12 — Marginal Social Cost
7 — Marginal Private Cost
4

Demand =
Marginal Social Benefit

0   Q₁ Q₂   Q₃   QUANTITY
                       OF GOOD X

Marginal Revenue

1. The production of good X creates an externality. The following questions are based on the graph above, which shows the marginal revenue, marginal social benefit, marginal private cost, and marginal social cost associated with the production of good X.

   (a) Is the externality positive or negative? Explain.

   (b) Using labeling from the graph above, identify the socially optimum output. Explain how you determined your answer.

   (c) Suppose that good X is produced by a profit-maximizing monopoly. Answer each of the following.

      (i) Using labeling from the graph above, identify the unregulated firm's output. Explain how you determined your answer.

      (ii) To produce the socially optimum output, indicate whether the government should tax or subsidize the firm.

      (iii) Calculate the dollar value of the needed per-unit tax or subsidy.

   (d) Suppose that good X is produced in a perfectly competitive industry. Answer each of the following.

      (i) Using labeling from the graph on the previous page, identify equilibrium output in the absence of regulation. Explain how you determined your answer.

      (ii) To produce the socially optimum output, indicate whether the government should tax or subsidize the firms in the industry.

      (iii) Calculate the dollar value of the needed per-unit tax or subsidy.

4.

P & L is a profit-maximizing shirt-manufacturing firm. The firm can sell all the shirts it can produce to retailers at a price of $20 each. P & L can hire all of the workers it wants at a market wage of $120 per day per worker. The table below shows the firm's short-run production function.

Number of Workers	Number of Shirts per Day
0	0
1	10
2	25
3	45
4	60
5	72
6	80
7	85
8	82

(a) In what kind of market structure does this firm sell its output? How can you tell?

(b) In what kind of market structure does this firm hire its workers? How can you tell?

(c) Calculate the marginal revenue product of the third worker. Show your work.

(d) How many workers should the firm hire to maximize profit? Explain.

FRQ #5

Petsall Corporation is a profit-maximizing monopolist. It sells a patented rabies vaccine for pets and earns economic profits.

(a) Draw a correctly labeled graph that shows each of the following for Petsall.

   (i) Output and price of the vaccine

   (ii) Area of economic profits

(b) Assume that Petsall hires its production workers in a perfectly competitive labor market at the wage rate of $20 per hour.

   (i) State the marginal conditions for hiring the profit-maximizing amount of labor.

   (ii) Draw a correctly labeled graph that shows the labor supply and demand curves for Petsall and indicate the profit-maximizing quantity of labor.

(c) Suppose that the market wage rate now falls to $15 per hour. Show on your diagram in (b) (ii) how each of the following would be affected.

   (i) The supply of labor to Petsall

   (ii) The amount of labor Petsall would hire

(d) Given the lower wage rate in (c), indicate how each of the following would change.

   (i) Total fixed cost

   (ii) Marginal cost

   (iii) Price of the product