ECO 101 Introduction to Microeconomics

Sample Midterm 2 Exam

Descriptive Questions

Lecture 8

1. What is Price Elasticity of Demand? What formulas can be used to measure PED?
2. What does Elastic Demand mean? What does the Demand Curve look like if demand is elastic?
3. What does Inelastic Demand mean? What does the Demand Curve look like if demand is inelastic?
4. What does Unit Elastic Demand mean? What does the Demand Curve look like if demand is unit elastic?
5. What does Perfectly Elastic Demand mean? What does the Demand Curve look like if demand is Perfectly Elastic?
6. What does Perfectly Inelastic Demand mean? What does the Demand Curve look like if demand is Perfectly Inelastic?

Lecture 9

1. What are the four factors that affect PED? Explain each of the four factors in detail using examples.
2. What is Cross Elasticity of Demand? What is the formula to calculate CED? Explain what the sign of CED means.
3. What is Income Elasticity of Demand? What formulas to calculate YED? Explain what the sign of YED means.
4. What is Price Elasticity of Supply? What is the formula to calculate PES?

Lecture 10

1. What is Utility? What is the difference between Total Utility and Marginal Utility?
2. What is the Law of Diminishing Marginal Utility?

Lecture 11

1. What is the difference between Explicit Costs and Implicit Costs?
2. What is the difference between Accounting Profit and Economic Profit?
3. What is the difference between Short-Run and Long-Run in production?
4. What is the difference between fixed inputs and variable inputs?
5. What is the difference between fixed costs and variable costs?
6. Define Total Physical Product and Marginal Physical Product.
7. What is the Law of Diminishing Marginal Returns?
8. Define Marginal Cost.
9. What is Average Physical Product?
10. Define Average Fixed Cost, Average Variable Cost and Average Total Cost.

Lecture 12

1. What is the difference between Long-run and Short-run in production?
2. Sketch the Long-Run Average Total Cost Curve and label the areas of Economies of Scale, Constant Returns to Scale and Diseconomies of Scale.
3. Define Economies of Scale, Constant Returns to Scale and Diseconomies of Scale.
4. What is Minimum Efficient Scale?
5. Why do firms experience Economies of Scale?
6. Why do firms experience Diseconomies of Scale?

Problem Solving

1. Suppose that business travelers and vacationers have the following demand for airline tickets from New York to Boston:

Price	Quantity Demanded (Business Travelers)	Quantity Demanded (Vacationers)
$150	2,100	1,000
200	2,000	800
250	1,900	600
300	1,800	400

a. As the price of tickets rises from $200 to $250, what is the price elasticity of demand for (i) business travelers and (ii) vacationers? (Use the midpoint method in your calculations.)
b. Why might vacationers have a different elasticity than business travelers?

Solution to Question 1

1. a. For business travelers, the price elasticity of demand when the price of tickets rises from $200 to $250 is [(2,000 – 1,900)/1,950]/[(250 – 200)/225] = 0.05/0.22 = 0.23. For vacationers, the price elasticity of demand when the price of tickets rises from $200 to $250 is [(800 – 600)/700] / [(250 – 200)/225] = 0.29/0.22 = 1.32.

b. The price elasticity of demand for vacationers is higher than the elasticity for business travelers because vacationers can choose more easily a different mode of transportation (like driving or taking the train). Business travelers are less likely to do so because time is more important to them and their schedules are less adaptable.

Problem 2

Suppose a firm sells 20,000 units when the price is $16, but sells 30,000 units when the price falls to $14.

a. Calculate the percentage change in the quantity sold over this price range using the midpoint formula.
b. Calculate the percentage change in the price using the midpoint formula.
c. Find the price elasticity of demand over this range of prices. State whether demand is elastic or inelastic over this range.
d. Suppose the firm's elasticity of demand is constant over a large range of prices, equal to the value found in part c. If the price were to fall another 4%, what should the firm predict will happen to its quantity sold?

Answer 2

a. The midpoint formula uses the average of the two quantities as the reference point for computing the percentage change. In this example, the percentage change is (30,000 – 20,000)/25,000 = 0.40, or 40%.
b. The percentage change is (16 – 14)/15 = 0.133, or 13.3%.
c. The price elasticity of demand is the ratio of the percentage change in quantity to the percentage change in price. In this example, E_d = 40/13.3 = 3. Since E_d is bigger than one, demand is elastic.
d. The elasticity of demand equals the percentage change in quantity divided by the percentage change in price. Rearranging this relationship, the percentage change in quantity is equal to the elasticity of demand times the percentage change in price. In this example, E_d = 3 and the price change is 4%, so quantity sold will increase by 12%. 12% = 3 x 4%.

Problem 3

Suppose you are given the following data on demand for a product. The price elasticity of demand when price decreases from $9 to $7 is:

Price ($)	Quantity Demanded
10	30
9	40
8	50
7	60
6	70

Problem 4

Mr. X only buys two products – carrots and potatoes. The price of each carrot is $2 and the price of each potato is $1.5. He currently buys 10 carrots each month, and gains 40 utils from the 10th carrot and he buys 12 potatoes each month and gains 45 utils from the 12th potato. What should Mr. X do to maximize his utility?

Problem 5

The table shows the total utility Joseph derives from eating pizza in the evening while studying

Pieces of pizza eaten	Total Utility	Marginal Utility
0	0	
1	30	
2	48	
3	60	
4	70	
5	78	
6	80	
7	76	

a) Fill out the column for Marginal Utility.
b) How much marginal utility does Joseph derive from the third piece of pizza?
c) After eating how many pieces of pizza does marginal utility start to decline?

Problem 6

Nimbus Inc. makes brooms and then sells them door-to-door. The table below given information on the number of workers hired and Nimbus's output:

Variable Input (Workers)	Fixed Input (Machinery)	Output	MPP	FC	VC	TC	MC
0	2	0					
1	2	20					
2	2	50					
3	2	90					
4	2	120					
5	2	140					
6	2	150					
7	2	155					

(a) The firm has to pay $100 each month for the lease on the machinery. The wage of each worker hired is $100 a day. Fill out the columns in the table above **(show detailed workings within each cell)**
(b) At what level of output does the Law of Diminishing Marginal Returns set in?

(c) From the table, what can you say about the relationship between MPP and MC? Use diagrams to support your argument.

Problem 7

Consider the following cost information for a pizzeria:

Q (DOZENS)	TOTAL COST	VARIABLE COST
0	$300	$ 0
1	350	50
2	390	90
3	420	120
4	450	150
5	490	190
6	540	240

(a) What is the pizzeria's Fixed Cost?
(b) Calculate Average Fixed Cost, Average Variable Cost, Average Total Cost and Marginal Cost.
(c) Comment on the relationship between Average Total Cost and Marginal Cost. Use a diagram.

Multiple Choice Questions

1. The quantity of a good demanded rises from 1000 to 1500 units when the price falls from $1.50 to $1.00 per unit. The price elasticity of demand for this product is approximately:
   A. 1.0
   B. .16
   C. 2.5
   D. 4.0
2. Demand is said to be inelastic when:
   A. the percentage change in quantity demanded is greater than the percentage change in price of a good
   B. in a linear demand curve, quantity demanded is close to zero (given the price) so that the percentage change in quantity demanded will be very high
   C. the percentage change in price exceeds the percentage change in quantity demanded of a good
   D. a relatively small change in price results in a relatively big change in quantity demanded
3. The determinants of the price elasticity of demand of a particular commodity include all of the following except:
   A. the availability of substitutes for the commodity
   B. the time period involved
   C. the ease with which resources can be shifted to and from the production of this commodity to other uses
   D. the degree of specificity with which the commodity is defined

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4. The fact that the expenditure on food as a percentage of income has declined as income has increased indicates that food:
   A. is an inferior good
   B. is a luxury good
   C. has an income elasticity of demand less than unity
   D. is a normal good with an elastic demand
   E. there is not enough information to be able to determine what type of good food is

5. The quantity of a good demanded rises from 90 units to 110 units when the price falls from $1.20 to $.80 per unit. The price elasticity of demand for this product approximates:

A. .5
B. 1.0
C. 2.0
D. 4.0

6. An income elasticity of demand equal to 2 for a particular product means that:

A. demand curves for the product slope upward.
B. the product is an inferior good.
C. a 10 percent increase in income will yield a 20 percent increase in the quantity sold.
D. a 20 percent increase in income will result in a 10 percent increase in the quantity sold.
E. (% change in Q) / (% change in P) = 2.

The price elasticity of demand measures _____

- **A)** the responsiveness of quantity demanded to a change in price
- **B)** how far a demand curve shifts
- **C)** a change in price
- **D)** a change in quantity demanded

The cross-price elasticity of demand measures how the quantity demanded of one good is related to consumer income

- **A)** TRUE
- **B)** FALSE

Positive cross-elasticities suggest that goods are _____ and negative cross-elasticities that goods are _____

- **A)** substitutes, inferior
- **B)** normal, complements
- **C)** substitutes, complements
- **D)** normal, inferior

A measurement showing how quantity demanded varies with income is the

- **A)** price elasticity of demand
- **B)** cross-price elasticity of demand
- **C)** budget elasticity of demand
- **D)** income elasticity of demand

If the price elasticity of demand for a good is .75, the demand for the good can be described as:

A) normal. B) elastic. C) inferior. D) inelastic.

When the price of a product is increased 10 percent, the quantity demanded decreases 15 percent. In this range of prices, demand for this product is:

A) elastic. B) inelastic. C) cross-elastic. D) unitary elastic.

If the price elasticity of demand for a product is equal to 0.5, then a 10 percent decrease in price will:

A) increase quantity demanded by 5 percent.
B) increase quantity demanded by 0.5 percent.
C) decrease quantity demanded by 5 percent.
D) decrease quantity demanded by 0.5 percent.

The extra utility from consuming one more unit of a good is called

- **A)** Marginal utility
- **B)** Additional utility
- **C)** Surplus utility
- **D)** Bonus utility

Suppose Kim can consume books, bananas, and bread. If Kim increases her consumption of bananas, ceteris paribus, the utility theory assumes that the marginal utility of

a. banana decreases
b. oranges remains constant
c. bread decreases
d. books, bananas and bread all increase
e. books, bananas and bread all decrease

Marginal utility is the….

a. change in the amount of a good consumed that increases total utility by one unit
b. change in total utility that results from increasing the amount of a good consumed by one unit
c. utility obtained from the consumption of all but the last unit of a good
d. none of the above

Dennis, who consumes only grilled chicken sandwiches and salads, has a weekly income of $100. He is currently consuming 20 grilled chicken sandwiches per week, at a price of $3 each, and 20 salads per week, at a price of $2 each. If the last sandwich and the last salad both added 40 utils to Dennis' total utility, he

a. is making the utility-maximizing choice
b. should buy more salads and fewer sandwiches
c. should buy more sandwiches and fewer salads
d. obtains more additional utility per dollar from sandwiches than from salads
e. both b and d

To maximize utility, a consumer must allocate expenditures in such a way that

a. the marginal utility from each good is equal
b. the utility received from the last unit of each good is equal
c. the total utility from each good is equal
d. the utility received per dollar spent on the last unit of each good is equal

Total revenue equals
a. total output multiplied by sales price of output.
b. total output multiplied by profit.
c. (total output multiplied by sales price) - inventory surplus.
d. (total output multiplied by sales price) - inventory shortage.

If a firm produces nothing, which of the following costs will be zero?
a. variable cost
b. total cost
c. average cost
d. opportunity cost

Average total cost is equal to
a. average fixed cost + average variable cost.
b. total cost - total quantity of output.
c. average variable cost + total fixed cost.
d. average variable cost x total quantity of output.

The amount that total cost rises when the firm produces one additional unit is called
a. marginal cost.
b. average cost.
c. fixed cost.
d. variable cost.

Marginal cost tells us
a. the marginal increment to profitability when price is constant.
b. the value of all resources used in a production process.
c. the amount total cost rises when output rises by one unit.
d. the amount fixed cost rises when output rises by one unit.

Diminishing marginal product suggests that
a. marginal cost is downward sloping.
b. additional units of output are more expensive.
c. the firm is at full capacity.
d. all of the above.

When marginal cost is less than average total cost,
a. marginal cost must be falling.
b. average total cost is falling.
c. average total cost is rising.
d. average variable cost must be falling.

If marginal cost is below average total cost, average total cost
a. is falling.
b. is rising.
c. is constant.
d. may rise or fall depending on the size of fixed costs.

An example of an implicit cost of production would be
a. the cost of raw materials for producing bread in a bakery.
b. the cost of a delivery truck in a business that rarely makes deliveries.
c. the income an entrepreneur could have earned working for someone else.
d. all of the above.

Economic profit is equal to
a. total revenue minus the opportunity cost of producing goods and services.
b. total revenue minus the accounting cost of producing goods and services.
c. total revenue minus the explicit cost of producing goods and services.
d. average revenue minus the average cost of producing the last unit of a good or service.

Total revenue minus both explicit and implicit costs is called
a. accounting profit.
b. economic profit.
c. average total cost.
d. None of the above is correct.

In the long run Firm A incurs total costs of $1,200 when output is 30 units and $1,400 when output is 40 units. Firm A exhibits
a. diseconomies of scale because total cost is rising as output rises.
b. diseconomies of scale because average total cost is rising as output rises.
c. economies of scale because total cost is rising as output rises.
d. economies of scale because average total cost is falling as output rises.

Diseconomies of scale occur when
a. average fixed costs are falling.
b. average fixed costs are constant.
c. long-run average total costs rise as output increases.
d. long-run average total costs fall as output increases.