

## I. Multiple Choice

1. A market failure occurs when:
  - A.  $MSB = MSC$
  - B. Private markets produce socially efficient outcomes
  - C.  $MSC \neq MSB$
  - D. All externalities are internalized
2. If  $MSC > MSB$  at equilibrium, the market:
  - A. Underproduces a good
  - B. Overproduces a good
  - C. Produces the efficient quantity
  - D. Experiences no deadweight loss
3. Which of the following describes a positive externality?
  - A. Smoking in public
  - B. Pollution from factories
  - C. Education creating a more productive workforce
  - D. Traffic congestion
4. A Pigouvian tax is designed to:
  - A. Encourage positive externalities
  - B. Eliminate deadweight loss from negative externalities
  - C. Lower government revenue
  - D. Shift demand rightward
5. A corrective subsidy is intended to:
  - A. Decrease production of harmful goods
  - B. Internalize a positive externality
  - C. Increase taxes on consumers
  - D. Reduce government spending
6. A public good is both:
  - A. Rival and excludable
  - B. Non-rival and excludable
  - C. Rival and non-excludable
  - D. Non-rival and non-excludable
7. The free-rider problem occurs because:
  - A. Some goods are rival in consumption
  - B. Non-excludable goods allow people to benefit without paying

- C. Government sets prices too low
  - D. Firms lack profit incentives
8. The tragedy of the commons describes:
- A. Underuse of public goods
  - B. Overuse of common resources due to lack of property rights
  - C. Efficient resource allocation
  - D. Government overregulation
9. The Lorenz Curve shows:
- A. The relationship between inflation and unemployment
  - B. The distribution of income across households
  - C. The trade-off between equality and efficiency
  - D. Marginal benefit and marginal cost
10. A Gini coefficient closer to 1 indicates:
- A. More equality
  - B. Less equality
  - C. Perfect equity
  - D. Perfect competition

## II. True / False

11. A socially efficient outcome occurs where  $MSB = MSC$ .
12. Deadweight loss measures total social benefit.
13. Positive externalities cause the market to underproduce goods.
14. A Pigouvian tax reduces overproduction from negative externalities.
15. Public goods are underproduced by the private market.
16. Common resources are overused without regulation.
17. The Lorenz curve lies above the line of equality in all economies.
18. A Gini coefficient of 0 means perfect equality.
19. Progressive taxation reduces income inequality.
20. Regressive taxes increase inequality.

### III. Fill in the Blanks

21. A market failure occurs when \_\_\_\_\_  $\neq$  \_\_\_\_\_.
22. The total cost to society of producing one more unit is called \_\_\_\_\_.
23. The total benefit to society of consuming one more unit is called \_\_\_\_\_.
24. A tax used to correct a negative externality is called a \_\_\_\_\_ tax.
25. A payment to encourage positive externalities is a \_\_\_\_\_.
26. A good that is non-rival and non-excludable is a \_\_\_\_\_ good.
27. The \_\_\_\_\_ problem occurs when people consume without paying.
28. The overuse of a shared resource is known as the \_\_\_\_\_ of the \_\_\_\_\_.
29. The curve that shows cumulative income distribution is called the \_\_\_\_\_ curve.
30. The numerical measure of income inequality is the \_\_\_\_\_ coefficient.

### IV. Matching

Concept	Description
A. Pigouvian tax	Graph showing income distribution
B. Common resource	Internalizes external costs
C. Gini coefficient	Rival, non-excludable
D. Tragedy of the commons	Numerical inequality measure
E. MSB	Overuse of shared resources
F. Public good	Benefit to society from one more unit consumed
G. Lorenz curve	Non-rival, non-excludable
H. Free-rider problem	Cost to society from one more unit produced
I. MSC	Non-payers still receive benefits
J. Corrective subsidy	Encourages beneficial goods

## V. Short Answer

31. Explain why negative externalities cause overproduction in free markets.
32. Describe how a Pigouvian tax moves the market toward social efficiency.
33. Give two examples of positive externalities and explain government responses.
34. Compare public goods and common resources in terms of rivalry and excludability.
35. Explain how the Lorenz Curve and Gini Coefficient together measure inequality.
36. Discuss how progressive taxation and transfer payments promote equity.
37. Identify one way regulation can correct a market failure.
38. Distinguish between equity and efficiency in economic policy.

## VI. Calculations

39. Suppose the area between the Lorenz Curve and the line of equality (A) is 0.2, and the area below the Lorenz Curve (B) is 0.3. Calculate the Gini coefficient.
40. A vaccine provides \$80 private benefit and \$40 external benefit, while its marginal cost is \$100.
  - a. Compute the social benefit.
  - b. Should the government subsidize the vaccine? Explain.
41. A factory's private cost per unit is \$5, but the pollution cost to society is \$3 per unit.
  - a. What should the Pigouvian tax be?
  - b. How does this affect production quantity?

## VII. Graphing Practice

42. Negative Externality (Pigouvian Tax):
  - a. Label axes: Price (P) and Quantity (Q).
  - b. Draw and label MPC, MSC, and Demand (MPB = MSB).
  - c. Mark  $Q_{\square}$  (market) and  $Q_{so}$  (socially optimal).
  - d. Shade DWL and label the tax rectangle.
43. Positive Externality (Subsidy):
  - a. Label MPB, MSB, and MPC = MSC.

- b. Show underproduction at  $Q^*$  and the efficient output  $Q^e$ .
- c. Indicate subsidy cost and DWL elimination.

44. Lorenz Curve:

- a. Label axes (cumulative % of households vs. income).
- b. Draw 45° line of equality.
- c. Plot Lorenz curve below it and shade area A (inequality).
- d. Identify how a flatter curve reflects greater equality.