Principles of Microeconomics

Final Exam

Name (中国学生填写中文)	
Student ID	

Notice:

1. This final exam paper has 5 **pages**.

2. Please write your answers on the **Answer Sheet**.

3. Answers on **Problem Set** will **not** be graded.

4. Please hand in your **Answer Sheet** and this **Problem Set** after the exam.

5. This exam will take 2 hours.

Multiple Choices (30 points, 3 points each)

1. Which of the following will result in a movement along the demand curve?

   A. A change in price.

   B. A change in the price of a close substitute.

   C. A change in consumers' tastes.

   D. A change in income.

2. Suppose potatoes are a Giffen good. When the price of potatoes increases,

   A. the substitution effect leads to an increase in demand.

   B. the substitution effect leads to a decrease in demand.

   C. the income effect leads to a decrease in demand.

   D. the income effect leads to an increase in demand.

3. Shane receives $100 as a birthday gift. In deciding how to spend the money, he narrows his options down to four choices: Option A, Option B, Option C, and Option D. Each option costs $100. Finally, he decides on Option B. The opportunity cost of this decision is

   A. the value to Shane of the option he would have chosen had Option B not been available.

   B. the value to Shane of Options A, C and D combined.

   C. $50.

   D. $100.

4. Which of the following is an example of a normative statement?

   A. The discount rate is the interest rate the Federal Reserve charges banks to borrow funds.

   B. The income tax rate is too high.

   C. The government should increase the tax on gasoline.

   D. The elimination of trade restrictions would increase an economy's standard of living.

5. Chloe consumes only two goods. Her preference is represented by utility function $U(x, y) = \min\{3x, 2y\}$, where x and y are the quantities of the two goods respectively. Which of the following is **correct**?

   A. The two goods are substitutes.

   B. The two goods are complements.

   C. The two goods are unrelated.

D. We can't tell how the two goods are related.

6. Which of the following is true of a monopolistically competitive market in the long-run equilibrium?

   A. Price is greater than marginal cost.

   B. Price is equal to marginal revenue.

   C. Firms make positive economic profits.

   D. Firms produce at the minimum of average total cost.

7. Suppose there is currently a tax of $50 per ticket on airline tickets. Sellers of airline tickets are required to pay the tax to the government. If the tax is reduced from $50 per ticket to $30 per ticket, then the

   A. demand curve will shift upward by $20, and the price paid by buyers will decrease by less than $20.

   B. demand curve will shift upward by $20, and the price paid by buyers will decrease by $20.

   C. supply curve will shift downward by $20, and the effective price received by sellers will increase by less than $20.

   D. supply curve will shift downward by $20, and the effective price received by sellers will increase by $20.

8. If the price elasticity of demand for a good is 1.5, then a 3 percent decrease in price results in a

   A. 0.5 percent increase in the quantity demanded.

   B. 2 percent increase in the quantity demanded.

   C. 4.5 percent increase in the quantity demanded.

   D. 5 percent increase in the quantity demanded.

9. Consider a monopolist market, given quantity Q, the inverse demand function is known as $P(Q)$, where $P'(Q) < 0$. The marginal cost for production is a constant number C, and there is no fixed cost. The optimal price set by the monopolist is denoted as P^M, and the quantity sold is denoted as Q^M. Which of the following is correct?

   A. $P^M = C$.

   B. $P^M = C - Q^M P'(Q^M)$.

   C. $P^M = C + Q^M P'(Q^M)$.

   D. None of above is true.

10. Which of the following is correct?

    A. The marginal cost curve crosses the average total cost curve at its minimum.

    B. The marginal cost curve crosses the average variable cost curve at its minimum.

    C. Long-run average costs can be higher than the short-run average cost.

    D. All of above.

Short Answers (10 points, 2 points each)

Please briefly explain the following concepts.

11. Market failure.

    _____

    _____

12. Monopolistic competition.

    _____

    _____

13. Law of demand.

    _____

    _____

14. Opportunity cost.

    _____

    _____

15. Deadweight loss.

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Computation Problems (60 points)

16. Suppose the demand for apples is $Q^D = 550 - 50P$ and the supply for apples is $Q^s = -12.5 + 62.5P$. (**5 points**)

    (a) Calculate the equilibrium price and quantity. (3 points)

    (b) Compute the consumer surplus, producer surplus, and total surplus for this market. (2 points)

17. Anna's utility function for goods X and Y is represented as

$$U(X, Y) = X^3 Y.$$

The prices of X and Y are 3 RMB and 4 RMB, respectively. Anna's income is 32 RMB. (**15 points**)

(a) What is Anna's optimal consumption bundle (X^*, Y^*)? (7 points)

(b) If the price of Y increase by 1 RMB, how much extra money should be given to Ann **at least** so as to keep her as happy as before? (8 points)

18. A monopoly is facing a demand curve described by $q = 8 - p$, and its marginal cost is $MC(q) = q + 2$, where y is the amount of production and p is the market price of the product. There is no fixed cost. (**20 points**)

(a) What is the socially efficient price and quantity? What is the firm's profit? (5 points)

(b) What is the optimal price set by the monopoly? What is the firm's monopoly profit? (5 points)

(c) Now the government decides to tax the monopoly – collecting 3 (units of money) for each product sold. What is the optimal monopoly price and quantity? (5 points)

(d) How does the consumer surplus change? Are the consumers better off or worse off? According to your result, is tax a good tool to adjust the market outcome? (5 points)

19. Suppose that there are two firms, A and B. Both firms have a cost function $C(Q) = 3Q$. The inverse market demand function is $P(Q) = 30 - Q$. Now both firms have to choose their production quantity. (**20 points**)

(a) Please solve for each firm's equilibrium quantity, price, and profit if they do not collude. (7 points)

(b) Suppose that the two firms make an agreement to form a cartel, what are the equilibrium quantities, price, and profits? (6 points)

(c) When the two firms formed a cartel, does any firm have an incentive to cheat on the other? If does, what is the optimal choice of quantity when the firm cheats, and what's the firm's profit? (4 points)

(d) Assume that the two firms compete only once. What is the most likely outcome? Why? (3 points)

[*Hint: will the two firms cooperate, not cooperate, or one of them will cooperate while the other cheats.*]