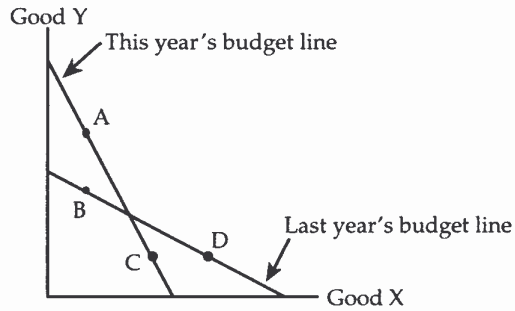


The following exam consists of 33 questions on 5 pages. Please check to see that you have all parts of the exam before beginning. The exam is worth 75 points. You have 50 minutes to complete the exam. Time may be a factor, so do not get stuck on any question. Only the answer in the designated area will be counted, include your scrap work with your name clearly written on it. Calculators are permitted. Good Luck.

**A. Multiple Choice: 11 Questions, 22 points.**  
(2 points each)

1. Assume that the demand curve for apples is downward-sloping and the supply curve for apples is upward-sloping. If the government imposes an excise tax of 10¢ per apple, then the total price (including the tax) that demanders must pay for an apple
  - a. remains unchanged.
  - b. rises by less than 10¢ per apple.**
  - c. rises by exactly 10¢ per apple.
  - d. rises by more than 10¢ per apple.
  
2. Suppose that there are only two goods in Spain, chocolate and bottled water. The absolute price of a 100-gram bar of chocolate is 200 pesetas, and the absolute price of a liter of bottled water is 100 pesetas. What is the relative price of bottled water in terms of chocolate?
  - a. 100 grams per liter.
  - b. 200 grams per liter.
  - c. 50 grams per liter.**
  - d. 400 grams per liter.
  
3. Suppose that because of inflation, the absolute price of a gallon of gasoline increases by 20% and the absolute price of a gallon of milk increases by 10%. In this situation, the price of gasoline relative to the price of milk
  - a. falls.
  - b. rises.**
  - c. remains the same.
  - d. changes unpredictably.
  
4. Amanda can prepare a Thai meal for a group in 2 hours and can type a 10 page paper in the same amount of time. Morgan can prepare the meal in 3 hours. Morgan will be the more efficient typist as long as she can type the a paper in less than
  - a. 4 hours.
  - b. 3 hours.**
  - c. 2 hours.
  - d. 1 hour.
  
5. Suppose a consumer buy goods X and Y and is currently spending all of her income on some of both goods. If the marginal value of X is less than the relative price of X, how can the consumer improve her level of satisfaction?
  - a. By purchasing more of both goods.
  - b. By purchasing more of good X and less of good Y.
  - c. By purchasing more of good Y and less of good X.**
  - d. The consumer cannot improve her level of satisfaction because she is at an optimum.



6. Which of the following changes is consistent with the situation shown in the diagram?
- The consumer's income fell.
  - The relative price of good X in terms of good Y fell.
  - The absolute price of good X rose, and the absolute price of good Y fell.**
  - The absolute price of both goods rose, with the price of good X rising by the higher percentage.
7. Refer to Budget Lines. The only situation where we can conclude that this consumer's tastes must have changed is when we observe him
- buying B last year and buying A this year.
  - buying D last year and buying A this year.
  - buying B last year and buying C this year.**
  - buying D last year and buying C this year.
8. What types of goods have downward-sloping Engel curves?
- Normal goods only.
  - Inferior goods only.**
  - Giffen goods only.
  - All types of goods.
9. True or False: If the substitution effect is larger than the income effect, a good which has a downward sloping Engel curve will also have a downward sloping Demand curve.
- True**
  - False
  - It is impossible to tell.
10. If a firm's marginal cost exceeds its marginal revenue, then
- the firm's profit is negative (i.e., the firm is suffering losses).
  - the firm should shut down its operations.
  - cutting back production will increase the firm's profit.**
  - the firm should reduce its per-unit cost by increasing its output.
11. The Cross Price Elasticity for two goods that are SUBSTITUTES is\_\_\_\_\_
- Greater than Zero**
  - Equal to Zero
  - Less than Zero

**B. 14 Points. Use the following information for questions 12 through 17. Be sure to show all of your work .**

(Each blank is 2 points each.)

The demand equation is given by  $Q = -120P + 1050$

The supply equation is given by  $Q = 90P$

12. What is the equilibrium Price and Quantity?  $P = \underline{5}$      $Q = \underline{450}$

Now assume the government institutes a sales tax of 7\$ per unit.

13. A sales tax's legal incidence is paid by demanders

14. What is the new price paid actually by consumers? \$8

15. What is the equilibrium quantity? 90

16. What is the Total **Revenue** received by the producers? \$90

17. With the \$7 sales tax, what percentage of the tax was paid by producers? 4/7 = 57%

**SHOW YOUR WORK HERE:**

**C. 22 points. Use the following information for problems 18 through 25. Be sure to show all of your work.**

(Each blank is 2 points each)

Utility Function:  $U = X^2 * Y^3$  where X is the amount of good X consumed and Y is the amount of good Y consumed.

$$MU_x = 2XY^3$$

$$MU_y = 3 X^2 Y^2$$

$$\text{Income (I)} = \$100$$

$$P_x = \$4$$

$$P_y = \$2$$

18. What is the Marginal Value of X in terms of Y {  $MV_{x/y}$  }? 2

19. Write the equation of the budget constraint:  $Y = 50 - 2X$

20. If I purchase no units of X, how much Y can I afford? 50 units

21. What is the optimal bundle of good X and Y?  $X =$  10  $Y =$  30

22. What Total Utility is received at the optimal bundle?  $(10^2) * (30^3) = 100 * 27000 = 2,700,000$

Suppose the price of good Y increases from \$2 to \$4.

23. Derive the new optimal bundle of X and Y.  $X =$  10  $Y =$  15

24. From the information obtained about the consumption of good Y both before and after the price change, derive the equation of a linear demand curve for *good Y* that passes through both points.

$$P_y = \underline{-2/15} * Y + \underline{6}$$

25. What is the elasticity of demand in this region? 0.5

**SHOW YOUR WORK HERE:**

**D. 8 points. Questions 26 through 29 refer to the following table which shows the demand for a firm's product and the firm's total cost of production**

Quantity Produced	Total Cost	Marginal Cost	Quantity Demanded	Price	Total Revenue	Marginal Revenue	Profit
0 units	\$ 0	-	0 units	\$155 per unit	0	-	0
1	70	70	1	150	150	150	
2	142	72	2	145	290	140	
3	217	75	3	140	420	130	
4	297	77	4	135	540	120	
5	385	88	5	130	650	110	
6	485	100	6	125	750	100	\$265
7	603	118	7	120	840	90	

(Each blank is worth 2 points each)

26. According to the equimarginal principle, how many units should the firm produce in order to maximize its profit? 6 units

27. And what would that profit be? \$265

28. Suppose the cost of producing an item increases by \$40 per unit. Would you expect your profit maximizing quantity (from 26) to change? Yes, because MC would change due to a change in variable costs.

29. Suppose the cost production increased by a flat fee of \$40. Would you expect your profit maximizing quantity (from 26) to change? No, because MC is unaffected by the change in fixed costs

**E. 9 points. Use the following information for questions 30 through 31.**

Suppose the only two goods you purchase are Apples and Bananas.

30. Draw an indifference curve diagram with bananas on the X axis. Suppose the price of bananas is \$2, the price of apples is \$4 and your income is \$120. Label the optimum basket before the price change A. (Note: with this information, you can't solve for the actual optimal basket. Just illustrate an optimal basket with your budget line and an arbitrary indifference curve.) Make sure to label your intercepts. [2pts]

**Budget line:  $120 = 4A + 2B$ ;  $A = 30 - 1/2B$ ; Y-intercept: (0, 30); X-intercept: (60,0)**

Suppose the price of bananas increases to \$3. Draw in your new budget line. Make sure to label the intercepts. [2 pts]

**New Budget line:  $120 = 4A + 3B$ ;  $A = 30 - 4/3B$ ; Y-intercept: (0,30); X-intercept: (40, 0); Line pivots inward.**

31. Assume both goods are normal. Use your point A and 2 additional points (B and C) to illustrate the substitution and income effects of this price increase. Assume point B is your new optimal point. Make sure to clearly label the two effects using A, B and C. [5 pts]

**A is on original budget line and IC;**

**C is on compensated budget line (parallel to new budget line) and original IC;**

**B is on new budget line**

**A to C: substitution effect is leftward because  $P_x$  went up so  $Q_x$  should go down due to sub effect  
C to B: Income effect: is also leftward, because good is normal, so  $P_x$  up implies  $Q_x$  even further down.**